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Antecedents of Customer Participation in Member-Based Organizations: An Investigation into Paid Membership in Health Clubs
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Across the United States, the obesity epidemic is spiraling out of control. Approximately 64% of American adults are either overweight or obese, and the trend continues to grow; obesity in adults and children has doubled in the past two decades (Bassett and Perl 2004; Burton et al. 2006). Most doctors and fitness trainers agree that maintaining a healthy weight is all about nutrition and exercise. Research has shown that people who exercise, along with maintaining a healthy diet will get sick less and need less prescriptions. More and more health insurance providers are recognizing this and rewarding their members by reimbursing membership fees at their local health club, offering organized exercise programs, or opening their own fitness facilities (Parrot 1996). While these insurance companies are making a step in the right direction, people do not improve their health simply by having a membership to a health club. Instead, they must visit and actively participate in their health clubs offerings in order to improve their health. A review of the literature reveals that research is growing on nutrition and consumption of calories (Chandon and Wansink 2007; Khare and Inman 2006; Kidwell, Hardesty and Childers 2007a, b; Moorman et al. 2004; Wansink and Chandon 2006); however, very little research has been conducted on the other part of the health equation – exercise. This research described contributes to the literature by understanding the influencers to customer participation in a health club, member-based setting. While this paper focuses on health clubs, other member-based organizations (e.g. bulk food warehouses, museums) may be able to benefit from the antecedents studied in this context.

The antecedents to customer participation at member-based organizations, specifically health clubs are examined in this paper. Understanding the antecedents to customer participation has many implications. First, customer participation in a health club will lead to membership renewal. Retaining a current customer costs a business roughly five times less than marketing to a new customer (Hoffman and Bateson 2006). Additionally from the consumer’s perspective, increased customer participation on their part will increase the value of their membership fees. Next, understanding the factors that influence customer participation in a health club will lead to better ways of motivating consumers to actively take part in their club’s offerings. Many consumers join health clubs with the intentions of exercising, yet quickly find excuses to stop them. Understanding why some members participate more than others is the first step towards understanding how to change this behavior. Last, a better understanding of antecedents in this member-based context can lead to future research on consumer participation in exercise outside of the member-based organization. Determining and understanding these antecedents will lead to a better understanding of consumer behavior, which can then lead to an increase in exercise and health in an effort to fight the obesity epidemic of this country.

Theoretical Background

In simple terms, equity theory proposes that both members of a transaction feel that their inputs and outputs for the transaction are fair (Adams 1965; Bolton and Lemon 1999). In other words, customers will ask themselves “Am I using this service enough, given what I pay for it?” (Bolton and Lemon 1999, p. 172) In relationship to service usage, customers who use the service more have increased value from the service and hence increased equity. In a model of customers’ usage of services, Bolton and Lemon (1999) used equity theory to examine how customers service usage changes over time. In particular, they demonstrated that usage is an antecedent and a consequent of payment equity and of overall satisfaction. Customers compare their inputs (e.g. price, time, energy) with their normative expectations in order to determine the level of future use. Additionally, this study showed that when total cost is independent of usage (e.g. health club membership, cable television), then consumers will evaluate the exchange as more equitable when their usage levels are higher (Bolton and Lemon 1999).

Given this background, it seems that health club members would be working out all the time in order to increase their perceived equity. However, this is not the case, mainly due to human nature to find excuses and the fact that many people do not enjoy exercising. It is in the health club’s interest to increase customer’s perceived equity, as this has been shown to increase customers overall satisfaction, which then leads to future usage (Bolton and Lemon 1999). To determine what factors influence customer participation and hence their perceived equity, an informal study group was conducted with 13 individuals at a member-based health club. After talking with these individuals and after a review of the
literature, pricing, regulatory fit, access convenience, and transaction convenience were selected as the proposed antecedents to customer participation in a member-based organization.

Customer satisfaction has been shown to be an antecedent to service usage and organizational commitment (Bolton and Lemon 1999; Kelley and Davis 1994). Customers will not continue to frequent a facility if they are not satisfied. Additionally, customer satisfaction can also be interpreted as a customer’s attitude toward the club. The theory of planned behavior has shown that attitude influences behavioral intent, which influences behavior (Ajzen 1991). This research will replicate past research that customer satisfaction is an antecedent to customer participation, while also adding to the literature by studying new antecedents to customer participation in a member-based health club. In the research model presented in Figure 1, customer satisfaction is shown as an antecedent to customer participation with the addition of the proposed factors as antecedents to customer satisfaction and customer participation. The components of the framework, along with a review of the literature, will be discussed next, followed by the methodology for this research.

**Figure 1. Conceptual Framework of Antecedents of Customer Participation in Member-based Organizations**

In the context of the production of goods and services, customer participation has been defined as “the degree to which the customer is involved in producing and delivering the service” (Bendapudi and Leone 2003, p.14; Dabholkar 1990, p. 484). In a detailed review of the literature, Bendapudi and Leone (2003) found two main themes. Initially, customer participation focused on developing the case that it is beneficial to have the customer participate in the production of goods and services, arguing that increased customer participation is a source of productivity gains (Bendapudi and Leone 2003; Lovelock and Young 1979). The second theme focused on managing customers as partial employees to the business (Kelley, Donnelly and Skinner 1990; Mills and Morris 1986). This research stream states that the customers may serve as partial employees to an organization by participating in the production of the service. Health clubs are a unique case of customer involvement. In order for a customer to gain the benefits of the service, the customer must be completely involved in the process. A person cannot gain the benefits of exercise and fitness without physically participating in the activity. In this proposed research, customer participation will continue to be defined as the degree to which the customer is involved; however, customer participation will be operationalized as the frequency and active use of a health club’s offerings (e.g. cardio machines, swimming pools, weights, etc.). Since exercise is a long-term, lifestyle commitment, the current research is interested in examining long-term customer participation. As the participants in this study will already be members of a health club, the members are already involved at some level; average frequency for health club members has been shown to be between three and four visits per week (Parrot 1996). This proposed research seeks to understand the factors that can increase this frequency and activity level.

**Member-based organizations**

This research will focus on member-based organizations where there is a fee to be a member. Paid memberships can be separated into two categories: (1) access, where the membership is needed to receive the services of the organization (e.g. American Automobile Association, Gold’s Gym); and (2) full-choice, where the service is available regardless of whether the consumer is a member (e.g. art museums, YMCAs) (Bhattacharya 1998). Furthermore, service costs can be classified as independent or dependent of the actual service usage. If the cost is dependent of usage, then costs will increase as usage increases. When the total cost is fixed, regardless of usage level, then it is said to be independent of usage (Bolton and Lemon 1999). In a health club, the base
membership rate is typically a fee that is independent of usage; however, other services that incur additional fees such as personal training, court fees, and tennis lessons would be dependent of usage. Members who do not pay for extra services are paying for a service that is independent of usage. This reflects the standard for most member-based health club operations. The current research will specifically focus on the access category of paid memberships that is a combination of independent and dependent of usage levels; specifically, the percentage as independent of usage will be higher than dependent of service usage. To say it differently, the health clubs in this research would be able to classify some members as completely independent of usage, while other members would be a combination.

One way individuals choose health clubs is based on the service offerings the facility offers. This research will examine full-service health clubs that offer a variety of services, such as aerobics classes, cardio equipment, weight machines, free weight, swimming, and various programming. While other member-based organizations, such as tennis clubs and soccer clubs, are also options, these facilities are generally highly dependent of service usage. For example, members of a tennis club pay a monthly fee, but they must additionally pay court fees every time they play. This research seeks to understand that antecedents that increase customer service in full-service health clubs.

A review of the literature revealed few studies on member-based organizations. One research study examined membership lapsing behavior in a paid member organizational setting. This study, conducted on members of an art museum, found that members renewed more frequently when there was increased participation in special interest groups, increased inter-renewal times and increased gift giving as it related to the focal interest of the museum (Bhattacharya 1998). Research has also been conducted on professional membership organizations, and their relationship building efforts (Gruen, Summers and Acito 2000); however, professional membership organizations are a unique segment of the access category of paid memberships, in that the person must be a lawyer, doctor, accountant, etc. to belong to that specific membership organization.

The majority of health clubs today collect membership dues through electronic funds transfer (EFT), which automatically charges membership fees to a credit card or deducts them from a checking/savings account. As a result of this movement towards EFT, members are not asked to “renew” their membership on an incremental basis. Instead, most members sign a contract for a set amount of time (e.g. month, year, two years). After the completion of this set amount of time, the membership automatically continues unless the member informs the health club that he/she would like to cancel the membership. As a result, it would be impossible in most health clubs to measure renewals; however, it would be possible to determine which members have cancelled their membership at a later date by pulling a report from the health club’s software management software. If this information is able to be collected, it would be proposed that a high level of customer participation would have a negative impact on cancellation rates (Figure 1).

**Pricing Methods**

Research examining the effects of pricing on service usage is ubiquitous. In their conceptual model of customers’ usage of services, Bolton and Lemon (1999) examined the concept of perceived payment equity and empirically showed that a consumer’s perceived payment equity influences their service usage. Payment equity can then be defined as a customer’s comparison of the economic costs of a service relative to the benefits derived from using the service. This payment equity is continuously evaluated by the customer as long as the business relationship continues (Bolton and Lemon 1999). Customers seek to maintain a perceived fairness in the exchange between price and services provided. As members of a health club, the members have already perceived the price as fair since they are currently paying members of the organization. However, this does not mean that pricing does not influence customer participation. As shown in their dynamic model, usage was found to be an antecedent and a consequent of payment equity (Bolton and Lemon 1999). Here, the consequent portion of usage as it relates to payment equity is investigated.

In another study, Soman and Gourville (2001) studied the effect of “transaction decoupling.” Transaction decoupling is “the disassociation of a product’s costs and benefits as a result of price bundling (Soman and Gourville 2001, p. 42).” This research found that consumers consume less and demand less compensation when the benefits of a product are purchased as part of a bundle. In other words, a consumer has a greater willingness to give-up units of consumption when a single price pays for multiple units of consumption. These findings are particularly applicable to a health club since membership dues can be considered a price bundle that bundles multiple visits. For monthly dues, the price bundle is for all visits in a single month while annual dues bundle all visits for the entire year. A similar article on the psychology of consumption showed that customers who paid monthly dues as oppose to yearly dues had a higher rate of renewal (Gourville and Soman 2002). In relationship to the transaction decoupling effect, members who pay their fees annually are effected more by transaction decoupling because their fees are only due once per year. On the other hand, members who pay monthly would be more likely to associate the benefits with the costs of the membership since they are reminded...
monthly of their economic costs. Therefore, the monthly paying members realized the benefits to a greater extent, used the club more, and were more likely to renew their membership (Gourville and Soman 2002). This relates pack to payment equity; members who pay monthly are reminded of their outputs (money) and therefore use the facility more to increase their payment equity (Bolton and Lemon 1999). Lastly, members who have their membership paid for by a third party (e.g. employer, insurance company) will not be responsible for the economic inputs, and therefore will not need to participate in the service to achieve payment equity (Figure 2 illustrates interaction). This research will study these effects on customer participation.

H1: Members who pay their membership monthly will have higher customer participation than those who pay annually. This effect will be lower for members who do not pay for their own membership.

Regulatory Fit

The literature on regulatory focus has shown two main regulatory influences on a person’s decision making: promotion and prevention focused (Crowe and Higgins 1997; Higgins 2000). Someone who is more promotion-focused is willing to take risks in order to accomplish their goals, which are generally positive (Crowe and Higgins 1997). A person who is prevention-focused takes less risks and is focused more on maintaining the status quo and minimizing mistakes. Since exercising is a long-term, lifestyle commitment that is not an instant solution, it is proposed that prevention-focused consumers will have higher participation. Members who understand their regulatory focus can use this to their advantage in shaping their exercise program, which in turn can increase their participation levels, which will then result in a higher perceived equity for the transaction.

H2a: Members who are prevention-focused will have increased customer participation as oppose to members who are promotion-focused.

In a recent study, a person’s regulatory focus was shown to influence a person’s self-efficacy (perceived ease) or response-efficacy (perceived effectiveness) of health behaviors (Keller 2006). Self-efficacy refers to the perceived ease of undertaking a new action, such as a new workout program. Response efficacy refers to the perceived effectiveness of the action or behavior. Self-efficacy was weighted more in a person who is promotion-focused than someone who is prevention-focused, while response efficacy was weighted more in prevention-focused consumers. This empirical study found that when the regulatory-efficacy fit is high, there will be greater intentions to perform the advocated behavior (Keller 2006). With this as a background, the current study will study the effects of regulatory-efficacy matches and mismatches on customer participation than a mismatch. This proposed interaction is illustrated in Figure 3.

H2b: The positive effect of prevention-focus on customer participation (H2a) will be greater for members high in response efficacy and less for members high in self-efficacy.

Service Convenience

Ask almost anyone, “What is the one thing you could use more of?” and most individuals would almost always respond, “Time.” Time is a perishable resource of which few people have enough. That being said, convenience is an integral part of a person’s decision to participate in a service. Service convenience is a consumers’ time and effort perceptions of decision convenience, access convenience, transaction convenience, benefit convenience, and postbenefit convenience (Berry, Seiders and Grewal 2002). For this research, access and transaction convenience will be the central type of service convenience examined.

Access convenience in a service would be the consumer’s perceived time and effort for the service delivery. In a health club context, access can be extended as the health club’s proximity to the consumer’s home, place of work, or place of school. One of the hardest aspects about working out is getting to the health club in the first place. Once there, many find it easy to participate in the club’s offerings. It is a struggle to find a person who, upon completion of a workout claims, “I wish I hadn’t come here.” Most will never regret their workout once they get themselves to the club. This research will examine the main effect of this access convenience on customer’s participation in a health club. If consumers and members understand the effects of access convenience on their participation in health clubs, then they can use this information in selecting a health club, which will then result in a higher perceived equity due to the higher customer participation.

H3a: Members who have a higher level of access convenience will have higher levels of customer participation.

Transaction convenience focuses on the actions necessary to use the service. Transaction convenience in a health club can be measured by availability of classes, hours of operations, and program offerings. All of these need to be available at convenient times in order for customers to have transaction convenience. In other words, members could have a membership and live close
to the facility, but if the classes offered or hours of operation do not fit their schedule, then their transaction convenience would still be low even though their access convenience is high. Class availability, program offerings and hours of operation would also measure a member’s level of customer satisfaction in a health club context (Kelley and Davis 1994); however, this research distinguishes transaction convenience from customer satisfaction in that customer satisfaction would encompass many additional measures (e.g. appearance of employees; appearance of facility). While transaction convenience and customer satisfaction are distinguished in this research, transaction convenience will have a main effect on customer satisfaction; specifically, this research will test the hypothesis that:

$H_{1b}$: Members who have a higher level of transaction convenience will have higher levels of customer satisfaction, and therefore, higher levels of customer participation.

**Methodology**

**Sample and Data Collection**

This research on participation in member-based health clubs was conducted in a health club located in the Midwest. The health club is a full-service, high-end health club offering weights, cardio, basketball, swimming, tennis, aerobics, and golf simulation. Membership at the time of data collection was approximately 4,000. As the ultimate goal of this study is to examine the effects on customer participation, it is important to survey members at the facility, as well as the members who rarely attend the facility. An insert was included in membership bills that directed members to a website. Additionally, an email was sent to members with an active link to the survey. Finally, handouts with the website were handed out in person by managers at the facility. To capture individuals who are not technically-savvy, hard copies were available with self-address, stamped envelopes for those individuals. A free guest pass was offered as an incentive for completing the survey. After online and mail-in surveys were tallied, 447 respondents responded, 23 respondents were discarded with less than a quarter of the survey completed, leaving a final sample size is 424. Non-response bias will be assessed by comparing the fist quarter of responses with the last quarter of responses on the main effect variables (Armstrong and Overton 1977).

**Measures**

**Customer Participation.** The survey will include self-report measures of customer participation to assess customer’s usage of the health club. In order to assess long-term participation, consumers will be asked questions such as: If your check-in history for the health club over the past year was printed, on average: 1) how many days per week would it report you coming to the club; 2) what days of the week do you workout at this facility?; 3) what time of day do you work out; 4) length of workout; 5) quality of workout. Since these measures are highly susceptible to bias, social desirable responding items will be included in the survey in order to ensure bias is not present.

**Customer Satisfaction.** An 11 item customer satisfaction scale that was specifically developed for health clubs will be used (Kelley and Davis 1994). Items ask the respondents to rate items on a seven-point very dissatisfied (1) to very satisfied (7) scale. Sample items include workout/fitness equipment, ability of employees, knowledge of employees and courtesy of employees.

**Payment.** Payment measures will be assessed in two multiple ways. Members will be asked questions such as: How frequently do you pay your membership dues (annually, monthly); Are you or a member of your family responsible for paying the membership dues (yes, no); Are you reimbursed for any portion of your membership dues (none, partial, all); Who reimburses these dues (employer, insurance company)

**Regulatory Focus.** Regulatory focus will be measured using an 18 item scale where members will be asked to rate items on a nine-point scale: not at all true of me (1) to very true of me (9) (Lockwood, Jordan and Kunda 2002). Promotion measures include items such as: I frequently imagine how I will achieve my hopes and aspirations; I often think about the person I would ideally like to be in the future. Prevention measures include items such as: I frequently think about how I can prevent failures in my life; I am anxious that I will fall short of my responsibilities and obligations.

**Efficacy.** Items to measure self-efficacy and response-efficacy are adapted from Jayanti and Burns (1998). Items are measured on a five-point scale: strongly disagree (1) to strongly agree (5). Self-efficacy measures include items such as: In general, I can do things to make me health; It is easy to exercise regularly. Response-efficacy includes items such as: Regular exercise helps me avoid common health problems; Taking care of my health now will reward me by not having problems later in life.

**Access Convenience.** Items to measure access convenience will include distance from the health club in miles to home, work and/or school. Respondents will be asked: In general when I come to the health club, I am traveling from (home, school, work); this distance is ___ miles. Additionally, the above question will be asked for where respondents are generally traveling to upon completing their workout at the health club.

**Transaction Convenience.** Transaction convenience measures were adapted from Andaleeb and Basu (1994). Respondents will rate items on a five-point
scale: strongly disagree (1) to strongly agree (5). Sample items include: The facility has convenient hours on weekends; on weekdays; the facility has convenient class times.

Control Measures. To control for “fitness fanatics” and social desirable responding, control measures that assess attitude toward exercise, involvement in exercising, level of exercise outside of the facility, length of membership and social desirability will also be assessed. Attitude toward exercise will be measured by adapting an existing scale from Schoebachler and Whittler (1996). Items will ask respondents to rate exercise on five-point scales such as: extremely pleasant --- extremely unpleasant; extremely valuable --- extremely worthless. Involvement in exercise items will ask respondents to rate items such as: exercising makes me feel good; I enjoy exercising. For exercise outside of the facilities, respondents will be asked to report number of days, length, and type of activity level outside of the health club. Members will be asked the length of their membership in 6 month increments, ranging from 0 months – 5 years (club has been open for 5 years). Lastly, social desirable responding will be measured using a validated shortened version of the original 33-item Marlowe-Crowne Social Desirability Scale (Reynolds 1982).

Discussion

The current research model has multiple implications for health clubs, health club members, health club employees, and companies paying for health club memberships. For health clubs and health club members, the ultimate goal for both parties is to keep members coming to the health club. By increasing customer participation, health club members are increasing the equity of their transaction. Additionally, health clubs benefit from this increase participation by decreased cancellations. Health club employees such as personal trainers and tennis instructors can benefit from this information by targeting their sales to the clients specific measures (e.g. regulatory focus). Last, companies paying for the membership benefit because they can use this information to motivate their employees or insurance clients to increase their participation.

After demonstrating the factors effecting customer participation in a health club setting, these results can then be used to attract additional individuals to health clubs. Insurance companies who pay for membership may also use this information to increase participation of their insured members. After these studies are conducted, additional studies should be conducted to examine these factors in other member-based fitness settings to see if the results can generalize to non-high-end health clubs, and possibly other member-based contexts. Exercise is a crucial part of the equation to reduce obesity and improve a person’s health; however, the challenge lies not in convincing people of this fact, but in actually increasing the individual’s levels of participation. For some individuals, any participation at all may be an improvement. Knowing the factors that increase customer participation in a health club is another step towards increasing exercise levels and improving the levels of health and wellness of the population.

References


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Member Satisfaction and Loyalty with Fitness and Health Clubs: The Role of Individual Characteristics within Different Club Segments

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Purpose

According to a report by Deloitte, the German fitness and health club (FHC) sector counted 7.9 million members at the end of 2012 and displayed a compound annual growth rate between 2006 and 2012 of 7.2%, making it the largest and one of the fastest growing sports disciplines in Germany. It might be therefore that most FHC managers focus their strategic and operational actions toward member acquisitions even though retaining current customers instead of acquiring new ones has been proven to be more cost-efficient. Hence, this study focused on member loyalty and explicitly investigated the relationship between member satisfaction and loyalty, by introducing further the members’ individual characteristics (such as their self-control, regulatory focus, fitness success and fitness professionalism level as well as their “feel good” factor) as antecedents of those focal constructs, embedded in an integrative model. Additionally, the three FHC segments (i.e. discount, medium and premium) were analyzed individually as members’ demographics have been stated to differ among those.

Method

In order to test the influence of individual characteristics on member satisfaction and loyalty with FHCs as well as to display differences in strengths of these relationships among the different FHC segments, we employed a variance-based PLS structural equation modeling approach. Specifically, we decided to use the SmartPLS 2.0 software application, as it accommodates reflective as well as formative measurement models. Data was generated via an online questionnaire that had been distributed to current and former (within past two years) FHC members in Germany. A total of 273 complete data sets could be used for further analyses. From those, the spread among segments was as follows: 57.7% discount, 20.9% medium and 21.6% premium club members.

Results & Conclusion

For the PLS analyses, evaluation recommendations by Hair et al. (2012) were tested and approved. To assess the relative importance of the relationships within the model, path coefficient estimates were used in combination with the t-values, which determine the significance of the coefficients and were extracted through the bootstrapping procedure (1000 drawings).

Aggregated Model

For the overall model, with an exception of the relationships between fitness success and satisfaction/loyalty, the results show that all path coefficients are significantly different from zero. Thus, all constructs contribute to the explanation of member loyalty with FHCs, even though fitness success does not contribute directly but indirectly. Results indicate that fitness success solely influences an individual’s fitness professionalism level, which in turn slightly influences its commitment and via this path ultimately impacts on its loyalty behavior. Furthermore, it is interesting to see that out of the three service quality dimensions, conditions quality contributes most (path coefficient: .37) to member’s satisfaction, while staff and feature quality only play a less considerable role. Surprisingly, with a path coefficient of .89, affective aspects outweigh the calculative commitment aspects (.18), which combined determine the commitment construct. Furthermore, a member’s “feel good” factor at a FHC significantly influences both satisfaction (.14) and commitment (.12), displaying the importance of psychological well-being in determining the ultimate outcome FHC member loyalty. The results for the aggregated model are displayed in Figure 1.

Segment-Specific Results

To analyze the integrative satisfaction-loyalty models for the three FHC segments individually and compare those with each other, PLS multigroup analysis was applied. Results indicate some substantial significant differences (in absolute values) between the segment specific subsets, ranging from .01 to .63. For example, in comparison to the premium segment, the discount and medium segments exhibit a much stronger relationship (|Δ| = .38 and = .63) between conditions quality and satisfaction, whereas features quality is irrelevant for the medium segment only. The discount club members assign a significantly higher importance to calculative commitment (|Δ| = .33 and = .25) and display a weaker relationship between trust and commitment (|Δ| = .16 and
than the members from both other segments. Clearly differentiating themselves from the other two, premium members’ fitness success has a significant impact on their satisfaction level as well as loyalty behavior. Results further confirm the heterogeneous nature of psychological characteristics of the different FHC members: discount and premium members’ self-control mainly determines their fitness success, while their regulatory focus has considerably less impact on the latter. In contrast, medium FHC members’ fitness success in our model is solely influenced by an individual’s regulatory focus.

**Conclusion**

The purpose of this paper was to analyze the role of psychological factors as well as the moderating effect of the FHC segment on member satisfaction and loyalty with a FHC. In accordance with previous literature, satisfaction, in collaboration with commitment and trust, mainly contributes to forming loyalty. However; an individual’s psychographic characteristics must not be neglected. Consequently, FHC managers are encouraged to learn more about their members’ psychological traits as well as their fitness abilities, in order to gear managerial activities properly. Additionally acknowledging that members of different FHC segments differ according to their demographics, we are further able to show that the importance of various psychological traits also differs among the segments. Consequently, FHC management would be well-advised in tailoring their service offerings as well as positioning strategies to the segment they are operating in.

**References available upon request.**

**Figure 1: PLS Path Model including Aggregated Results**
Empirical Examination of Subjective Age in Older Adults
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Abstract
In this paper the authors create a subjective aging index to quantify biological, mental and social dimensions. Empirical findings show that scores on the Subjective Aging Index significantly predict subjective age among individuals forty and older, with different dimensions being more important to different age groups. The findings support the Agogo, Milne and Schewe (forthcoming) integrative model.

Introduction
As the number of older adults worldwide increases rapidly, causing sweeping changes to many facets of modern life, there is a need to better understand the unique characteristics of older individuals to help them and society in general to deal with the realities of the impending demographic shift. There is reason to believe that many popularly-held notions and expectations of older adults need to be rethought in the light of observed trends and habits among aging individuals today. Chronological age, which has been considered in the past to be a poor predictor of behavior (Barak & Schiffman, 1981), is even more unreliable today as baby boomers and other aging cohorts display behavior that can best be described as ‘time-bending’.

In a previous paper (Agogo, Milne, & Schewe, forthcoming) elaborate an integrated framework for understanding how older individuals’ tendency to take action on multiple dimensions of aging is making them feel and act younger. This framework describes the current trend in facing the realities of aging as older individuals self-balancing the costs and benefits of getting older by taking on as many activities as they give up. This is done to sustain youth-like levels of activity ultimately leading to subjective ages that trail their chronological ages. These time-bending activities occur in biological, mental and social dimensions. The model provides a way of understanding the wide disparity in the aging experience among older adults as a function of factors that influence the subjective age of older individuals (see Figure 1).

Our current study is designed to continue that line of discussion by carrying out an empirical investigation of the determinants of subjective age in older adults. The research questions include the following. How well can subjective age be predicted by objective measures of biological factors, social factors, and mental factors in an individual? And what differences in subjective age exist across groups of older adults? Answers to these research questions have an impact on healthcare related issues of quality of life in later years and even mortality.

Measures of Age
The principal dimensions of age include chronological, mental, social, and biological age. Chronological age is represented as the number of years a person has lived. Mental age is measured as intelligence or cognition and there are many widely used scales for measuring mental age in children and adults. Social age is usually defined in terms of social roles and habits (Birren & Renner, 1977). Biological age is used to capture how much of biological changes have occurred in an individual over time. It is measured using biomarkers (Jackson, Weale, & Weale, 2003), frailty (Jones, Song, & Rockwood, 2004) and physical parameters (Borkan & Norris, 1980), although there is no generally used measure of biological age.
In the field of marketing, many attempts have been made to develop self-reported measures of age that can promote understanding of the role of an individual’s perception and outlook on their behavior. The most common self-reported measure of age is subjective age, which measures an individual’s self-perception in terms of reference age groups, i.e., “middle-aged”, “elderly”, or “old” and is also referred to as identity age. Subjective age can also be measured in terms of units of age, in which situation it has been referred to as personal age (Kastenbaum, Derbin, Sabatini, & Artt, 1972) and cognitive age (Barak, 1987). There are four dimensions to subjective age: feel-age, look-age, do-age and interest-age with each number averaged into a single measure. Related concepts are ideal age and desired age, self-reported aspirational measures of age that reflect self-concept (Barak, Stern, & Gould, 1988; Sirgy, 1982).

Method

Measures and Scale Development

A set of measures for the independent and dependent variables were either developed or adapted from extant literature. The dependent variable, subjective age was measured (in actual years) as the average of feel-age, do-age, look-age and interest-age as conceptualized by (Barak & Schiffman, 1981). We refer to this measure as average subjective age throughout this paper. In addition, three additional measures related to subjective age were collected to verify the convergent validity of our chosen dependent variable. They include ideal age (Overall in actual years, I would like to be back at…), a single overall measure of subjective age (Overall in actual years, I feel like I am…), as well as judged age, a measure of other people’s perceptions of an individual’s age (Overall in actual years, people think I am…) – all in actual years.

For the independent variables, the Subjective Aging Index (SAI) was created. This measure comprises biological, mental and social sub-scales formed by consulting relevant existing literature and adapting existing items as well as creating additional items. To develop the Biological Aging Index which measures the prevalence of biological related behavior and factors which would lead to high subjective age, items were taken or adapted from the cognitive failures questionnaire (Broadbent, Cooper, FitzGerald, & Parkes, 1982), the mental exercise scale (Salthouse, 2006) and the MOS SF-36 scale (Haley et al., 1994; McHorney et al., 1993). To develop the Social Aging Index, items were taken and adapted from measures of social isolation (Cornwell & Waite, 2009) and the International Personality Item Pool (IPIP, n.d.).

An initial pool of about forty items was created for each of these sub-scales, i.e., biological, mental and social sub-dimensions. Expert judgment and consensus were used to reduce this initial number by half for each of the sub-scales, i.e., to twenty items each.

Scale Pre-Testing

The reduced scale was pre-tested on a small group of thirty individuals between the ages of 30 and 70 to obtain initial feedback as well as to evaluate initial psychometrics of the overall Subjective Aging Index. The findings suggested proceeding with data collection for the main study without change to the items of the SAI.

Data Collection

To test the above stated model, a representative sample from eight groups representing females and males in their forties, fifties, sixties and seventies was used. The sampling strategy was to obtain a stratified random sample with a maximum of 100 participants per segment. Participants were recruited from Amazon.com’s online paid labor system Mechanical Turk, a common source of respondents for such studies (Buhrmester, Kwang, & Gosling, 2011; Goodman, Cryder, & Cheema, 2012; Horton, Rand, & Zeckhauser, 2011). Subjects were presented with an online survey hosted on Qualtrics.

To restrict participants from taking the survey multiple times IP blocking, a feature of Qualtrics that ensures only one response can be recorded from a home/office internet connection, was utilized. In total, 1245 people attempted to take the survey, however; 594 responses were collected due to certain age segments reaching their quota faster than others prohibiting participants who belong to those age segments from taking the survey.

After data collection was complete, we conducted a data cleaning process that was based on the following criteria. First, chronological age was collected twice, first as year of birth and secondly as age on the 1st of January. All entries that showed a disparity between both numbers were
dropped. Secondly, gender was also collected twice and responses with non-matching genders were dropped. Finally, because a survey such as this asking subjective age in actual years is prone to exaggerated answers by some subjects, all responses where the difference between actual age and subjective age was beyond three standard deviations of the sample were excluded from the final analysis. This process resulted in a final sample of 552 respondents.

Despite these steps, the purposive sample was not completely achieved as there were fewer respondents in the older age category (seventy and older), possibly due to the small number of people in those age groups who are active users of MTurk. Overall, females represented 53.8% of the participants, with only 4.7% of the females being seventy years or older. As for males, only 7.8% of the male sample were in their seventies. Table 1 shows the breakdown of sample by gender and age group.

The majority of our sample stated that they have a 4-year college degree (36.1%), followed by 25.7% who stated they have a degree from some college. We also found that income was skewed to the lower end with approximately 60% making less than 50,000 dollars a year. Detailed information on the demographics of the sample can be found in Appendix A.

**Results**

**Dependent Variable**

Subjective age for each participant was measured by averaging a four-item scale adopted from Barak & Schiffman (1981). The measure showed high reliability (Barak & Schiffman, 1981) and Table 2 shows that the four dimensions that constitute the average subjective age are highly correlated.

Furthermore, the average subjective age mentioned above was found to have high correlations with other measures of subjective age collected from the participants as shown in Table 3. Therefore, we used average subjective age in subsequent analyses given this high convergent validity and prior use in the literature. Boxplots of average subjective age across groups are included in Appendix B.

**Table 1**

<table>
<thead>
<tr>
<th>Sample size, tabulated by gender and age group</th>
<th>Males</th>
<th>Females</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forties</td>
<td>36.9%</td>
<td>32%</td>
<td>34.2%</td>
</tr>
<tr>
<td>Fifties</td>
<td>37.3%</td>
<td>33.3%</td>
<td>35.1%</td>
</tr>
<tr>
<td>Sixties</td>
<td>18%</td>
<td>30%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Seventies</td>
<td>7.8%</td>
<td>4.7%</td>
<td>6.2%</td>
</tr>
<tr>
<td>N</td>
<td>255</td>
<td>297</td>
<td>552</td>
</tr>
</tbody>
</table>

**Table 2**

| Correlations among Dimensions of Subjective Age |
|---|---|---|---|
| Feel-Age | Look-Age | Do-Age | Interest-Age |
| Look-Age | .637** | .756** | .567** |
| Do-Age | .756** | .675** | .557** |
| Interest-Age | .567** | .557** | .587** |
| Mean (Years) | 46.33 | 47.39 | 46.28 | 41.47 |
| Std Dev (Years) | 14.48 | 12.17 | 13.91 | 13.41 |

**Correlation is significant at the 0.01 level (2-tailed)**

**Table 3**

| Mono-Method Multi-Measure Correlation Table for Dependent Variables |
|---|---|---|
| Average Subjective Age | Single Measure Subjective Age | Judged Age |
| Single Measure Subjective Age | 0.823** |
| Judged Age | 0.786** | 0.716** |
| Ideal Age | 0.528** | 0.433** | 0.569** |

**Correlation is significant at the 0.01 level (2-tailed)**

**Independent Variables**

The final Subjective Aging Index used has three sub-dimensions each consisting of twenty items, all three having reliabilities above 0.87. Each item was recorded on a 5-point scale (from 1 to 5) with a low score being preferable to a high score. For each sub-dimension, a total score was found by summing the items recorded to arrive at total scores with a possible range from 20 to 100. To aid interpretability of subsequent analyses, these scores were normalized using the following formula: 

\[
\text{Normalized Score} = \frac{\text{Sum of Sub Dimension} - 20}{80}.
\]

This standardization converted the total score to an index ranging from 0 to 1, i.e., the Biological Aging Index, Mental Aging Index and Social Aging Index. Table 4 below shows correlations between the items in these three sub-index scores and other independent variables used, as well as reliabilities of items in each sub-index (on diagonal).
Table 4
Correlation between Independent Variables (Cronbach Alphas on Diagonal)

<table>
<thead>
<tr>
<th></th>
<th>Biological</th>
<th>Mental</th>
<th>Social</th>
<th>Gender</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>0.899</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental</td>
<td>0.534**</td>
<td>0.870</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>0.325**</td>
<td>0.309**</td>
<td>0.878</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.158**</td>
<td>-0.021</td>
<td>0.004</td>
<td>-0.096*</td>
<td>-0.072</td>
</tr>
<tr>
<td>Age</td>
<td>0.025</td>
<td>0.020</td>
<td>-0.096*</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>0.439</td>
<td>0.373</td>
<td>0.478</td>
<td>0.004</td>
<td>54.18</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.164</td>
<td>0.123</td>
<td>0.132</td>
<td></td>
<td>9.58</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed)**

An index score of 1 for any of the sub-dimensions will indicate that the individual’s behavior and habits along that sub-dimension is leading to higher subjective age. For example, a Biological Aging Index score of 1 indicates that the subject exhibits behavior and keeps habits which are increasing their subjective age (e.g., lack of exercise, unhealthy eating habits, dependence on medication) and similarly, an index score of zero will indicate habits that eliminate feelings of a higher subjective age due to that sub-dimension.

ANOVAs were run on the three age indices to examine the differences in responses between genders and age groups. The ANOVAs show no differences across gender and age groups for social and mental age indices; however, female subjects had higher Biological Age Index scores than male subjects (p<0.001). (See Table 5)

Table 5
ANOVARs between the biological, social and mental age indices based on gender and age groups

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>T-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>0.4106</td>
<td>0.4624</td>
<td>14.004***</td>
</tr>
<tr>
<td>Social</td>
<td>0.4785</td>
<td>0.4775</td>
<td>0.252</td>
</tr>
<tr>
<td>Mental</td>
<td>0.3703</td>
<td>0.3755</td>
<td>0.008</td>
</tr>
<tr>
<td>N</td>
<td>255</td>
<td>297</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>40s</th>
<th>50s</th>
<th>60s</th>
<th>70s</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>0.4327</td>
<td>0.4374</td>
<td>0.4460</td>
<td>0.4485</td>
<td>0.200</td>
</tr>
<tr>
<td>Social</td>
<td>0.4972</td>
<td>0.4669</td>
<td>0.4706</td>
<td>0.4636</td>
<td>1.480</td>
</tr>
<tr>
<td>Mental</td>
<td>0.3776</td>
<td>0.3642</td>
<td>0.3704</td>
<td>0.4099</td>
<td>2.072</td>
</tr>
<tr>
<td>N</td>
<td>189</td>
<td>194</td>
<td>135</td>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>

Relationship between Subjective Age and Chronological Age

Overall, there is a strong relationship between chronological age and subjective age with the pattern holding strongly across gender and age groups. However, as can be construed from Figure 2 below, most of the sample (88%) report subjective ages that are below their chronological age. The scatterplot also shows that people tend to feel a little over a decade younger than they really are (standard deviation of subjective age is 11.48 years). This preliminary finding is similar to previous studies conducted in other countries (Demakakos, Gjonca, & Nazroo, 2007; Ying & Yao, 2010).

Predictive Modeling and Regression

Because the primary objective of this study was to see how well these sub-dimensions could predict subjective age, a regression analysis was conducted using the model shown below.

Average Subjective Age

\[
\text{Age} = \beta_0 + \beta_2 \text{Chronological Age Index} + \beta_3 \text{Gender} + \beta_4 \text{Biological Age Index} + \beta_5 \text{Mental Index} + \beta_6 \text{Social Age Index}
\]

Figure 2
The relationship between age and subjective age

The model was designed such that in analyzing the impact of these factors on subjective age, the dimension of coefficients will be years such that the number of years added or subtracted to subjective age can be determined. In total, we ran seven regression models for different views of the data. We examined the variance inflation factors (VIF) and found multicollinearity to not be an issue. Our first model showed average subjective age predicted by biological, mental and social age indices along with gender (dummy coded) and chronological age. The model resulted in an adjusted R² of 0.569. The regression shows that when
the impact of all the items is held constant, individuals generally feel about 13 years younger than their actual age (very close to the standard deviation of the sample as well). Further, as shown in Table 6, biological age is the most important of the three age indices with a coefficient of 18.016. To interpret this coefficient, an individual with a maximum score on the Biological Age Index would feel up to 18 years older than an individual with a score of zero. Similarly, an individual with a biological index score of 0.5 would feel up to 9 years younger than an individual with a score of 1, all other considered factors held constant. The Mental and Social Age Indices, with regression coefficients of eight years and seven years respectively can be interpreted similarly. This suggests that overall, biological factors are more important to reducing (or increasing) subjective age than mental and social factors combined.

Our analyses of this overall model also showed that age and gender are important factors in predicting average subjective age. With respect to age, the impact of an added chronological year on subjective age is less than one ‘subjective year’. That means that although subjective age increases with age, it may trail chronological age by up to 20%. With respect to gender, subjective age in males overall is about 2 years older than in females, all other factors being equal.

To further understand the effects of gender, a second set of regressions was conducted. The regression model shown earlier was rerun in gender-based partitions of the dataset, with gender excluded from the predictors. Interestingly, we found that all factors were significant for females (Biological, Social and Age with p<0.001, and Mental with p<0.05). However, only the Biological Age Index and age were the significant factors of Average Subjective Age for males (p<0.001).

Lastly, to peer into any unique differences between age groups, we repeated the overall regression model on data for each of the four age groups (i.e., 40s, 50s, 60s and 70s). The results, shown in Table 7, strongly suggest that as individuals get older different sub-dimensions of the index begin to matter more. For example, the degree of impact that biological factors have on subjective age, compared to mental and social factors, seems to decline with age. While the Biological Age Index was a significant predictor of Average Subjective Age for individuals in their forties (p<0.01), fifties (p<0.001) and sixties (p<0.001), its coefficient remains fairly constant while the coefficients for Social and Mental indices change between groups (except in the sixties group, where the coefficient of the Biological Aging Index increases sharply). This more clearly shown when betas for each group are compared. Similarly, individuals seem to feel the impact of the years more depending on the decade of their life they are in. The regression coefficient of age, which is significant for all groups except the oldest, increases from 0.6 for the forties group to 0.8 in the sixties group. In other words, while a forty year old feels about seven months older with each passing year, a sixty year old will feel almost ten months older over the same period. We also found that the Mental Age Index was only significant for individuals in their sixties (p<0.05) while Social Age Index was significant for individuals in their fifties (p<0.05) and for those in their 70s. This alternating importance of factors across decades strongly suggests that different factors systematically explain changes in subjective age between age groups. This supports the notion of ‘balancing’ which individuals begin to do as they get older in order to keep themselves feeling young. Importantly, the overall adjusted R² increased consistently between age groups, suggesting more variance could be systematically explained by the Subjective Age Index for older individuals. Lastly, beyond the forties gender does not seem to have a significant effect on subjective age as gender is only significant (p<0.05) for the youngest group.
Table 6
Overall and gender-based regressions predicting Average Subjective Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall coeff</th>
<th>Females only coeff</th>
<th>Males only coeff</th>
<th>vif</th>
<th>vif</th>
<th>vif</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental</td>
<td>8.560***</td>
<td>1.447</td>
<td>9.136*</td>
<td>1.433</td>
<td>7.732</td>
<td>1.521</td>
</tr>
<tr>
<td>Social</td>
<td>7.132***</td>
<td>1.168</td>
<td>8.697***</td>
<td>1.235</td>
<td>4.443</td>
<td>1.098</td>
</tr>
<tr>
<td>Age</td>
<td>0.809***</td>
<td>1.018</td>
<td>0.817***</td>
<td>1.025</td>
<td>0.805***</td>
<td>1.029</td>
</tr>
<tr>
<td>Gender</td>
<td>1.759***</td>
<td>1.038</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

R2          | 0.573          | 0.612               | 0.537            |
Adj R2      | 0.569          | 0.606               | 0.530            |
F (prob)    | 146.393***     | 114.986***          | 72.517***        |
N           | 552            | 297                 | 255              |

*Significance level: *p<.05, **p<.01, ***p<.001

Table 7
Age group-based regressions predicting Average Subjective Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age group 40 coeff</th>
<th>vif</th>
<th>Age group 50 coeff</th>
<th>vif</th>
<th>Age group 60 coeff</th>
<th>vif</th>
<th>Age group 70 coeff</th>
<th>vif</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.174</td>
<td>-5.951</td>
<td>-16.754</td>
<td>38.107</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological</td>
<td>15.067**</td>
<td>1.590</td>
<td>16.648***</td>
<td>1.479</td>
<td>23.509***</td>
<td>1.606</td>
<td>17.513</td>
<td>2.424</td>
</tr>
<tr>
<td>Social</td>
<td>4.513</td>
<td>1.201</td>
<td>9.708*</td>
<td>1.130</td>
<td>4.149</td>
<td>1.254</td>
<td>26.664*</td>
<td>1.479</td>
</tr>
<tr>
<td>Gender</td>
<td>2.506*</td>
<td>1.019</td>
<td>0.984</td>
<td>1.067</td>
<td>1.181</td>
<td>1.162</td>
<td>3.171</td>
<td>1.312</td>
</tr>
<tr>
<td>Age</td>
<td>0.604**</td>
<td>1.026</td>
<td>0.688***</td>
<td>1.130</td>
<td>0.813***</td>
<td>1.155</td>
<td>0.03</td>
<td>1.634</td>
</tr>
</tbody>
</table>

R2          | 0.206               | 0.244 | 0.340               | 0.574 |
Adj R2      | 0.185               | 0.224 | 0.314               | 0.498 |
F (prob)    | 9.510***            | 12.118*** | 13.292***          | 7.559*** |
N           | 189                 | 194   | 135                 | 34   |

*Significance level: *p<.05, **p<.01, ***p<.001

Table 8
Age group-based and gender-based percentages of people who feel older/younger

<table>
<thead>
<tr>
<th>For fieses</th>
<th>Fifties</th>
<th>Sixties</th>
<th>Seventies</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feel Younger</td>
<td>84%</td>
<td>78%</td>
<td>90%</td>
<td>88%</td>
<td>85%</td>
<td>88%</td>
</tr>
<tr>
<td>Feel Older</td>
<td>16%</td>
<td>13%</td>
<td>10%</td>
<td>12%</td>
<td>15%</td>
<td>12%</td>
</tr>
</tbody>
</table>

N           | 189       | 194     | 135       | 34    | 255    | 297   | 552    |

Table 9
Showing Top Five Items that increase Subjective Age in research sample

<table>
<thead>
<tr>
<th>Biological</th>
<th>Mental</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you...-Worry about your level of physically fitness?</td>
<td>How often do you...-Start doing one thing and get distracted into doing something else (unintentionally)?</td>
<td>How often do you NOT...-Seek out large parties/crowded events to attend?</td>
</tr>
<tr>
<td>How often do you NOT...-Display muscular flexibility greater than most individuals your age?</td>
<td>How often do you...-Read something and find you haven’t been thinking about it and must read it again?</td>
<td>How often do you NOT...-Make yourself the center of attention in a group?</td>
</tr>
<tr>
<td>How often do you...-Try to alter (lose or gain) weight in order to improve your physical health?</td>
<td>How often do you...-Don’t quite remember something although it’s “on the tip of your tongue”?</td>
<td>How often do you NOT...-Volunteer?</td>
</tr>
<tr>
<td>How often do you NOT...-Carry out physical tasks that you believe most people your age cannot?</td>
<td>How often do you...-Forget people’s names?</td>
<td>How often do you NOT...-Introduce or connect people together?</td>
</tr>
<tr>
<td>How often do you...-Take any type of prescription medication?</td>
<td>How often do you...-Forget why you went from one part of your house/office to the other?</td>
<td>How often do you NOT...-Seek adventure?</td>
</tr>
</tbody>
</table>

*Information for the entire scale is included in Appendix C and D.
The Time-benders

By grouping the responses into those who feel younger than they actually are (chronological age greater than subjective age) and those who feel older than they actually are (chronological age less than subjective age), even more interesting insights were discovered about how these groups are different on their Subjective Aging Index scores (only 1.2% of the sample had chronological age equal to subjective age). ANOVAs revealed significant differences (p<0.000) in Biological, Mental and Social Aging Index scores between these groups. Interestingly, Table 8 shows that people currently in their sixties (also referred to as baby boomers) have the highest proportion of people who feel younger than their age, compared to the other groups sampled. This is strongly suggestive of the time-bending attitudes of baby boomers, discussed in the theory paper that formed the foundation for this study. Further evidence to support this trend of time-bending will be covered in the discussion section.

Discussion

Overall, this follow up study has supported the key theoretical underpinnings proposed in our earlier paper. After creating a Subjective Aging Index, there is significant statistical support for the proposition that biological, mental and social factors influence subjective age in adults forty and older. Figure 3 below shows our original model superimposed on a scatter plot of chronological age against subjective age for the sample. There are five key observations that can be drawn from this study.

First, Americans are generally working hard to deal with biological, mental and social aging factors and as such they tend to feel younger than they really are. An astounding 88% of the sample reported subjective ages that were lower than their chronological age. Not only that, but the lack of significant difference across age groups and between genders (except one significant result, for biological aging factors) suggest that the American society is taking up the challenge to age successfully.

Second, despite this somewhat similar response to the challenge of aging, the results are not the same for different groups. For instance, there is a huge gap between what influences feelings of subjective age between genders. For a study with significant power such as this, that only the biological aging factors are significant in predicting subjective age in men is nothing short of remarkable. In fact, that additional factors are unable to significantly influence subjective age in men is a source for concern since that will have an adverse impact on the ability to age successfully and healthily in the face of debilitating or disabling physical conditions.

Third, there are differences based on what decade an individual is in. This is strongly suggested by the alternating significance of the mental and social subdimensions of the Subjective Aging Index between age groups. One way to interpret this is that people attempt to balance multiple factors of their lives as they grow older to continue to feel younger. That means an individual might respond to biological aging by discounting that factor in favor of, say, mental or social factors as they cross from fifty to sixty and then from sixty to seventy. Another support for this is the fact that the Biological Aging Index becomes insignificant (p>0.05) for people in their seventies after being significant for all younger groups. Also, for the oldest group only social factors significantly predicted subjective age.

Fourth, people currently in their sixties seem especially resilient against the inevitability of aging. This is what the previous paper described as the time-bending effect among baby boomers, an argument made from observation of larger societal trends with regards to baby
boombers trying to stay physically active, seeking out mental stimulation through different means and staying socially (and romantically) engaged. One statistic to support this assertion is the magnitude of the intercept in the sixties group compared to the others. People in their sixties may feel up to 10 years younger than people with identical Biological, Mental and Social Aging Index in younger groups.

Finally, the Subjective Aging Index components do a better job of predicting subjective age for older individuals. There is a steady increase in variance explained across age groups. This is probably because people notice and think about these factors more as they grow older and then internalize them at which point subjective age becomes more systematic and therefore explainable. This might even suggest that looking at subjective age in younger populations might be ineffective.

Conclusion

Research has shown that individuals internalize negative aging stereotypes throughout one’s life. These stereotypes provide an anchor against which people judge themselves, which, in turn, can have negative physiological consequences. Interestingly, individuals acquire these age stereotypes years before becoming old themselves (Levy, Slade & Kunkel, 2002). Research has also shown that having a younger subjective age is correlated with a more positive psychological wellbeing, positive health and outcomes (Barrett, 2003; Boehmer, 2007; Linn & Hunter, 1979; Markides & Boldt, 1983; Stephan, Caudroit, & Chalabaev, 2011; Stephan, Chalabaev, Kotter-Grühn, & Jaconelli, 2013; Westerhof & Barrett, 2005), and a lower mortality rate (Kotter-Grühn, Kleinspehn-Ammerlahn, Gestorf, & Smith, 2009).

Therefore, understanding the determinants of subjective age for adults 40 and older is an important contribution to the debate on aging in America and beyond. Our findings have important implications for individuals wishing to feel better as they age, businesses that create and market products to older adults, researchers working to ensure that older adults remain relevant in society and policy makers tasked with the responsibility of catering to an aging population.

In this paper, additional evidence is found to support existing research that suggests that by dealing with factors such as attitudes and social involvement (Levy & Myers, 2004; Levy, Slade, Kunkel, & Kasl, 2002), aging individuals can still feel great and engage in healthy behavior into their older years. In this context, aging populations will be better off if they can expect not just reparative care but also rejuvenative care from medical practitioners. In this context, rejuvenative care is any kind of medical care aimed at improving an individual’s level of social, mental and biological functioning beyond normal levels (Agogo et al., forthcoming). Such a paradigm shift in medical practices and geriatrics can go a long way in permanently transforming the aging experience leading to better management of health outcomes and possible savings to healthcare costs in the USA.

In addition, this research also identifies common behavior and habits among people who feel older than they are. Table 9 shows an extract of the items in the Subjective Aging Index from the biological, mental and social subscales which are most common among those who had older subjective ages in our research sample. This list can be adopted as a practical starting point for those seeking things to avoid in order to stay rejuvenated as they grow older.

References


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## Appendix A
### Demographics table for the US sample

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male 46.2%, Female 53.8%</td>
</tr>
<tr>
<td>Age groups</td>
<td>40s 34.2% , 50s 35.1% , 60s 24.5% , 70s 6.2%</td>
</tr>
<tr>
<td>Race</td>
<td>Caucasian 85.9% , African American 6% , Hispanic 2.5% , Asian 4% , Native American 0.7% , Other 0.9%</td>
</tr>
<tr>
<td>Education</td>
<td>Less than High School 1.1% , High School / GED 9.2% , Some College 25.7% , 2-year College Degree 11.4% , 4-year College Degree 36.1% , Masters Degree 11.2% , Doctoral Degree 2.4% , Professional Degree (JD, MD) 2.9%</td>
</tr>
<tr>
<td>Income</td>
<td>under $25,000 23.2% , $25,000 - $29,999 10.5% , $30,000 - $34,999 10.0% , $35,000 - $39,999 6.3% , $40,000 - $49,999 8.9% , $50,000 - $59,999 10.7% , $60,000 - $84,999 14.3% , Over $85,000 16.1%</td>
</tr>
</tbody>
</table>
Appendix B
A boxplot that shows descriptive information of the measure of subjective age used across the eight groups.

Appendix C
Tables by gender

<table>
<thead>
<tr>
<th>Biological Factors Scale</th>
<th>Female</th>
<th>Male</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you...-Worry about your level of physically fitness?</td>
<td>3.36</td>
<td>2.933</td>
<td>23.750</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Display muscular flexibility greater than most</td>
<td>3.27</td>
<td>2.980</td>
<td>8.961</td>
<td>.003</td>
</tr>
<tr>
<td>How often do you...-Try to alter (lose or gain) weight in order to improve your physical</td>
<td>3.23</td>
<td>2.784</td>
<td>21.634</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Carry out physical tasks that you believe most people your age</td>
<td>3.15</td>
<td>2.961</td>
<td>4.686</td>
<td>.031</td>
</tr>
<tr>
<td>How often do you ...-Take any type of prescription medication?</td>
<td>3.13</td>
<td>2.710</td>
<td>9.222</td>
<td>.003</td>
</tr>
<tr>
<td>How often do you NOT...-Walk briskly for twenty minutes and experience less strain</td>
<td>3.05</td>
<td>2.753</td>
<td>9.009</td>
<td>.003</td>
</tr>
<tr>
<td>How often do you ...-Carry out activities to improve your current over-all physical</td>
<td>3.04</td>
<td>2.835</td>
<td>6.342</td>
<td>.012</td>
</tr>
<tr>
<td>How often do you NOT...-Sleep deep and uninterrupted all throughout the night?</td>
<td>3.02</td>
<td>3.000</td>
<td>.044</td>
<td>.834</td>
</tr>
<tr>
<td>How often do you NOT...-Take the stairs rather than the elevator?</td>
<td>3.01</td>
<td>2.725</td>
<td>8.786</td>
<td>.003</td>
</tr>
<tr>
<td>How often do you...-Tire easily when you exercise?</td>
<td>2.94</td>
<td>2.722</td>
<td>6.673</td>
<td>.010</td>
</tr>
<tr>
<td>How often do you NOT...-Bend, kneel or stoop easily?</td>
<td>2.79</td>
<td>2.529</td>
<td>7.159</td>
<td>.008</td>
</tr>
<tr>
<td>How often do you NOT...-Feel sufficiently strong to take on most physical tasks?</td>
<td>2.75</td>
<td>2.420</td>
<td>15.476</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Find you weigh more than most individuals your age?</td>
<td>2.72</td>
<td>2.455</td>
<td>6.377</td>
<td>.012</td>
</tr>
<tr>
<td>How often do you NOT...-Carry out activities to improve your current over-all physical</td>
<td>2.71</td>
<td>2.639</td>
<td>.706</td>
<td>.401</td>
</tr>
<tr>
<td>How often do you NOT...-Carry out some form of exercise?</td>
<td>2.63</td>
<td>2.478</td>
<td>3.084</td>
<td>.080</td>
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<tr>
<td>How often do you...-Lift a regular object once then feel strain when you attempt to</td>
<td>2.57</td>
<td>2.369</td>
<td>5.889</td>
<td>.016</td>
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<tr>
<td>How often do you...-Experience disruptions of your daily activities as a result of</td>
<td>2.53</td>
<td>2.404</td>
<td>1.765</td>
<td>.185</td>
</tr>
<tr>
<td>Question</td>
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<td>Male</td>
<td>F</td>
<td>Sig.</td>
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<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>How often do you...-Experience difficulty breathing when you exert yourself?</td>
<td>2.47</td>
<td>2.361</td>
<td>1.368</td>
<td>.243</td>
</tr>
<tr>
<td>How often do you...-Fail to hear people when you’re in a large crowd?</td>
<td>2.44</td>
<td>2.616</td>
<td>3.822</td>
<td>.051</td>
</tr>
<tr>
<td>How often do you...-Have issues with your blood pressure?</td>
<td>2.18</td>
<td>2.173</td>
<td>.001</td>
<td>.981</td>
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<tr>
<td>How often do you...-Start doing one thing and get distracted into doing something else (unintentionally)?</td>
<td>3.03</td>
<td>2.796</td>
<td>8.401</td>
<td>.004</td>
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<tr>
<td>How often do you...-Read something and find you haven’t been thinking about it and must read it again?</td>
<td>3.02</td>
<td>2.824</td>
<td>6.980</td>
<td>.008</td>
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<td>How often do you...-Don’t quite remember something although it’s “on the tip of your tongue”?</td>
<td>3.02</td>
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<td>How often do you...-Forget people’s names?</td>
<td>2.94</td>
<td>2.914</td>
<td>.098</td>
<td>.755</td>
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<td>How often do you...-Forget why you went from one part of your house/office to the other?</td>
<td>2.82</td>
<td>2.475</td>
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<td>How often do you...-Forget where you put something like a newspaper or a book?</td>
<td>2.70</td>
<td>2.576</td>
<td>2.503</td>
<td>.114</td>
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<td>How often do you NOT...-Consciously make time to reflect and think?</td>
<td>2.68</td>
<td>2.780</td>
<td>1.458</td>
<td>.228</td>
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<td>How often do you NOT...-Experience a feeling of inspiration caused by something around you?</td>
<td>2.67</td>
<td>2.753</td>
<td>1.268</td>
<td>.261</td>
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<tr>
<td>How often do you NOT...-Play games that involve rapid thinking, matching and guessing?</td>
<td>2.62</td>
<td>2.812</td>
<td>5.518</td>
<td>.019</td>
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<tr>
<td>How often do you NOT...-Play games that require strategic thinking, anticipation and planning?</td>
<td>2.57</td>
<td>2.745</td>
<td>4.505</td>
<td>.034</td>
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<tr>
<td>How often do you...-Have difficulty understanding concepts that are new to you?</td>
<td>2.54</td>
<td>2.490</td>
<td>.527</td>
<td>.468</td>
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<tr>
<td>How often do you NOT...-Learn how to use new tools/devices easily?</td>
<td>2.49</td>
<td>2.451</td>
<td>.291</td>
<td>.590</td>
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<td>How often do you...-Forget whether you’ve turned off a light or a fire or locked the door?</td>
<td>2.47</td>
<td>2.396</td>
<td>.897</td>
<td>.344</td>
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<tr>
<td>How often do you NOT...-Accomplish the list of daily tasks you set out for yourself?</td>
<td>2.37</td>
<td>2.502</td>
<td>3.204</td>
<td>.074</td>
</tr>
<tr>
<td>How often do you...-Wonder whether you’ve used a word correctly?</td>
<td>2.31</td>
<td>2.294</td>
<td>.039</td>
<td>.844</td>
</tr>
<tr>
<td>How often do you...-Fail to see what you want on a supermarket shelf (although it’s there, right in front of you)?</td>
<td>2.28</td>
<td>2.322</td>
<td>.234</td>
<td>.629</td>
</tr>
<tr>
<td>How often do you NOT...-Calculate the tip easily when paying for a meal in a restaurant?</td>
<td>2.09</td>
<td>1.922</td>
<td>4.106</td>
<td>.043</td>
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<td>How often do you...-Forget appointments?</td>
<td>1.84</td>
<td>1.902</td>
<td>.784</td>
<td>.376</td>
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<tr>
<td>How often do you...-Bump into people unintentionally?</td>
<td>1.83</td>
<td>1.929</td>
<td>1.937</td>
<td>.165</td>
</tr>
<tr>
<td>How often do you...-Forget where to turn on a road you know well?</td>
<td>1.74</td>
<td>1.859</td>
<td>2.712</td>
<td>.100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Female</th>
<th>Male</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you NOT...-Seek out large parties /crowded events to attend?</td>
<td>4.08</td>
<td>3.855</td>
<td>9.176</td>
<td>.003</td>
</tr>
<tr>
<td>How often do you NOT...-Make yourself the center of attention in a group?</td>
<td>3.97</td>
<td>3.686</td>
<td>14.242</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Volunteer?</td>
<td>3.47</td>
<td>3.506</td>
<td>.127</td>
<td>.722</td>
</tr>
<tr>
<td>How often do you NOT...-Introduce or connect people together?</td>
<td>3.41</td>
<td>3.286</td>
<td>2.044</td>
<td>.153</td>
</tr>
<tr>
<td>How often do you NOT...-Seek adventure?</td>
<td>3.38</td>
<td>3.086</td>
<td>12.694</td>
<td>.000</td>
</tr>
</tbody>
</table>
How often do you NOT...-Ask for assistance from friends or family when you are in a tight spot? 
How often do you NOT...-Make new friends? 
How often do you NOT...-Open up to your close friends and family when something is bothering you? 
How often do you NOT...-Handle difficult social situations skillfully? 
How often do you...-Wish for more companionship? 
How often do you NOT...-Like to amuse your friends? 
How often do you NOT...-Start conversations with other people? 
How often do you...-Feel uncomfortable with others? 
How often do you NOT...-Visit and socialize with close friends and family? 
How often do you...-Feel isolated from others? 
How often do you NOT...-Relax and feel comfortable in the presence of other people? 
How often do you...-Purposely stay in complete silence? 
How often do you NOT...-Speak to more than one person at a social gathering? 
How often do you NOT...-Exchange pleasantries and chat with many of the people you interact with regularly? 
How often do you...-Withdraw from human contact for prolonged periods of time? 

### Appendix D

<table>
<thead>
<tr>
<th>Biological Factors Scale</th>
<th>Feel Older</th>
<th>Feel Younger</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you...-Worry about your level of physically fitness?</td>
<td>3.09</td>
<td>3.595</td>
<td>15.256</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Display muscular flexibility greater than most individuals your age?</td>
<td>3.02</td>
<td>3.865</td>
<td>38.474</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Try to alter (lose or gain) weight in order to improve your physical health?</td>
<td>3.01</td>
<td>3.108</td>
<td>.443</td>
<td>.506</td>
</tr>
<tr>
<td>How often do you NOT...-Carry out physical tasks that you believe most people your age cannot?</td>
<td>2.95</td>
<td>3.770</td>
<td>42.848</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Sleep deep and uninterrupted all throughout the night?</td>
<td>2.93</td>
<td>3.541</td>
<td>19.393</td>
<td>.000</td>
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<tr>
<td>How often do you...-Take any type of prescription medication?</td>
<td>2.87</td>
<td>3.405</td>
<td>6.911</td>
<td>.009</td>
</tr>
<tr>
<td>How often do you...-Lose energy during the course of a regular day?</td>
<td>2.86</td>
<td>3.486</td>
<td>28.560</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Walk briskly for twenty minutes and experience less strain than most people your age?</td>
<td>2.81</td>
<td>3.608</td>
<td>30.946</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Take the stairs rather than the elevator?</td>
<td>2.80</td>
<td>3.365</td>
<td>16.183</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Tire easily when you exercise?</td>
<td>2.72</td>
<td>3.595</td>
<td>52.254</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Carry out activities to improve your current over-all physical condition?</td>
<td>2.59</td>
<td>3.257</td>
<td>30.682</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Bend, kneel or stoop easily?</td>
<td>2.55</td>
<td>3.419</td>
<td>38.505</td>
<td>.000</td>
</tr>
<tr>
<td>Mental Factors Scale</td>
<td>Feel Older</td>
<td>Feel Younger</td>
<td>F</td>
<td>Sig.</td>
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<tr>
<td>----------------------</td>
<td>-----------</td>
<td>--------------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>How often do you NOT...-Feel sufficiently strong to take on most physical tasks?</td>
<td>2.50</td>
<td>3.203</td>
<td>34.091</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Find you weigh more than most individuals your age?</td>
<td>2.50</td>
<td>3.203</td>
<td>21.140</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Carry out some form of exercise?</td>
<td>2.46</td>
<td>3.243</td>
<td>39.837</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Fail to hear people when you’re in a large crowd?</td>
<td>2.45</td>
<td>2.946</td>
<td>13.887</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Lift a regular object once then feel strain when you attempt to lift it repeatedly?</td>
<td>2.42</td>
<td>2.878</td>
<td>14.358</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Experience disruptions of your daily activities as a result of physical aches and pain?</td>
<td>2.36</td>
<td>3.162</td>
<td>38.225</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Experience difficulty breathing when you exert yourself?</td>
<td>2.33</td>
<td>3.027</td>
<td>26.824</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...-Have issues with your blood pressure?</td>
<td>2.12</td>
<td>2.541</td>
<td>7.879</td>
<td>.005</td>
</tr>
<tr>
<td>How often do you...-Don’t quite remember something although it’s “on the tip of your tongue”?</td>
<td>2.89</td>
<td>3.405</td>
<td>25.461</td>
<td>.000</td>
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<tr>
<td>How often do you...-Read something and find you haven’t been thinking about it and must read it again?</td>
<td>2.88</td>
<td>3.216</td>
<td>9.744</td>
<td>.002</td>
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<tr>
<td>How often do you...-Forget people’s names?</td>
<td>2.88</td>
<td>3.243</td>
<td>9.358</td>
<td>.002</td>
</tr>
<tr>
<td>How often do you...-Start doing one thing and get distracted into doing something else (unintentionally)?</td>
<td>2.88</td>
<td>3.230</td>
<td>8.673</td>
<td>.003</td>
</tr>
<tr>
<td>How often do you NOT...-Consciously make time to reflect and think?</td>
<td>2.69</td>
<td>2.932</td>
<td>3.849</td>
<td>.050</td>
</tr>
<tr>
<td>How often do you NOT...-Experience a feeling of inspiration caused by something around you?</td>
<td>2.65</td>
<td>3.095</td>
<td>17.651</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Play games that involve rapid thinking, matching and guessing?</td>
<td>2.63</td>
<td>3.189</td>
<td>21.531</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...-Play games that require strategic thinking, anticipation and planning?</td>
<td>2.60</td>
<td>3.000</td>
<td>11.199</td>
<td>.001</td>
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<tr>
<td>How often do you...-Forget why you went from one part of your house/office to the other?</td>
<td>2.60</td>
<td>3.041</td>
<td>12.852</td>
<td>.000</td>
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<td>How often do you...-Forget where you put something like a newspaper or a book?</td>
<td>2.59</td>
<td>2.959</td>
<td>10.312</td>
<td>.001</td>
</tr>
<tr>
<td>How often do you...-Have difficulty understanding concepts that are new to you?</td>
<td>2.49</td>
<td>2.689</td>
<td>3.588</td>
<td>.059</td>
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<tr>
<td>How often do you NOT...-Learn how to use new tools/devices easily?</td>
<td>2.44</td>
<td>2.662</td>
<td>3.969</td>
<td>.047</td>
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<td>How often do you NOT...-Accomplish the list of daily tasks you set out for yourself?</td>
<td>2.40</td>
<td>2.649</td>
<td>5.671</td>
<td>.018</td>
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<tr>
<td>How often do you...-Forget whether you’ve turned off a light or a fire or locked the door?</td>
<td>2.40</td>
<td>2.689</td>
<td>6.349</td>
<td>.012</td>
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<td>How often do you...-Fail to see what you want on a supermarket shelf (although it’s there, right in front of you)?</td>
<td>2.25</td>
<td>2.649</td>
<td>12.010</td>
<td>.001</td>
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<td>How often do you...-Wonder whether you’ve used a word correctly?</td>
<td>2.25</td>
<td>2.622</td>
<td>10.230</td>
<td>.001</td>
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<td>How often do you NOT...-Calculate the tip easily when paying for a meal in a restaurant?</td>
<td>1.95</td>
<td>2.405</td>
<td>14.002</td>
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</tr>
<tr>
<td>How often do you...</td>
<td>Feel Older</td>
<td>Feel Younger</td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>--------------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td>Bump into people unintentionally?</td>
<td>1.83</td>
<td>2.203</td>
<td>13.693</td>
<td>.000</td>
</tr>
<tr>
<td>Forget appointments?</td>
<td>1.81</td>
<td>2.230</td>
<td>14.783</td>
<td>.000</td>
</tr>
<tr>
<td>Forget where to turn on a road you know well?</td>
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<td>2.068</td>
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<td><strong>Social Factors Scale</strong></td>
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<td></td>
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<tr>
<td>Feel Older</td>
<td>Feel Younger</td>
<td>F</td>
<td>Sig.</td>
<td></td>
</tr>
<tr>
<td>How often do you NOT...Seek out large parties /crowded events to attend?</td>
<td>3.94</td>
<td>4.189</td>
<td>5.031</td>
<td>.025</td>
</tr>
<tr>
<td>How often do you NOT...Make yourself the center of attention in a group?</td>
<td>3.80</td>
<td>4.068</td>
<td>5.693</td>
<td>.017</td>
</tr>
<tr>
<td>How often do you NOT...Volunteer?</td>
<td>3.43</td>
<td>3.851</td>
<td>10.881</td>
<td>.001</td>
</tr>
<tr>
<td>How often do you NOT...Ask for assistance from friends or family when you are in a tight spot?</td>
<td>3.30</td>
<td>3.149</td>
<td>1.600</td>
<td>.206</td>
</tr>
<tr>
<td>How often do you NOT...Introduce or connect people together?</td>
<td>3.28</td>
<td>3.784</td>
<td>16.643</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...Seek adventure?</td>
<td>3.19</td>
<td>3.622</td>
<td>12.571</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you NOT...Make new friends?</td>
<td>3.14</td>
<td>3.554</td>
<td>12.943</td>
<td>.000</td>
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<td>How often do you NOT...Open up to your close friends and family when something is bothering you?</td>
<td>2.89</td>
<td>3.122</td>
<td>3.743</td>
<td>.054</td>
</tr>
<tr>
<td>How often do you NOT...Handle difficult social situations skillfully?</td>
<td>2.75</td>
<td>3.149</td>
<td>12.584</td>
<td>.000</td>
</tr>
<tr>
<td>How often do you...Wish for more companionship?</td>
<td>2.73</td>
<td>3.095</td>
<td>7.425</td>
<td>.007</td>
</tr>
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<td>How often do you NOT...Visit and socialize with close friends and family?</td>
<td>2.62</td>
<td>3.041</td>
<td>14.093</td>
<td>.000</td>
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<td>How often do you NOT...Like to amuse your friends?</td>
<td>2.62</td>
<td>3.000</td>
<td>11.110</td>
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<tr>
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<td>2.61</td>
<td>3.000</td>
<td>13.167</td>
<td>.000</td>
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<tr>
<td>How often do you...Feel uncomfortable with others?</td>
<td>2.61</td>
<td>2.932</td>
<td>7.012</td>
<td>.008</td>
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<td>How often do you NOT...Relax and feel comfortable in the presence of other people?</td>
<td>2.46</td>
<td>3.000</td>
<td>23.570</td>
<td>.000</td>
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<tr>
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<td>3.108</td>
<td>26.506</td>
<td>.000</td>
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<tr>
<td>How often do you...Purposely stay in complete silence?</td>
<td>2.40</td>
<td>2.703</td>
<td>6.259</td>
<td>.013</td>
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<tr>
<td>How often do you NOT...Exchange pleasantries and chat with many of the people you interact with regularly?</td>
<td>2.37</td>
<td>2.838</td>
<td>17.617</td>
<td>.000</td>
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<td>.000</td>
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<td>2.757</td>
<td>12.120</td>
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</table>
Brand Community Involvement among Children and Adolescents
Laura A. Flurry, Louisiana Tech University

Abstract
Online communities designed to appeal to children are on the rise. The success of this marketplace phenomenon indicates that adolescents are likely candidates for brand community membership; however, the literature has yet to examine this trend. This research addresses this gap and establishes the likely existence of brand community involvement among adolescents. It further explores the characteristics which may differentiate children who are more likely to become involved in brand communities and examines what impact their involvement may have on adolescents’ psychological well-being. The results support the existence of a high brand community involvement segment among adolescents. Adolescents high in brand community involvement are found to display noteworthy differences in attitudes, values, and marketplace behaviors. Several interesting avenues of future research are proposed.

Introduction
Harley-Davidson riders, Apple Computer enthusiasts, Playstation gamers and Starbuck customers are examples of prototypical brand community members. In a recent survey by Pew Research, 75% of respondents were involved in some form of social group that could be construed as a brand community. In fact, 80% of internet users were involved in at least one group. Marketing managers are embracing the development of these brand-centered social groups because brand-community members buy more, remain loyal, and reduce marketing costs (Muniz and O’Guin, 2001; McAlester et al., 2002; Cova and Pace, 2006; Carlson, Suter, and Brown, 2008; Schau, Muniz Jr., and Arnould, 2009).

Given these advantages, online communities appealing to children are also emerging. For example, My Lego Network is an online social community for children where kids are encouraged to share their experiences with the Lego product and to find friends who share their same passion. Similarly, Mattel maintains a fan and community site where those passionate about Barbie or Hot Wheels can converse with friends and create their own versions of the product. These social communities have dual importance, as children serve as both a current market and a future consumer.

Despite the obvious growth in the use of this strategy, the brand community literature has yet to examine the efficacy of children and adolescents as brand community members. This gap raises the essential need for inquiring (1) do children exhibit characteristics of brand community identification? (2) are there traits or characteristics which differentiate children who are more likely to become involved in brand communities? (3) what effect, if any, does involvement in brand communities have on children’s psychological well-being?

Brand Community
Cova (1997) suggests that communities centered on the consumption of products and services are the logical outcome of postmodern individuals who initially tried to free themselves from the restrictions of traditional communities that inhibit individualism, and then reversed themselves to recompose the social link. In their seminal work Muniz and O’Guinn (2001) trace the origins of the demise of the traditional community in modern times and propose that membership in a brand community fills a void that a consumer might feel regarding the loss of traditional community. Muniz and O’Guinn (2001) defined brand communities as “a specialized, non-geographically bound community, based on a structured set of social relations among admirers of a brand” and brand communities must “exhibit the traditional markers of community, shared consciousness, rituals and traditions, and a sense of moral responsibility” (p. 412).

Furthermore, due to the rise of information technology, community is no longer restricted by geographic boundaries. A virtual community enables “social aggregations emerging from the internet when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace” (Rheingold, 1993, p. 3). Muniz and O’Guinn (2001) further contend that opportunities for brand community involvement are significantly enhanced through available technology in our “mass-mediated world.”

Carlson, Suter, and Brown (2008) suggest that two types of brand communities thereby exist: first, a social brand community which requires interaction among members whether at a physical location or in a virtual world and second, a psychological brand community which does not require actual social interactions with those who identify with a brand community or the presence of the three markers of brand community, but rather a psychological sense of brand community. Basing their theory of psychological brand communities on social
identity theory, they propose that the primary drivers of psychological brand communities are the degree to which individuals identify with the brand itself and the group of all individuals who purchase or utilize that brand. Furthermore, the authors argue that a computer-mediated environment is conducive to a person identifying with a psychological brand community. Finally, Schmitt (2011) views brand community as the strongest psychological construct that indicates a connection between a brand and a consumer, and is a result from interpersonal and socio-cultural engagements.

Children and Brands

Literature suggests that children do form relationships with brands. Self image/product-image congruity theory introduced by Sirgy (1982) and more specifically the work by Chaplin and Roedder John (2005) and Achenreiner and Roedder John (2003) examined the development of self-brand connections and the meaning of brand names to children and adolescents. Chaplin and Roedder John (2005) demonstrated that as children age, their number of self-brand connections increase. Young children (ages 7-8) make limited self-brand connections which are based on concrete, but simple associations with the brand such as owning or buying branded items. Older children (12 and up) have increased numbers of self-brand connections, and the connections are much deeper. To older children, brands have personalities, user characteristics, and symbolize group membership that provides a natural link to their self-concepts (Achenreiner and Roedder John, 2003).

More recently, Bryant and Akerman (2009) examined how children’s and adolescents’ virtual social identities evolve and reflect consumption. Examining how virtual identity and consumption interact, Bryant and Akerman (2009) observed that as children develop and enter adolescence, they are not only more active on social websites, but brands take on a more important role in the development of their virtual identities, and the virtual identities become more self-representative. These findings suggest that as children move into adolescence and self-brand connections become increasingly important, it is likely that they will develop social ties where products and brands play a central role, thus being likely to identify with brand communities. The more important consumption is to a person’s psychological self-concept, the more likely the person will become a member of a brand community (Kozinets, 1999).

Despite indications that children and adolescents are likely to form brand communities, this has not been explored. To do so, it is first necessary to review what characteristics adolescents would be expected to exhibit to indicate likely membership in a brand community. Research suggests that individuals who join brand communities share a “consciousness of kind” (Muniz and O’Guinn, 2001). Consciousness of kind implies that individuals who are highly involved with or identify highly with a brand show an intrinsic connection towards other users of that brand. Thus, adolescents would envision a connection with other users of the brand and see themselves as similar to one another. Second, brand community members are also more likely to envision a strong, quality brand relationship (Algesheimer, Dholakia and Herrmann, 2005), able to see aspects of themselves in the image of the brand. Third, adolescent brand community members would be expected to be more knowledgeable regarding the brand when compared to peers. Finally, brand community affiliation may also be evidenced if adolescents “perceive” themselves to be members, shown by feeling a sense of belonging and self-identifying with a brand community and its members, either in person or virtually (Zaglia, 2013; Brodie, Ilic, Juric and Hollebeek, 2013).

The widespread success of online social communities for children and the development of marketing strategies designed to encourage brand-based interaction (e.g., brand-based birthday parties, unique product codes for purchase-only access to virtual activities, etc.) lends credibility to the notion that adolescents may exhibit these characteristics. Thus, the first question addressed in this research is:

RQ1: Do adolescents exhibit characteristics of brand community involvement?

Profile of Adolescent Brand Community Members

Most brand community studies focus on the market outcome variables of community participation by adults. Fewer studies focus on the factors that influence users to engage in brand communities or what characteristics distinguish brand community members from non-members. One study suggests that the difficulty in developing a profile of typical brand community members may be because different individuals have different motivations for joining a brand community, and thus leads to heterogeneity among community members (Ouwersloot and Odekerken-Schroder, 2008).

A few studies, however, suggest that some individual-level factors do play a role in how likely it is that individuals will participate in brand communities. Extraversion, openness, and need for affiliation have been shown to have a positive relationship with brand community participation (Fuller, Metzler, and Hoppe, 2008; Tsai, Huang, and Chiu, 2012). As yet, no studies have questioned if there are distinguishing characteristics which differentiate young consumers who join brand communities. Thus, another question examined herein is:

RQ2: What characteristics differentiate adolescents likely to join brand communities?
**Brand community involvement and adolescents’ psychological well-being**

Parents, educators, and public policy makers have become increasingly concerned with rising marketing activities that target youth and the negative influence these activities may have on adolescents’ psychological well-being. Little is known about the relationship between adolescents’ psychological well-being and their propensity for brand community involvement. It is possible that increased participation and identification with brand communities is a substitute for traditional community involvement, and ultimately provides an improvement in quality of life for children. In contrast, it could be that children who gravitate to brand communities do so due to decreased levels of self-esteem and a need to enhance social and life skills (Chaplin and Roedder John, 2007). To explore this further, we examine the relationship between adolescents’ likely brand community involvement and susceptibility to interpersonal influence, social anxiety, and satisfaction with life.

Susceptibility to interpersonal influences is defined as “the need to identify with or enhance one’s image in the opinion of significant others through the acquisition of and use of products and brands, the willingness to conform to the expectation of others regarding purchase decisions and/or the tendency to learn about products and services by observing others and/or seeking information from others” (Bearden, Netemeyer and Teel, 1989). Achenreiner (1997) noted that as children age their need to identify with or enhance their image in the opinion of others through the acquisition and use of products and brands increases. As they get older, they also experience an increased need to conform to the expectation of others regarding purchase decisions. Thus, adolescents involved in brand communities are likely to seek out other community members as a primary source of information and to comply with expectations of other community members (Muniz and O’Guinn, 2001).

Social anxiety has been identified as particularly important to study during adolescence, as it is common and may be a risk factor for impairment in adulthood (La Greca and Lopez, 1998, La Greca and Harrison, 2005). Social anxiety is a multi-dimensional construct which measures an individual’s fear of being negatively evaluated by peers and distress associated with new situations and unfamiliar people (Bearden and Rose, 1990). Previous research has argued that individuals who increasingly focus on material goods often do so because of low self-esteem which may be accompanied by social anxiety (Bearden and Rose, 1990; Chaplin and Roedder John, 2007). Adolescents who are highly involved with brand communities may be more likely to experience social anxiety due to their greater fear of being accepted in the group and their desire to be perceived by community members as complying with shared rituals, traditions, symbols, and meanings (Muniz and O’Guinn, 2001). On the other hand, the presence of brand communities in a computer mediated environment which offers message boards, chat rooms, instant messaging and virtual worlds as forums, may reduce their anxiety by providing more impersonal opportunities for social interaction and thereby enhancing well-being.

Finally, the effect of marketing on consumers’ quality of life and life satisfaction has interested many scholars (Leelakulthanit, Day, and Walters, 1991; Grzeskowiak and Sirgy, 2007; Sirgy, Lee, and Rahtz, 2007). Similarly, researchers have examined the influence of advertising on children’s well-being, finding no conclusive results as to the effects (Goldberg and Gorn, 1978; Buijzen and Valkenburg, 2003). Unlike advertising where the child or adolescent is often perceived as an unwilling, vulnerable victim (Buijzen and Valkenburg, 2003), brand community involvement is based on a conscious decision by the adolescent to identify/engage not only with the brand but also with community members in order to enhance his or her self-image (Escalas and Bettman, 2003). Research with college-aged brand community members suggests that brand community belongingness positively influences consumer well-being, including social well-being, leisure well-being, and quality of school life (Grzeskowiak and Sirgy, 2008). Thus, though it has not been examined, it is likely that adolescents who are highly involved in brand communities may experience higher overall life satisfaction, including satisfaction with social life and satisfaction with possession of material goods (Leelakulthanit et al, 1991).

**RQ3:** What are the effects of brand community membership on adolescents’ psychological well-being? Are adolescents who are members of brand communities more susceptible to interpersonal influence and more likely to suffer from social anxiety? Do brand communities enhance adolescents’ life satisfaction, fulfilling their needs for social affiliation?

**Method**

**Context of the Study**

To explore the potential for brand community, it was necessary to select a product category within which children and adolescents are likely to be familiar and to form bonds with other users. Informal discussions found that personal gaming systems (PGs) were a common topic of discussion among young people, extending across both age and sex boundaries. Further, in a survey of 2,002 3rd through 12th grade students, the Kaiser Family Foundation found that 87% of households have at least one personal gaming console and 59% have at least one hand-held gaming device. The same survey indicated that...
the amount of time playing video games has steadily increased over a 10 year period, from 26 minutes a day in 1999 to 1 hour and 13 minutes in 2009 (Rideout, Foehr, and Roberts, 2010). Thus, it was thought that a personal gaming system might be an appropriate product category for an exploratory investigation.

**Data Collection**

A national online panel (Zoomerang.com) was employed to collect survey data from respondents aged 7-18 and their parents. Instructions required that children answer questions independently of their parents, but that parents be available to help but not influence responses. Respondents were asked if they owned a Personal Gaming System (PGS), which could include a console or handheld device. In order to ensure respondents understood the product category, a list of several popular gaming systems was provided, as well as an “other” option with a space to provide the brand name. Out of 331 child/adolescent-parent pairs, 252 respondents (76%) owned a personal gaming system.

**Construct Measures**

Table 1 summarizes the measurement properties of the multiple-item measures adapted for use in this research. Adolescents responded to questions or scales to indicate brand community (Algesheimer et al. 2005), materialism (Goldberg et al. 2003), satisfaction with life (Diener et al. 1985), social anxiety (La Greca and Stone 1993), susceptibility to interpersonal influence (Mangleburg et al. 2004), life aspirations (Kasser and Ryan 1993), advertising skepticism (Obermiller and Spangenberg 1998), purchase communication (Carlson and Grossbart 1988), market knowledge and direct influence. Parents responded to questions regarding materialism (Goldberg et al. 2003) and indirect influence and were asked to provide demographic data and to specify how much time younger children (ages 7-11) spent watching television, playing computer or video games, and surfing or playing on the Internet.

**Results**

Cluster analysis was used to classify respondents into brand community groups based on the brand community indicators of community identification, quality of brand relationship and brand knowledge (see Table 2). To determine a typology of the number of groups, hierarchical cluster analysis with average linkage was computed. The resulting iterative change in coefficients (Squared Euclidean Distance) on the agglomeration schedule suggested a three cluster solution. K-means cluster analysis constrained to three clusters was then computed. Significant differences were found on all indicators of brand community (F<.01). Mean results for the three groups of adolescent brand community (high brand community, neutral and low brand community) are found in Table 2. Fifty-nine adolescents (24%) were classified as having high brand community involvement, 127 (50%) were neutral, and 66 (26%) were classified as having low brand community involvement. As a validation check, the number of hours spent playing their personal game system was compared across the three groups. Seventy percent of the high brand community group (HBC) spent 3 or more hours per day playing their PGS, whereas 48% of those in the neutral brand community group (NBC) spent 1-2 hours and 70% of the low brand community group (LBC) spent less than one hour per day interacting with their personal gaming system.

To develop a profile of the brand community groups, several characteristics were explored, including demographics, values and attitudes, and marketplace behaviors. Table 3 provides a summary of the findings differentiating these three groups. Significant differences were noted for the child’s sex, satisfaction with things owned, materialism, financial aspirations, social avoidance, susceptibility to interpersonal influence, expectations for gift expenditures, skepticism toward advertising, hours spent playing PGS, frequency of shopping, purchase communication, market knowledge, market maven status, direct influence and indirect influence.

No differences were found for child’s age, monthly allowance, household income, ethnicity, religious affiliation, parents’ home ownership, parents’ employment status, or parent’s education. There were also no differences noted in the number of hours spent watching TV or using the Internet at home.

Finally, the three groups were explored for differences in psychological well-being (Table 3). Results indicate that there are significant differences in life satisfaction, depression and liking for school.

**Discussion**

The results of this exploratory study highlight several areas deserving discussion and further study. This research suggests that as children move into adolescence, the relationships that are created through brand ownership may take on such a significant role in their lives as to influence some to become involved with brand communities. Albeit exploratory, this study lends credence to the adolescent brand-based groups which are developing in the marketplace. In this study, a segment of children indicated that they felt a sense of community identification with other users, thought the product represented an important aspect of their life, and knew a lot about the product. This segment was also the heaviest user group, representing roughly a quarter of the respondent sample.
Of particular interest are the results indicating that adolescents in the high brand community group (HBC) may have important distinguishing attitudes and values and exhibit noteworthy differences in their marketplace behavior. HBC adolescents were more likely to discuss aspects of their purchase activities with their parents than were neutral or LBC members. HBC adolescents further envisioned themselves as market mavens and perceived themselves to have a greater awareness of marketplace information. HBC members were significantly more likely to be skeptical of advertising and were more frequent shoppers across all store types. Possibly due to this marketplace knowledge, HBC adolescents were also seen by their parents as having greater indirect influence. Parents of these children frequently purchased products they believed their children would want without any preference or specific request having been made by the child. HBC and neutral adolescents had greater direct influence on family purchases across many decision-making aspects, including suggesting which brands, stores and specific product items to buy and shopping for family products. Altogether, these findings indicate that children with brand community involvement are also exceptionally knowledgeable and experienced consumers.

Adolescent brand community members may also differ in their values and attitudes. Adolescent HBC members were found to exhibit more materialistic values and to be more likely to aspire to be well-off financially. They expressed greater satisfaction with buying things and felt that their parents should spend significantly more money on gifts for them. These materialistic values are interesting in light of the finding of no difference between BC groups on children’s aspirations for community service, self-acceptance or affiliation. Thus, overall, HBC members may place a higher value on materialistic gain.

Also of interest is the finding of very little difference in brand community involvement due to demographic factors. HBC adolescents were more likely to be male; however, this difference may be a function of the product category chosen. There were no differences found for respondents’ ethnicity, household income, religious affiliation, home ownership, or parents’ occupation or education. Further, there was no difference in the amount of time spent watching TV or surfing the Internet among adolescents. The absence of these differences is noteworthy in that children’s ownership of game systems and inclination to join a brand community is not likely due to access to resources or technology usage. It is further important to note as a key to the development of an effective target strategy. Identification of adolescent brand community members may be more challenging than simple population statistics.

Results herein further suggest that brand community involvement may be linked to positive well-being. HBC adolescents were happier, expressing greater overall life satisfaction and liking for school. Thus, the opportunity for social interaction with others who share the same passion may enhance psychological well-being. Of note, however, is the finding that HBC were also more likely to be susceptible to interpersonal influence and were more likely to experience social anxiety and periodic depression than their lesser involved counterparts. This could be due to the tendency of HBC adolescents to have higher materialistic values. Higher levels of materialism in adolescents have been linked to lower levels of self-esteem (Chaplin and John, 2007), which is associated with susceptibility to interpersonal influence and social anxiety. This general tendency may define the psychological profile of those attracted to brand community groups.

Adolescents who are involved in brand communities may develop additional peer relationships compared to their lesser involved friends. While peer relationships are purely based on identification with a brand, they remain important to the adolescent’s identity development process. Brand community networks can serve as an important source of information to the adolescent and could provide social value to community members (Schau et al., 2009). Adhering to protocol and compliance with community traditions are important characteristics of brand community involvement. As such, it is natural to expect that adolescents would be concerned with how fellow brand community members feel and a resulting fear of being negatively evaluated by other community members.

Another alternative explanation is that brand community membership, especially virtual brand communities, may simply be a coping mechanism for adolescents who experience high levels of anxiety when put in new situations or have a fear of meeting new people. Anxious adolescents may seek out brand community membership, especially in virtual brand communities, as a substitute for face to face interactions with which they are uncomfortable and these virtual brand communities may help to fill an important socialization need that otherwise might go unmet.

Limitations and Future Research

Since this was the first study attempting to measure differences between adolescents who measure high and low in brand community involvement, our exploratory findings generate many questions and must be viewed in light of its limitations. Perhaps the most important limitation of this research is the contextual scope of the findings. Adolescent brand community involvement was examined in the context of PGS ownership. Future research should consider a wider range of product categories to establish the robustness of the findings. In addition, it would be interesting to
investigate the types of products in which children tend to hold brand community association. Do children largely join groups for products for their own use or do they also join groups for products they aspire to own?

During the development of this research, it was noted that adolescents seemed to develop strong attachments to their preferred brand of personal gaming system. Users of competing gaming systems were viewed negatively, often being described as having undesirable traits. This observation may constitute a future research direction, that of brand community conflict and oppositional loyalty among adolescents (Ewing, Wagstaff and Powell 2013). Gaming systems, once adopted, require the additional purchase of brand-specific games. PGS users are effectively hostage to the brand. This creates an interesting environment in which to study the effects of brand community involvement on oppositional loyalty and consumer value.

Future research could further explore what antecedent variables may lead adolescents to become more involved in brand communities, as well as additional outcome variables of brand community involvement. Materialism and social anxiety are two variables that deserve a closer look as it is unclear whether they are antecedent variables or outcome variables of brand community involvement. Does materialism and social anxiety contribute to adolescents becoming more involved in brand communities, or does greater involvement in brand communities lead to adolescents becoming more materialistic and socially anxious?

It would be interesting to explore the development process of brand relationships in adolescents. What effects do brand passion, brand trust, and brand identification (Albert, Merunka and Valette-Florence, 2012) have on adolescents' brand community involvement? Is brand passion in adolescents contagious? In other words, can adolescents develop strong feelings for brands merely resulting from interpersonal influence or is personal use required?

Previous research has established that brand community involvement in adults leads to positive marketing outcomes, including customer retention and word of mouth (Zhou, Zhang, Su and Zhou, 2012). Having indications that brand community involvement may develop from a young age, the question begs if brand community involvement in children and adolescents may lead to similar positive marketing outcomes, thereby reducing costs, creating opportunities for valuable user feedback and more effective customer support, and developing a future brand loyal customer.
Table 1. Means, standard deviations, and reliabilities of multiple item measures (n=252)

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<td>2.98</td>
<td>0.98</td>
<td>.80</td>
</tr>
<tr>
<td>New Situations</td>
<td>2</td>
<td>2.59</td>
<td>1.00</td>
<td>.79</td>
</tr>
<tr>
<td>Child Purchase</td>
<td>5</td>
<td>2.85</td>
<td>0.47</td>
<td>.76</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child’s Market Knowledge</td>
<td>3</td>
<td>3.01</td>
<td>0.68</td>
<td>.91</td>
</tr>
<tr>
<td>Child’s Advertising</td>
<td>4</td>
<td>3.12</td>
<td>0.62</td>
<td>.87</td>
</tr>
<tr>
<td>Skepticism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child’s Frequency of</td>
<td>7</td>
<td>3.34</td>
<td>1.93</td>
<td>.97</td>
</tr>
<tr>
<td>Shopping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect Influence</td>
<td>7</td>
<td>3.72</td>
<td>0.67</td>
<td>.87</td>
</tr>
<tr>
<td>Direct Influence</td>
<td>7</td>
<td>2.56</td>
<td>0.71</td>
<td>.92</td>
</tr>
</tbody>
</table>

Table 2. Adolescents’ brand community involvement by cluster group (n=252).

<table>
<thead>
<tr>
<th></th>
<th>Low Brand Community n=66</th>
<th>Neutral n=127</th>
<th>High Brand Community n=59</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Identification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel like I belong to a club with other users of this gaming system</td>
<td>1.17</td>
<td>2.38</td>
<td>3.69</td>
</tr>
<tr>
<td>I am a lot like people who use this gaming system</td>
<td>1.76</td>
<td>2.69</td>
<td>3.68</td>
</tr>
<tr>
<td>Quality of Brand Relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My choice of gaming system plays an important role in my life</td>
<td>1.22</td>
<td>2.48</td>
<td>3.75</td>
</tr>
<tr>
<td>My choice of gaming system says a lot about the kind of person I am</td>
<td>1.58</td>
<td>2.49</td>
<td>3.69</td>
</tr>
<tr>
<td>Brand Knowledge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When compared to other people, I know a lot about my gaming system</td>
<td>2.20</td>
<td>2.91</td>
<td>3.81</td>
</tr>
</tbody>
</table>
Table 3. Profile of adolescent brand community groups (n=252).

<table>
<thead>
<tr>
<th>Demographics</th>
<th>High brand community (n=59)</th>
<th>Neutral (n=127)</th>
<th>Low brand community (n=66)</th>
<th>Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s Age</td>
<td>13.9 years</td>
<td>13.5 years</td>
<td>13.7 years</td>
<td>F=.32 (.73)</td>
</tr>
<tr>
<td>Sex</td>
<td>64% Male</td>
<td>57% Male</td>
<td>70% Female</td>
<td>□+17.18 (.00)</td>
</tr>
<tr>
<td>Child’s Monthly Allowance</td>
<td>31% $10-$25</td>
<td>38% none</td>
<td>42% none</td>
<td>□+14.16 (.08)</td>
</tr>
<tr>
<td>Household Income</td>
<td>22% 30-60K</td>
<td>34% 30-60K</td>
<td>36% 30-60K</td>
<td>□+17.61 (.23)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>79% White</td>
<td>78% White</td>
<td>79% White</td>
<td>□+8.30 (.60)</td>
</tr>
<tr>
<td>Religious Affiliation</td>
<td>31% Protestant</td>
<td>37% Protestant</td>
<td>36% Protestant</td>
<td>□+15.04 (.86)</td>
</tr>
<tr>
<td>Parent’s Home Ownership</td>
<td>80% Own</td>
<td>69% Own</td>
<td>76% Own</td>
<td>□+2.89 (.24)</td>
</tr>
<tr>
<td>Parent’s Employment Status</td>
<td>53% Full-time</td>
<td>43% Full-time</td>
<td>62% Full-time</td>
<td>□+14.58 (.56)</td>
</tr>
<tr>
<td>Parent’s Education</td>
<td>61% College Grad</td>
<td>46% College Grad</td>
<td>53% College Grad</td>
<td>□+13.92 (.73)</td>
</tr>
<tr>
<td>Parent’s Age</td>
<td>40.3</td>
<td>42.4</td>
<td>44.2</td>
<td>F=2.29 (.10)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Values and Attitudes</th>
<th>High brand community (n=59)</th>
<th>Neutral (n=127)</th>
<th>Low brand community (n=66)</th>
<th>Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with things owned</td>
<td>3.39</td>
<td>(2.56)</td>
<td>2.48*</td>
<td>F=26.66 (.00)</td>
</tr>
<tr>
<td>Youth materialism</td>
<td>(3.22)</td>
<td>(2.58)</td>
<td>(2.37)</td>
<td>F=43.03 (.00)</td>
</tr>
<tr>
<td>Parent materialism</td>
<td>(3.78)</td>
<td>(3.06)</td>
<td>(2.81)</td>
<td>F=29.70 (.00)</td>
</tr>
<tr>
<td>Child’s Aspiration</td>
<td>3.73</td>
<td>3.71</td>
<td>3.86</td>
<td>F=1.95 (.14)</td>
</tr>
<tr>
<td>Self-acceptance</td>
<td>3.63</td>
<td>3.52</td>
<td>3.63</td>
<td>F=1.31 (.27)</td>
</tr>
<tr>
<td>Financial Success</td>
<td>(3.63)</td>
<td>(3.02)</td>
<td>2.98</td>
<td>F=17.77 (.00)</td>
</tr>
<tr>
<td>Community</td>
<td>3.56</td>
<td>3.39</td>
<td>3.56</td>
<td>F=2.31 (.10)</td>
</tr>
<tr>
<td>Social Avoidance</td>
<td>(3.11)</td>
<td>(2.68)</td>
<td>2.54</td>
<td>F=5.68 (.00)</td>
</tr>
<tr>
<td>New Situations</td>
<td>(3.21)</td>
<td>(2.96)</td>
<td>2.82</td>
<td>F=2.63 (.07)</td>
</tr>
<tr>
<td>Generalized</td>
<td>(2.94)</td>
<td>(2.59)</td>
<td>2.28</td>
<td>F=7.05 (.00)</td>
</tr>
<tr>
<td>Susceptibility to Interpersonal Influence</td>
<td>(3.33)</td>
<td>(2.49)</td>
<td>(2.19)</td>
<td>F=34.67 (.00)</td>
</tr>
<tr>
<td>Informative</td>
<td>(3.23)</td>
<td>(2.59)</td>
<td>(2.28)</td>
<td>F=18.37 (.00)</td>
</tr>
<tr>
<td>Parents should spend on gift</td>
<td>58% $50 or more</td>
<td>69% $25-$99</td>
<td>64% $49 or less</td>
<td>□+21.66 (.01)</td>
</tr>
<tr>
<td>Skepticism toward Advertising</td>
<td>(3.46)</td>
<td>(3.02)</td>
<td>3.09</td>
<td>F=11.72 (.00)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavioral Outcomes</th>
<th>High brand community (n=59)</th>
<th>Neutral (n=127)</th>
<th>Low brand community (n=66)</th>
<th>Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td># Hours spent playing PGS</td>
<td>46% 1-2 hours</td>
<td>32% &lt; 1 hour</td>
<td>70% &lt; 1 hour</td>
<td>□+55.42 (.00)</td>
</tr>
<tr>
<td># Hours watching TV</td>
<td>29% 3-4 hours</td>
<td>48% 1-2 hours</td>
<td>55% 1-2 hours</td>
<td>□+13.71 (.19)</td>
</tr>
<tr>
<td># Hours using Internet at home</td>
<td>41% &lt; 1 hour</td>
<td>34% &lt; 1 hour</td>
<td>36% &lt; 1 hour</td>
<td>□+8.41 (.75)</td>
</tr>
<tr>
<td>Frequency of Shopping</td>
<td>(4.39)</td>
<td>(3.28)</td>
<td>3.25</td>
<td>F=8.74 (.00)</td>
</tr>
<tr>
<td>Purchase Communication</td>
<td>(3.09)</td>
<td>(2.77)</td>
<td>2.80</td>
<td>F=10.31 (.00)</td>
</tr>
<tr>
<td>Market Knowledge</td>
<td>(3.49)</td>
<td>(2.87)</td>
<td>2.85</td>
<td>F=22.47 (.00)</td>
</tr>
<tr>
<td>Market Maven</td>
<td>(5.08)</td>
<td>(3.75)</td>
<td>3.47</td>
<td>F=25.06 (.00)</td>
</tr>
<tr>
<td>Direct Influence</td>
<td>(2.69)</td>
<td>2.54</td>
<td>(2.30)</td>
<td>F=6.94 (.00)</td>
</tr>
<tr>
<td>Indirect Influence</td>
<td>(3.61)</td>
<td>(3.18)</td>
<td>3.15</td>
<td>F=9.36 (.00)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well-Being</th>
<th>High brand community (n=59)</th>
<th>Neutral (n=127)</th>
<th>Low brand community (n=66)</th>
<th>Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life</td>
<td>(3.11)</td>
<td>(2.83)</td>
<td>2.95</td>
<td>F=4.79 (.01)</td>
</tr>
<tr>
<td>Depression</td>
<td>(2.60)</td>
<td>(2.29)</td>
<td>2.12</td>
<td>F=4.93 (.01)</td>
</tr>
<tr>
<td>Liking School</td>
<td>(3.31)</td>
<td>(2.97)</td>
<td>3.18</td>
<td>F=3.42 (.03)</td>
</tr>
<tr>
<td>GPA</td>
<td>3.27</td>
<td>3.22</td>
<td>3.37</td>
<td>F=1.02 (.36)</td>
</tr>
</tbody>
</table>

*Parentheses indicate mean grouping for significant differences, where F<.05
References


A Food Content Analysis of Two Children’s Shows
Bradley R.A. Wilson, University of Cincinnati
Nancy A. Jennings, University of Cincinnati
Shakeyrarah I.R. Elmore, University of Cincinnati
Jon P. Hesse, University of Cincinnati

Abstract

The purpose of this study was to analyze how food intended for consumption was portrayed in two children’s shows, iCarly and Victorious. The two shows were selected because one had an overweight main character (iCarly) and the other (Victorious) did not. Four episodes of each show (for a total of 8 episodes) were analyzed and compared. Each show was divided into individual segments and coded for the presence of food within each segment. Over half of the show segments (65.0%) contained food that was intended to be consumed. Food was more prevalent in Victorious (72.9% of show segments) than in iCarly (56.4% of show segments). Food was more likely to be found in the home setting for iCarly and in a school setting for Victorious. Concerning the sex of the characters in segments where food was intended for consumption, significantly fewer segments contained predominantly males (41.7%) than predominantly females (72.0%) or mixed males and females (70.6%) (X2(2, N = 117) = 7.21, p < .05). No significant differences were found for characters by age of characters in segments that contained food for consumption; however, as expected since the shows are targeted to youth, the majority of food consumers were teens (61.8%) and no children under the age of 3 were seen consuming food. All segments where food was intended for consumption contained predominantly white characters; however, that is expected since racial diversity is not prevalent within either show. No significant differences were noted regarding the weight of characters featured in segments that contained food for consumption; the vast majority showed normal weight characters (96.0% of segments with food). Significant differences were noted in the overall activity level of characters in segments that contained food. The most prevalent physical activity level of characters in segments with food was moderate activity (73.7%) (X2(3, N = 117) = 8.22, p < .05).

References available on request.
A Goal-Setting and Goal-Striving Model to Better Understand and Control the Weight of Overweight U.S. Ethnic Minority Members
Jiayun (Gavin) Wu, Savannah State University

Abstract
This paper develops a refined theoretical goal-setting and goal-striving model regarding U.S. minority members’ weight-control motivations and decision-making processes, in order to better understand the reasons for their overweight condition and to guide the development of effective health-coping strategies and intervention programs regarding weight control. It advances our understanding by showing that individuals’ different types of goals can have an even broader and more dynamic impact on behavior, and that the construct of hope can have a moderating effect on both the goal-setting and goal-striving stages. This paper theoretically demonstrates that for some people, keeping their body weight well-controlled can be challenging. Nonetheless, its results can still aid in the development of effective strategies to reduce the U.S.’s overweight minority population.

References available upon request.
The Use of Social Media for Mindful Healthy Eating Over the Holidays: Theory and Empirical Results
Shalini Bahl, Mindful Universe
George R. Milne, University of Massachusetts-Amherst
Spencer Ross, Simmons School of Management

Abstract
Holiday eating has contributed to obesity in the U.S. This paper suggests mindfulness is an approach to eat healthier during this time period. The authors develop a theory of mindfulness and present a new methodology for mindful eating based on employing social media technologies. The approach is tested in a mindful holiday eating experiment from Thanksgiving to New Year’s Day. The results of the participants are analyzed within the framework of mindful eating. Insights on mindful eating, the theory, and methodology are provided.

Introduction
Healthy eating is a challenge during the holiday season. It is commonly asserted that the average American gains five pounds of weight between Thanksgiving and New Year’s Day (Yanovski et. al. 2000). Controlling weight gain during this period is important because it is the biggest contributor to annual weight gain, which if goes unchecked can lead to obesity. This paper presents mindful eating (Bahl, Milne, Ross and Chan 2013), as an approach to reverse this trend. As background, a theory of mindful eating is presented. As a demonstration of the mindfulness perspective for weight control, the authors introduce a novel social media enabled approach that consists of posting photos and journaling in a public community online site. This paper makes a contribution by developing a theory of mindful eating, presenting a new method for encouraging healthy eating based on combining mindful practice with social media technologies, and providing empirical insights on the process.

This paper consists of five remaining sections. We begin by discussing the weight gain problem. Second, we discuss the mindfulness construct and introduce a theory of mindful eating. Third, we present our method. In the fourth section we discuss empirical results. In the last section we outline the contributions and advantage of mindful eating and the social media approach for weight loss.

Weight Loss Problem
Obesity is overtaking smoking as the most serious threat to American’s health. According to a 2012 Gallup Poll, 81% of Americans answered obesity as being an “extremely” or “very serious” problem to society versus only 67% answering that way for smoking. Americans are justified in their concern about the rise of obesity in America. Sixty-eight percent of adults in the United States were overweight or obese and 33.8 percent were reported to be obese (APA 2012), accounting for 21 percent of U.S healthcare costs that translates into $190.2 billion per year (Cawley and Meyerhoefer 2012).

Weight gain becomes an even bigger problem during the holiday period between Thanksgiving and New Year’s Day. It is asserted that Americans gain about five pounds during this period (Yanovski et al 2003). Even though Yanovski et al (2012) discovered that only obese people had a weight gain of about five pounds, while others gained about one pound, the weight gained during this period was not reversed during the spring and summer months. Therefore the cumulative effect of weight gain during the holiday period contributes to increasing body weight in all adults and should not be overlooked.

A Theory of Mindful Eating
Mindfulness is becoming an increasingly important construct guiding clinical psychology intervention, as its practice assists individuals in disengaging from harmful habits and unhealthy behaviors, bringing psychic clarity to better decision-making, and enhanced well-being (Brown and Ryan 2003). Despite its growing importance in other disciplines, the mindfulness construct has not been studied in the consumer behavior and public policy domains. With the exception of Thompson and Troester’s (2002) and more recently Bahl, Milne, Ross, and Chan (2013), mindfulness has not been explored with respect to consumer behaviors, despite its potential to positively contribute to consumer well-being through better consumption lifestyles. For purposes of this study, we use Dr. Jon Kabat-Zinn’s definition of mindfulness as, “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn 1994, p. 4). Bishop et al (2004) further elaborate, “In a state of mindfulness, thoughts and feelings are observed as events in the mind, without over-identifying with them, and without reacting to them in an automatic, habitual pattern of reactivity. This dispassionate state of self-observation is thought to introduce a ‘space’ between one’s perception and response.” Mindful eating then involves (a) paying attention to what is occurring (thoughts, emotions, body sensations, and environmental cues) in the present moment; (b) an awareness that arises by intentionally attending to whatever is arising in the present
moment; (c) a non-reactive state that is open to exploring possibilities and; (d) making conscious choices that do not conform to habitual patterns of reactivity.

In this section we integrate research from psychology, neuroscience, and consumer behavior to create a model that illustrates how mindfulness can help people make healthier choices in the long run. Figure 1 shows that stimuli affects the non-conscious mind that affects the conscious mind and then behavior. Mindless behavior adds to stress that feeds back to the unconscious mind. Mindfulness based practices (in this case our methodology described in a later section), improve the mindfulness trait in the person. This works either through a top down control through the conscious mind or a bottom up control through the non-conscious mind.

The basis for our theory unfolds in nine interrelated steps:

First, there are two main types of mental processes that determine behaviors. These are variously known as conscious/non-conscious, controlled/automatic, or systematic/heuristic processes (Bargh and Chartrand 1999). We use Bargh and Chartrand’s (1999, p. 463) definition of the conscious mind to include, "mental acts of which we are aware, that we intend (i.e., that we start by an act of will), that require effort, and that we can control (i.e., we can stop them and go on to something else if we choose.” Non-conscious or automatic mental processing takes place effortlessly and without any intention or awareness that is taking place (Bargh and Chartrand 1999).

Second, when exposed to a stimulus, a person’s non-conscious mind is activated, leading to automatic behavior based on habits learned in the past. Past research indicates that because of limited cognitive resources, 50% to 95% of human behavior is driven by the unconscious mind (Bargh and Chartrand 1999; Baumeister et al. 1998, Wood; Quinn, and Kashy 2002).

Third, even when we make conscious decisions, the unconscious is known to influence the conscious mind (Bargh 2002; Bargh and Chartrand 1999). Because of neuron connections created by past experiences, people develop a strong like or dislike for environmental stimuli and thus the set of possibilities from which the conscious mind chooses is narrow and limited. There is substantial evidence that one's evaluations and goals are often activated without one needing to think about them, or even being aware of their evaluation or impact on behaviors (Bargh 2002, Bargh and Chartrand 1999).

Fourth, stress is known to be a factor that reduces our cognitive resources and increases our automatic responses to stimuli, which often involves unhealthy coping behaviors (Muraven and Baumeister 2000).
Fifth, mindless behaviors including unhealthy choices add to the stress, which further depletes cognitive resources enhancing our automatic reactions to situations.

Sixth, mindfulness practice enhances the mindfulness trait (Brown and Ryan 2003).

Seventh, the attentional aspect of mindfulness enhances cognitive abilities, creating a top-down control over automatic reactions (Hölzel et al. 2011).

Eight, the non-evaluative aspect of mindfulness weakens old neuron connections (Hölzel et al. 2011; Sharp 2011) and that opens people up to more possibilities.

Ninth, the top-down and bottom-up together influence the conscious mind to create a spacious mindset that allows people to make more mindful choices.

A Method for Mindful Eating

The method for this paper is a form of systematic self-observation (Mick 2005, Rodriquez and Ryane 2002), which are a form of introspective life stories (Belk 2000). The data collection method combines the use of a Photo Meditation, journaling and support from an online community. Taking photos creates a pause before one eats or drinks an item. It puts an objective lens on the object. By creating a space in time, it provides the individual the freedom to choose, and break away from his/her unhealthy habits (Hark 2013). Research has noted that photography can create more mindfulness (Johnstone 2013) and promotes positive emotion and appreciation (Kurtz and Lyubomirsky 2013). Journaling is the practice of self-discovery and self-assessment (Tan 2012). It helps provide a concrete record of events that subverts longer term memory distortions. By journaling, one’s moment to moment awareness increases in a non-judgmental way. A community can provide support through therapeutic oversight, therapeutic confession and auto-therapeutic testimonial (Moisio and Berchashveili 2010). The oversight shows individuals that the issue belongs to a higher power, confession shows that failure can happen to everyone, and testimonial can rejuvenate members through celebration of success. Indeed, this is the model practiced by Weight Watchers.

The three authors plus three other individuals participated in the holiday mindful eating experiment (http://mindfuluniverse.com/forum/topics/mindful-holiday-eating-experiment-guidelines-to-participate). Participants were asked to first take a picture of every meal, snack and drink they had during the period from Thanksgiving day until January 1. At the end of each day, participants were to first review the pictures, and then to write a blog post about the day’s eating event. The journal posted on a community discussion board (www.mindfuluniverse.com) that was open to other’s observations, comments and feedback.

Empirical Results and Discussion

Participants participated at different levels and had very different experiences. One author, posted comments every day along with pictures from most days. A second author, consistently posted until December 6, and then put up photo montages for the next 10 days before stopping to contribute posts while continuing with the photo documentation. The third author stopped journaling after day 9. For the non-authors, one contributor posted pictures and journal notes every day. A second non-author contributed 5 days and the third 2 days.

The three authors reviewed all their posts and pictures, and then wrote reflective memoranda about the experiment. For the participants who posted every day, there were over 100 meals documented. Our theory of mindful eating is used as an organizing framework for the empirical findings.

Stimuli

External: External stimulus refers to people, places, and objects external to the participants that trigger a response. Since the focus of this experiment is mindful eating, the external stimuli typically included food items that are desirable to the participants. This could include decadent holiday cakes and cookies, a favorite morning drink, or food items that one typically doesn’t consume regularly but are tempting in the moment. As one participant noted:

“They had the leftover marshmallows in a glass on the table. I ate most of them, and not very mindfully. They were kind of a joke at the table, and they tasted so good!”

The external stimulus could also be seeing other people enjoying your favorite foods:

“The first plate was a success with the hot veggies and pork roast. However the slice of chicken pizza, although mindfully chosen, was a little off plan. I ate it slowly and was satisfied. Then, everyone decided to go for seconds. I gave into the peer pressure of the event.”

Internal: Internal stimulus included thoughts, body sensations, and emotions arising within the participants that trigger reactions, which in this experiment was eating. Typically, the physiological state of hunger prompts people to eat.

“I may have had about 3-4 pancakes with syrup, but around 3pm, was hungry again, so had a Lean Pocket.”

Besides feeling hungry, thoughts associated with food can also trigger eating. For example, in the quotation below, thoughts of grading or mundane work become the stimuli that prompt the participant to eat chocolate-based foods.
“When I am grading or doing other mundane work I like to eat chocolatey stuff.”

Non-Conscious Mind
Mindful Habit
Participants wrote about routines and habits that are healthy and mindful. For example, this participant speaks about cultivating the healthy habit of starting the day with juice and even though she is in a hurry, she can enjoy the flavors fully.

“Today was a very busy day, but I did manage to start my day with juice. Even though I was in a hurry I managed to really enjoy the flavors of the different fruits and veggies.”

As part of this participant’s morning routine he practices meditation and is finding that the mindful eating habits are being triggered more often than not:

“This morning after meditation, I decided to enjoy myself. But at the same time my mindful eating habits were starting to kick in more times than not.”

Affliction Habit
There were many examples of behaviors based on habits learned in the past. Participants engaged in these behaviors even though they knew they were not good for them.

“I love frozen food. It's a completely irrational thing. I know it's bad for me. I know it's not organic. I know there are lots of additives. I know the nutritional content is marginal, at best. And yet, there's something about it that makes me continue eating it.”

“Normally I have dessert. It's a habit going all the way back to childhood. I think I was always used to seeing my mother having a scoop of ice cream or something.”

Conscious Mind
Spacious Mindset
A spacious mindset refers to a state of mind that is open to exploring possibilities and conscious of old habits. Such a mind state offers more opportunities for mindful choices. The quotations below exemplify a spacious mindset with which the participant is able to come up with novel ways of interrupting old patterns to eat more mindfully.

“A plate full of cut coffee cake and cookies was within my reach. I had many a nibble, torn piece of coffee cake once in a while. Eventually I had to move this away from my reach.”

“At the end of the evening we drank wine by the tree and fire. Katie brought out a tray of cookies. In years past I would have tried one of each—there were six varieties, and maybe have a few repeats of my favorites. This year however, I asked for a knife. I cut the cookies in half. I got the variety and half the calories.”

Narrow Mindset
A narrow mindset is defined by old conditioning and habits that offer a narrow subset of possibilities. A narrow mindset lacks imagination and control and results in automatic responses dictated by old scripts. The old scripts among participants were shaped by family rituals from childhood or shared cultural narratives associated with holidays:

“This holiday (Thanksgiving) is great, its about Family, Food, and Football. Football and beer and snacks. I thought about skipping this ritual, but why have a bad holiday?”

“I had the most mindful first plate. And I would have been really satisfied if I had stopped. Then I broke down a little as old scripts were playing in my head. I was thinking about the memories of eating legs and wings rather than paying attention to my stomach and how full I was.”

“I noticed that I hate to waste food. I think we should cook smaller portions to combat this. The other voice I often hear is to eat all food on my plate.”

“I realize that eating and watching TV at the same time is not mindful, but it’s a Sunday afternoon.”

“Even though thanksgiving is only one day, the holiday feeling lingers. I don't normally eat desert every day but have been because we have leftovers in the fridge but it feels justified because it is holiday season - noticing the cultural narrative we all share about it being ok to eat during holidays.”

Behaviors
Mindful Behaviors: What Is Considered #Mindful
There were many instances in the mindful eating experiment where participants displayed characteristics of mindful eating including intentionally bringing attention to the food or act of eating along with non-reactive states accompanied by more conscious choices. Very often mindful eating was accompanied by slowing down and avoiding multitasking so the participants could fully appreciate the process of eating.

“I now make it a point to actually sit down to enjoy the taste of it.”

“Even though I have been eating more than usual, because of this experiment I am more conscious of
what I am eating, I am slowing down, and avoiding multitasking while eating.”

The third author also noted that an effort to eat mindfully prompted a desire to create mindfulness habits in other areas of life as well:

“By the time the experiment was done, I was already thinking about wanting to get more into mindfulness habits—maybe not through taking pictures, but through meditation, getting into processes for work, etc.”

No doubt mindful eating can play an important role in shifting our other attitudes and behaviors to break out of living on autopilot. It is for this reason, that the mindful raisin eating exercise is one of the first practices introduced in many mindfulness programs including the much-researched Mindfulness-Based Stress Reduction program to help people break out of unhealthy patterns they may be stuck in without their conscious awareness.

Mindless Behavior: What is Considered #MindFail

Mindless behavior or #MindFail, using the language spoken in the online world, generally involved not giving full attention to eating or ignoring body signals when the participant was full to continue eating and give in to old habits and scripts.

“I gotta admit today was a mindfulness fail because I was multitasking as I ate.... I guess I was too excited for the holidays.”

“During football game I had too many organic chips and hummus. Two beers. (This what comes from eating in front of the TV.)”

While I was eating it my husband came home from work and I ended up eating a lot of my plate while standing. Not too mindful huh?

“At the end of the semester the UMASS dining commons has a free meal day for faculty and staff after many of the students left for the holidays. The umass dining system is award winning and something we look forward to. My plan was to stick with proteins and veggies. The first plate was a success with the hot veggies and pork roast. However the slice of chicken pizza, although mindfully chosen, was a little off plan. I ate it slowly and was satisfied. Then, everyone decided to go for seconds. I gave into the peer pressure of the event. This is what I had done at the past so I followed the script. For the second plate I got a small Caesar salad, and then some grilled veggies. Walking away I decided to treat myself with about 6 sweet potato fries. I was looking for the shrimp, but it was gone. Then, I had the cheese raviolis. #mindfail. Pictured are the empty plates from my feast. I guess I should have taken photos before. What missing was the pause”

“The first few bites were delicious, but then my stomach realized that I probably should have stopped at the soup :) So I shared some of my ratatouille with my husband...again :) And then... it was time for dessert! I couldn't let that pass!! But nothing too rich seemed to sound appealing. So I only ordered a small fruit tarlet and only ate the filling, and I completely forgot to take a picture of it :) I admit, this wasn't very mindful, my eyes were bigger than my stomach.”

What was also interesting was that even mindfulness practices could become unmindful. As depicted in the quote below, taking pictures was meant to be a mindfulness practice to create a pause but after a few repetitions, even this activity could be done on autopilot and it required a special attention to ensure that taking pictures wouldn’t become an unmindful activity:

“But I also noticed how easily the mind goes into autopilot. For example, taking pictures at first was a mindful pause but soon became something I did without thinking and had to be conscious of making it a mindful pause.”

Stress

As predicted in our mindful eating theory, stress seemed to trigger automatic responses involving unhealthy coping behaviors and lack of control:

“I think I must have been a little ego depleted, or my will power dissolved after 2 beers and 2 glasses of wine. I tried both pies with whip cream and a half scoop of ice cream. This was too much. I even realized it while eating—but kept on until I finished.”

One of the participants wrote about choosing to not eat mindfully upon receiving bad news:

“We had been out of chips in the house, so I bought a bag of Doritos. The Lean Pockets were my lunch and I decided that I was going to mindfully be mindless and eat as many of the Doritos as I wanted without documentation of all the chips I ate (the flavor was actually pretty horrible).”

Mindfulness Practice

The suggested mindfulness practices for this experiment included photo meditation, journaling, and giving and getting support from the group. Even though the participants varied in the frequency and choice of mindfulness practices in which they engaged during the experiment, they all were impacted in one way or the other by the different practices:
“I am finding that this experiment is giving me more time to think about my relationship with food and get a better sense of what I am eating and how it is making me feel. For example, by limiting myself to a relatively small lunch and only one beer, I felt much more energetic later in the afternoon. I need to remember this feeling when I am making food choices in the future. The tradeoff often is between immediate satisfaction versus a future consequence or feeling.”

“The photo taking became a good habit, there were days when I was great and consistent and days toward the end when I forgot. But it definitely made me mindful of food portions and plate presentation. I tend to do better with smaller plates. I noticed that I crave way more sweets in the winter and I have a goal to find recipes for healthy sweet treats :) I do have to improve on mindful chewing which is something I didn’t even think about in the past. At least now I am aware of the fact that I don’t chew enough :) Also, relaxing and avoiding distractions is something I need to continue to work on. I realized that meal time is a sacred time and the quality of the experience is important to my spirit, mind and body. I am really grateful for this opportunity to become aware at such a time full of tasty bounties :)

“I certainly was not on a low calorie diet yesterday but I found that because I was documenting everything I am eating I did not eat in between like I would have otherwise, like you know take a bite here or there. Instead I drank a lot more water than I would have.”

“Many times, the pause created a self-awareness of the food choices I was making—whether or not I was putting too much on my plate, whether the food I was eating was healthy, whether the food I was eating was nutritionally balanced, etc.”

“I would say it was a success. Compared to last year, I am starting the New Year with no holiday weight added in. In terms of mindfulness I believed I have benefited. Specifically, I think I have gained much more awareness of what I eat and my eating habits. I can’t say they have been radically changed, but rather slowed down and the bad habits lessened. The picture taking originally provided me a pause. Now whether I take a picture or not, I bring attention to what I am going to eat. For these reasons, the mindful experiment was a success.”

Mindfulness Practice and Trait

The experiment was not long enough to study how the mindfulness practices enhance mindfulness as a trait. However, we did note that the effects of the mindfulness practices also impacted other behaviors beyond eating. For example, one participant observed:

“Later that evening I had a girls’ night out with some friends and we went to a Chinese restaurant. It took a while for a waiter to get to us, and then we realized they started tending to another table that had gotten there after us. It was surprising how I noticed that, but didn’t get worked up about it. One of my friends did stand up to talk to the waiter to get their attention. I was surprised at how calm I was. This is new for me because I would have been impatient by then.”

From the above example, we notice a shift in the participant’s response to a situation that would earlier have prompted her to react with impatience. This participant further clarified, “I think the practice of enjoying the meal, the time with the people at the table eventually helped me arrive at this moment.”

Mindfulness Trait

Attentional

The attentional aspect of the mindfulness trait cultivates the ability to be fully present and give full attention to the object of focus in the present moment. Even though mindful eating may not have become a habit yet, participants noted the ability to control their natural tendencies such as eating fast or too much by slowing down and giving their full attention to eating:

“I noticed I started eating my food in a hurry, but then I tried to slow down and enjoy the ingredients of my omelet and the tasty flavor of avocado. I think it worked :)

“I am eating better and enjoying the food more since doing this experiment but also tend to go back to eating on autopilot and need to continuously remind myself to really taste what I am eating.”

Even though I have been eating more than usual because of this experiment I am more conscious of what I am eating, I am slowing down, and avoiding multitasking while eating.”

Non-Evaluative

The non-evaluative aspect of the mindfulness trait involves self-acceptance and non-judgment that helps to weaken old neural connections that form habits (Hölzel et al. 2011; Sharp 2011). Participants were seen extending self acceptance and kindness to themselves:

“I indulged on several things I don't regularly eat so this weekend I decided I was not going to feel guilty...
about it. I can start my usual diet on Monday :) When
we got home, I made myself some chamomile tea again
:)"

Being non-evaluative includes extending kindness
to one self and acknowledging the positive feelings one
experiences upon making mindful choices. These positive
feelings rewire the brain to create new memories of what it
feels like to eat well, which can help create new healthier
habits.

“As others continued to overeat (according to their
comments and not my judgment), I sat there and
focused on how content I felt and how happy that I had
not overeaten. This is a memory of an outcome that I
would like to consider the next time I sit down to a big
meal.”

The experiment was not long enough to see if the
non-evaluative aspect of mindfulness did result in change in
habits over an extended period of time, however, it was
interesting to note participants bring up elements from the
mindful eating theory as part of their experience during the
experiment.

One important finding that we had not included in
our model was personality differences that explained some
of the eating behaviors. While the participants were varying
in their experience with formal mindfulness practices,
which perhaps influenced their mindfulness trait, one other
personality trait that varied among the participants was
novelty seeking. For example,

“Looking at the pictures, they mostly seem drab and
colorless. And, when you’re limited in what foods you
eat, you start to get bored quickly. I think this also
explains why I eat out of the house frequently: food
preparation of the same, habitual foods differs from
how I might prepare at home.”

“I noticed that I don't get tired of my routine, I really
like my fruit plate, I feel satisfied and nourished after I
eat it :)

“Lunch was another salad at work. I never seem to get
tired of this…”

The first quotation can be contrasted with the second and
third in that the first participant appeared to get “bored
easily” with limited food choices, while the other two
participants ate the same food for certain meals daily and
don’t get tired of their routine. This opens up many avenues
for future research that are beyond the scope of the current
study.

Limitations and Future Research

This is an exploratory study to examine what
might be the benefits of combining community support,
food photography and journaling to promote mindful eating
during the holiday season. We propose a theory of mindful
eating and find supporting observations for the constructs
comprising the theory. However, we do not know the
mindfulness levels of people entering the study and cannot
separate the mindful eating behaviors resulting from the
conditions in the study and mindfulness as a trait cultivated
by the participants before coming to the study. We do see
varying degrees of mindfulness among the participants.
Future studies can control for the varying degrees of
mindfulness as a trait among participants to isolate the
benefits that community support, food photography, and
journaling offer with respect to mindful eating.

The participants also spoke about the benefits of
the mindfulness practices suggested in this experiment but
found the technology cumbersome because they were
having to do multiple tasks in different places to create a
photo-journal in the community site. Marketers might be
interested to know that there is a need for an app that allows
for photo-journaling and community support all in one
place. Similar apps such as the Insight Timer, which are not
for mindful eating but practicing mindfulness, are indeed
becoming popular and it might be timely to come up with a
mindful eating app that includes the three facilities we
studied in this experiment – photo meditation, journaling,
and community support.

Overall thoughts

The last posts from the two participants who made
it all the way through the experiment (one author and one
non-author) viewed the experience as positive.

“I would say it was a success. Compared to last year, I am
starting the New Year with no holiday weight added in. In
terms of mindfulness I believed I have benefited.
Specifically, I think I have gained much more awareness of
what I eat and my eating habits. I can’t say they have been
radically changed, but rather slowed down and the bad
habits lessened. The picture taking originally provided
me a pause. Now whether I take a picture or not, I bring
attention to what I am going to eat.”

“My learnings? the photo taking became a good habit,
there were days when I was great and consistent and
days toward the end when I forgot. But it definitely
made me mindful of food portions and plate
presentation. I tend to do better with smaller plates. I
noticed that I crave way more sweets in the winter and
I have a goal to find recipes for healthy sweet treats :) I
do have to improve on mindful chewing which is
something I didn’t even think about in the past. At least
now I am aware of the fact that I don't chew enough :) Also,
relaxing and avoiding distractions is something I
need to continue to work on. I realized that meal time is a sacred time and the quality of the experience is important to my spirit, mind and body. I am really grateful for this opportunity to become aware at such a time full of tasty bounties :)

For the participants who did not make it through, losing focus through competing activities was a reason. Yet through adaptations, they were able to behave in mindful ways.

As you can see, I wasn't a very mindful contributor to the experiment. I lost focus throughout the holidays, which are stressful for me because they include a lot of travel and visiting and just generally being away from the structure of my academic life/routine. I found myself many times right after finishing a meal, thinking, "I forgot to record that." Overall, I don't think I strayed very far from my usual habits, with a few exceptions on the big days when I was with family. I was simultaneously participating in a wellness program challenge through my employer, which challenged us to "maintain, don't gain," between Thanksgiving and Christmas. That challenge required a weekly weight recording, and I did not gain any weight during that time. While this wasn't necessarily a goal of the mindful eating study, I find it interesting (and somewhat reassuring, perhaps falsely) that I tend to regulate my intake automatically (eat a little too much in one sitting, maybe only have two meals that day instead of three, for example). That makes me think of what I could do if I did apply mindfulness over a longer period of time and maintain focus.

For others technical problems and the hassle and time of journaling stopped the practice because it was taking them away from mindfulness.

Along with the coding problems and my Instagram feed being overrun with pictures, I realized it was taking me a long time to describe the food. I started to look at what other people in the experiment were saying about food and I realized that I was going too heavily into detail about the food. I wasn’t sure if I was being overly robust in wanting to keep my end of the “bargain” with producing data, or if I just had a substantial relationship with food—as though journaling demonstrated whatever food was doing in my life. I stopped the journaling around that Day 9. The Instagraming and written journaling I was doing was far too time-consuming to feel mindful about food. In fact, it started to feel like any mindful benefits were starting to invert. I thought mindfulness practice and the things I would find out about how I experience food and being present-moment, etc. was going to change. But the more I needed to say, the less I was able to get other things done that needed to be done in my daily routine.

Another participating author noted, “What I learned about myself:

1) I noticed the impulse to reach out and eat the object of delight such as monkey bread and didn't want to even wait to take a picture

2) When i eat slowly and mindfully, I enjoy the food more and eat less

3) Mindful gluttony - I certainly was not on a low calorie diet yesterday but I found that because I was documenting everything I am eating I did not eat in between like I would have otherwise, like you know take a bite here or there. Instead I drank a lot more water than i would have.

For me over all I know that I ate much more mindfully and knowing that I would be sharing the pictures and the accountability factor perhaps helped. But I also noticed how easily the mind goes into autopilot. For example, taking pictures at first was a mindful pause but soon became something I did without thinking and had to be conscious of making it a mindful pause. I also learned about my cravings for sugar and the cultural sanction offered by holidays to give in to my cravings. Now planning to go on further contemplation of my sugar cravings by not eating any chocolates and deserts for a month to explore this further within myself.”

References


Analysis of Electronic Health Record Implementation and Usage in Texas Acute Care Hospitals
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E. Deanne Brocato, Utah State University

Abstract

Despite a consensus that the use of health information technology should lead to more efficient, safer, and higher-quality care, there are no reliable estimates of the prevalence of adoption and physician usage of electronic health records (EHRs). Data from the American Hospital Association was examined for the presence of specific electronic-recorded functionalities. We also examined the differences in implementation and usage of EHRs to specific hospital characteristics.

Introduction

Electronic health records (EHRs) have been proposed as a sustainable solution for improving quality of medical care. EHRs provide a longitudinal electronic record of patient encounters and patient health information, including patient demographics, progress notes, problems, medications, vital signs, medical history, immunizations, laboratory data and radiology reports (Medicine 2003). Robust EHRs automate and streamline the clinician’s workflow by allowing order entry for medications, laboratory tests, and diagnostic procedures. The highest functioning EHRs provide clinicians with real-time evidence-based decision support and the potential for aggregating and reporting quality and outcome measures (Society 2006).

Promoting the adoption and use of health information technology (HIT) is a major priority for U.S. policy makers as a means of managing health care costs and improving quality. The American Recovery and Reinvestment Act (ARRA) authorized incentive payments through Medicare and Medicaid to providers that implement certified electronic health records and demonstrate their “meaningful use.” The U. S. Department of Health and Human Services (HHS) recently finalized the meaningful-use criteria for the first two years of the three-stage incentive program (Services. 2010). These criteria are intended to ensure that doctors and hospitals will use health IT to improve the quality, efficiency, safety, and other aspects of care (Chaudhry, Wang et al. 2006; CM, EG et al. 2010).

Despite the appeal of EHRs, U.S. hospitals have been slow to implement and physicians appear to be reluctant to utilize EHRs. Jaana et. al (2012) reported that 2.7% of acute care hospitals in the United States have a “comprehensive” electronic records system implemented in all clinical units, and 9.2% have a “basic” system present in at least one clinical unit. In contrast, other countries, such as Australia and the United Kingdom, are nearing universal adoptions of EHRs (Simon, Jenter et al. 2008). Available data suggest that in the U.S. the larger, nonprofit, urban hospitals have made more headway than critical-access hospitals, small and medium-size hospitals, and public and rural hospitals (Ashish, DesRoches et al. 2010). Further, and most importantly, a 2003 national survey from the Commonwealth fund suggests that only 27 percent of physicians are utilizing the available EHRs (Audet 2004).

While literature recognizes the potential lifesaving benefits of EHR in healthcare, the majority of EHR literature available takes a management perspective and concentrates mainly on adoption, implementation, acceptance and barriers (Overhage, Suico et al. 2001; Ash and Bates 2004; Miller and Sim 2004; Chiang, Boland et al. 2008; Withrow 2008; Zandieh, Yoon-Flannery et al. 2008). Meanwhile, research that examines the actual usage of EHRs by physicians in healthcare systems is sparse. Further, extant literature tends to focus on the EHR system as a whole entity instead of as a composite system that encompasses varying functions (Simon, McCarthy et al. 2008).

The purpose of this study is to examine the availability of electronic health record systems and their usage by physicians in Texas acute care hospitals. Additionally, we advance current research by analyzing hospital EHRs that have been categorized into four functional groups classified by the American Hospital Association:

- **Patient information data**: medications, orders, and clinical notes
- **Results management**: results from laboratory tests, radiology studies, and other tests
- **Order entry**: orders for laboratory tests radiology studies and other tests
- **Decision support**: knowledge sources, drug alerts, reminders, and clinical guidelines/pathways

The breaking down of EHR systems into these four functional categories takes previous research one step further by allowing separate analysis on the differing
functions of an EHR system. This knowledge will provide a better understanding of what stage hospitals are in with regard to their adoption of EHRs, which functions of EHRs are most often implemented, and what percentage of physicians are utilizing them. Further, dissecting the data by hospital characteristics (size, teaching status, and ownership) provides insight into the disparity that currently exists between hospitals and gives an improved view of the direction future policies and incentives should take.

Methods
This study is an exploratory study that envelops the implementation and physician usage of electronic health records. Along with descriptive statistics, analysis of variance is performed to determine if any differences exist between hospitals of varying characteristics.

Sample
The American Hospital Association (AHA), funded by the National Coordinator for Health Information Technology, administers a supplement to its annual survey of all acute care hospitals, in the state of Texas, to assess the adoption of electronic health records and their use in each facility. A paper copy of the survey was sent to each hospital’s chief executive officer, who asked the person most knowledgeable about the hospital’s health IT efforts to complete the survey in its entirety. The health IT expert was also responsible for the collection of physician usage data from the hospital’s electronic health record system that logs usage of EHRs broken down by functional category.

The AHA EHR supplement was sent to 500 Texas acute care hospitals. The data from the AHA was analyzed for missing records and this resulted in a final sample of 374 Texas acute care hospitals.

Descriptive Statistics
Classification trees found that 27% of the variation occurring in the data can be attributed to hospitals of varying size. Through partitioning using JMP 7.0 (visual discovery software from SAS) hospitals were grouped into small, medium, and large size based on general and specialty beds available. The groups were defined as small being all hospitals with less than 100 beds, medium consisting of hospitals with between 100 and 300 beds, and large hospitals categorized as having more than 300 beds. This classification coincides with current nursing literature (Henderson 1965; General 1988; Khuspe 2004; Ward, Diekema et al. 2005).

Table 1 displays the demographic characteristics of hospitals; including facility ownership status, affiliation types, and size.

Survey Instrument
The AHA supplemental survey that was sent to each hospital consisted of three main questions. The first question addressed if the hospital had an EHR. Possible responses were: Yes, fully implemented; Yes, partially implemented; and No. The second question was for respondents that answered yes (partially or fully) to the EHR question. This question pertained to if the EHR that was implemented consisted of specific applications (sorted into the four functional categories described earlier.) Possible responses available to choose from where: Yes, fully implemented; Yes, partially implemented; or No.

Finally, the percentage of treating physicians in each hospital was noted for: 1) Routinely ordering medication electronically and 2) Routinely ordering laboratory or other tests electronically. Response options were: 0%, 1-24%, 25-49%, 50-74%, and 75-100%.

Results
Preliminary analysis of data found that over half of Texas hospitals do not have an electronic health record available for use, one third of the hospitals have only partially implemented EHRs, and only ten percent of the hospitals have a fully implemented EHR (table 2).

Evaluation of the four functions of EHR systems revealed that results management and order entry are the two most often fully implemented components. These two functions have been found to be most beneficial to physicians because of their ability to aid in the capacity to have quick access of past and new test results that support interfaces from labs and permits efficient data entry of all orders and documentation by authorized clinicians (table 2).

Additionally, while patient-level data is not fully implemented often, (15.5%) when combined with partially implemented (23.3%), it totals 38.8% implementation. This is higher than the component of decision support. As hospitals realize the benefit of electronic patient record data and its ability to facilitate a more efficient flow while assisting administrative and physician duties, it is likely that we will see an increase in the implementation of this EHR component. This is an interesting area for future research and is discussed further in said section.

Most importantly, when analyzing EHRs, physician usage is extremely valuable information and often a noted limitation in current literature (Liner, Ma et al. 2007; Kazley and Ozcan 2008). Table 3 presents a breakdown of percentage of time physicians reported actually utilizing the EHR system for electronic ordering of medications and lab/other tests among hospitals with EHRs implemented. Astonishingly, according to our data, over 80% of doctors never use these functions and very few utilize them often.

Analysis of variance was performed on the data to establish if a statistically significant difference exists in mean availability of EHRs and physician usage of EHRs.
between hospitals of varying characteristics – such as size, ownership, and teaching status. Assumptions of ANOVA were tested using the Shapiro-Wilk test and results showed that we could not reject normality. A modified Levine p-value of .95 along with plots of residuals gives no reason to doubt equal variance or independence.

Results showed that a difference does exist with regard to size, for all four EHR functions (table 4). Further, post-hoc tests revealed the difference lies between small and large hospitals. This makes intuitive sense. Larger hospitals have more resources at their disposal than small hospitals.

Hospital teaching status was shown to also have an impact on two of the EHR functions and both electronic medication ordering/lab tests (table 5). The difference seen between teaching and non-teaching hospitals follows the same reasoning as with size; teaching hospitals have more resources to adopt EHRs and physicians in a teaching environment are more likely to be open to new technologies.

Finally, hospital ownership (public, private, government) was analyzed. Here we see a statistically significant difference between the majorities of EHR functions, but no difference emerges with regard to electronic ordering of medication/lab tests (table 6).

Conclusions

In Texas in 2007, only 9.9% of hospitals reported having a fully implemented electronic health record system. With policies and programs set in place by the government (American Recovery and Reinvestment Act of 2009 and Health Information Technology for Economic and Clinical Health Act), these numbers may have increased. However, current research suggests otherwise (Menachemi, Ford et al. 2007; Simon, Jenter et al. 2008; Jha, DesRoches et al. 2009).

There are many barriers to implementation of EHR systems (cost, acceptance, technology proficiency), but change is inevitable. It is an extremely important topic in today’s society and continues to be one surrounded by much controversy. This study brings to light the slow adoption of EHRs and more importantly the reluctance of physicians to utilize the available systems.

While having an EHR available is extremely important, if physicians are not utilizing these tools the potential benefits never come to fruition. There are several reasons why hospitals may not invest in EHRs and one of the top reasons is the substantial financial cost that generally sees negative return on investment (Thompson and Brailer 2004). This brings up the question, “Is EHR implementation truly to blame for the negative return on investment or is the lack of physician usage of the EHR system the underlying principle?”

Future research will examine which functionalities of EHRs result in the most improvement in clinical outcomes and how physician usage of EHRs affects patient safety and quality of care. Further, a time series analysis is planned for the years 2006-2010 to investigate when a positive gain is realized for EHR adopters and identify any lag time.

Limitations

This study does have limitations. First and foremost, this research was conducted on a single state, Texas, which is not necessarily representative of the population of hospitals in the entire United States. However, the authors chose the state of Texas as it is one of the largest states and encompasses many distinctly different demographics in varying metropolitan and rural areas.

Further, there is the possibility that hospitals that have better information technology systems, are better managed, or have more resources, are likely to have reported EHR data more accurately.

Finally, the counting of EHRs and their components has limitations. This approach does not account for length of time EHR was in place. This could have an impact on the percentage of physician utilization; as using new technology generally encompasses a learning period.

References


Medicine, I. o. (2003). Key capabilities of an electronic health record system.


### Table 1 – Hospital Demographics

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### Table 2 – Hospital EHR Availability

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<td>54</td>
<td>14.4</td>
</tr>
<tr>
<td>Fully Implemented</td>
<td>91</td>
<td>24.3</td>
</tr>
<tr>
<td>Decision Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Available</td>
<td>254</td>
<td>67.9</td>
</tr>
<tr>
<td>Partially Implemented</td>
<td>76</td>
<td>20.3</td>
</tr>
<tr>
<td>Fully Implemented</td>
<td>44</td>
<td>11.8</td>
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Table 3 – Physician Use of EHRs

<table>
<thead>
<tr>
<th>Electronic Medication Orders</th>
<th>% of Use</th>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>322</td>
<td>86.1</td>
</tr>
<tr>
<td>1-24</td>
<td>1</td>
<td>24</td>
<td>6.4</td>
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<tr>
<td>25-49</td>
<td>25</td>
<td>4</td>
<td>1.1</td>
</tr>
<tr>
<td>50-74</td>
<td>50</td>
<td>7</td>
<td>1.9</td>
</tr>
<tr>
<td>75-100</td>
<td>75</td>
<td>17</td>
<td>4.5</td>
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</table>

<table>
<thead>
<tr>
<th>Electronic Ordering of Lab/Tests</th>
<th>% of Use</th>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>300</td>
<td>80.2</td>
</tr>
<tr>
<td>1-24</td>
<td>1</td>
<td>30</td>
<td>8.0</td>
</tr>
<tr>
<td>25-49</td>
<td>25</td>
<td>5</td>
<td>1.3</td>
</tr>
<tr>
<td>50-74</td>
<td>50</td>
<td>9</td>
<td>2.4</td>
</tr>
<tr>
<td>75-100</td>
<td>75</td>
<td>30</td>
<td>8.0</td>
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</table>

Table 4 – Hospital Size as Factor

<table>
<thead>
<tr>
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<th>Sig</th>
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<tr>
<td>EHR</td>
<td>4.878</td>
<td>0.028*</td>
</tr>
<tr>
<td>Patient Data</td>
<td>6.595</td>
<td>0.011*</td>
</tr>
<tr>
<td>Results Mgmt.</td>
<td>3.863</td>
<td>0.050*</td>
</tr>
<tr>
<td>Order Entry</td>
<td>3.368</td>
<td>0.067</td>
</tr>
<tr>
<td>Decision Support</td>
<td>1.609</td>
<td>0.205</td>
</tr>
<tr>
<td>Medication</td>
<td>3.963</td>
<td>0.047*</td>
</tr>
<tr>
<td>Labs/Other Tests</td>
<td>5.292</td>
<td>0.022*</td>
</tr>
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</table>

Table 5 – Hospital Teaching Status

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<tr>
<td>EHR</td>
<td>15.749</td>
<td>0.000*</td>
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<tr>
<td>Patient Data</td>
<td>20.410</td>
<td>0.000*</td>
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<tr>
<td>Results Mgmt.</td>
<td>18.80</td>
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<tr>
<td>Order Entry</td>
<td>11.013</td>
<td>0.000*</td>
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<tr>
<td>Decision Support</td>
<td>16.546</td>
<td>0.000*</td>
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<td>Medication</td>
<td>2.6690</td>
<td>0.071</td>
</tr>
<tr>
<td>Labs/Other Tests</td>
<td>0.2190</td>
<td>0.804</td>
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</table>

Table 6 – Hospital by Ownership

<table>
<thead>
<tr>
<th></th>
<th>F</th>
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<tbody>
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<td>EHR</td>
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<tr>
<td>Patient Data</td>
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<tr>
<td>Results Mgmt.</td>
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<td>0.004*</td>
</tr>
<tr>
<td>Order Entry</td>
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<tr>
<td>Decision Support</td>
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<td>0.004*</td>
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<tr>
<td>Medication</td>
<td>0.336</td>
<td>0.715</td>
</tr>
<tr>
<td>Labs/Other Tests</td>
<td>0.254</td>
<td>0.776</td>
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</table>
Outsourcing of Drug Development: A Transaction Cost Perspective
Isaac Wanasika, University of Northern Colorado

Abstract

The outsourcing of pharmaceutical activities from the United States and Western Europe to Asian countries has continued to increase in recent years. This transformation has resulted in strategic realignment of big pharma as they seek new opportunities in emerging and developing markets. While this trend seems to have evolved organically as a business imperative, there have been mixed reactions from scholars on the merits and sustained viability of this business model. Our focus is on the drug development activity, previously considered to be a key component of the core competence within the pharmaceutical industry. The purpose of the study is to identify push and pull factors leading to outsourcing of drug development activities, develop a transaction cost theoretic perspective for this framework and highlight emerging issues.

Issues affecting outsourcing in the pharmaceutical industry are well-documented. However, recent developments in the pharmaceutical industry involving the outsourcing of drug development processes have raised a number of questions regarding sustained viability of the big pharma business model as we know it. Given that more pharmaceutical firms are restructuring their businesses to adapt this framework, there is need to understand how value is captured and sustained. Drug development phase used to be considered as a critical part of big pharma’s core competence. Given the new dynamics, we seek to explore the redefined core competence of pharmaceutical firms. Thirdly, we focus on the sustainability of the new framework.

The research questions are explored from a transaction cost economics (TCE) perspective. This approach is relevant because TCE perceives the organization as a “nexus of contracts” where parties to a transaction have a long term strategic view of the organization and contracts are deemed incomplete. Following Ronald Coase’s (1937) seminal work on TCE, the theory has been extensively extended by Williamson (1985) and others. Boerner and Macher (2003) and David and Han (2004) provide a detailed analysis of refinements and extensions to the theory by other scholars. Coase sought to understand why it was sometimes more efficient to use the firm rather than the market. Coase demonstrated fundamental flaws with the economic theory of price mechanism: there was a cost to using the price mechanism, transaction costs. Arrow (1969) defines transaction costs as the costs of running the economic system. If the organization is an engine, then friction is the transaction cost. Williamson (1985) uses the lens of governance modes, associated with a variety of contracting forms, to explicate the TCE problem. Where transactions can be efficiently supported by general-purpose assets, identity of the parties is irrelevant with little need for protective governance structures. High-powered market incentives are adequate. Such conditions are amenable to contract law. The second governance structure is the hybrid mode that has autonomous parties but a given level of dependency. Such transactions are supported by neoclassical contract that is ‘elastic’ and offers a threshold for renegotiation of maladaptations and misalignments. Hierarchical structures (internal organization) are suitable where there is significant exposure and safeguards against exposure cannot be effectively implemented. This is the contract law of forbearance. The relevance of TCE arises because of market failure and organizational failure as a form of efficient management. Due to complexity, bounded rationality, uncertainty, asymmetric information and opportunism, efficient markets are rarely achieved. Firms will assume a long term strategic view and pursue a pragmatic path of efficient contracting with the ultimate objective of minimizing transaction costs. Consequently, the market may not necessarily reflect firm value because of the incompleteness and elasticity of the firm’s contractual obligations with third parties. This justifies the long term strategic perspective nature of the enterprise and the need to create a balance with short term performance.

The TCE perspective lends itself to understanding the strategic alignments because TCE acknowledges realistic market conditions such as market failure. The firm’s boundaries are also contingent upon situating activities within or outside the firm, based on specified parameters. Parties to transactions are deemed to be pragmatic and strategic, bearing in mind the long term implications of contractual arrangements, asymmetric information across the industry, the need to secure safeguards and credible commitments in transactions and above all, the human conditions of opportunism and bounded rationality.

References available upon request.
An Evaluation of Enterprise Risk Management in Healthcare Institutions

Wendy Ritz, Fayetteville State University
M. Beth Hogan, Fayetteville State University
Tamuchin McCreless, Fayetteville State University

Abstract

Healthcare organizations require proactive internal controls to manage organizational risk, even with well-developed health and safety policies. ‘Enterprise risk management’ (ERM), requires the identification of events that put the institution at risk. Management can then create action plans to reduce organizational impact. Understanding what events are relevant enough to be displayed on the healthcare institution’s website or included in an ERM policy is the focus of this study.

The widespread occurrence of bedbug infestation within healthcare facilities, while distasteful, affords a unique opportunity to review ERM in healthcare organizations. Every healthcare facility is at risk of such an infestation that can result in costly litigation and negative publicity. This research seeks to establish that the availability of salient information influences the enterprise risk management response and that the board of director’s appetite for risk and the availability of salient information together moderate risk response. Preliminary results support these assertions.

Introduction

Healthcare providers have viewed risk management as a set of tasks meant to protect or prevent threats of financial loss as a result of accident, injury, or medical malpractice (Kraman & Hamm, 1999). Being compliant with the Sarbanes-Oxley Act (2002) meant that healthcare providers were assessing increased liabilities associated with operations. Increased liabilities associated with the operations of an institution include the risk of being audited or investigated for regulatory violations. More recently, rising litigation and insurance costs have been the driving force behind healthcare providers (for-profit and not-for-profit) embracing a process that focuses on identifying, assessing, and managing portfolio of risks across the entire organization. This research investigates the salient factors influencing enterprise risk management (ERM) for a healthcare institution. The authors suggest that the availability of information or availability heuristics positively influences the choices that the board of directors makes in determining which risks are managed and which risks are ignored. This paper quantifies and considers the board of directors’ appetite for risk and the inclusion of ERM risk responses.

Background

The availability heuristics’ stream of psychology literature focuses on decision making and has found that judgments of risk are based on the availability of information and shaped based on past experiences (Tversky & Kahneman, 1973, 1974). When regarding availability heuristics, the phrase “twice bitten, once shy” seems fitting. The degree of ease with which one can recollect an event has been found to positively influence the individual’s perception that the event will occur again (Tversky & Kahneman, 1974). Media attention can distort the public’s perception of the frequency of risk events; for example the movie Jaws (Spielberg, 1975) influenced the public’s perceived frequency of the risk of shark attacks (Lichtenstein, Fischhoff, Layman, & Combs, 1978; Pachur, Hertwig, & Steinmann, 2012). Previous literature states that the effects of availability heuristics influence risk judgments for, “less important information processing tasks and for simplifying complex tasks” (Folkes, 1988, p. 22). This research adds to the granularity of this body of literature and emphasizes the power of availability heuristics as an influencer of a risk judgment in a healthcare institution’s ERM process. It is well documented in management literature that the practice of assigning the process of ERM falls to the accounting and finance departments with little input from the other functional areas (Blaskovich & Taylor, 2011; Cornett, 2006; Lazarus, 2011). The exclusion of other functional areas often restricts the availability of information. This biases the perception of risk events towards those predominantly associated with direct financial losses known to have been experienced by healthcare institutions. For example, a view of one healthcare institution website, the ERM page, promotes patient safety and care as they relate to a goal of “protecting financial resources” through the reduction of the number, severity, and cost of losses of events” as viewed on http://risk.uclahealth.org/.

Other healthcare institutions have incorporated reputation as an asset and consider adverse media attention as a risk and have established levels of remediation (Tolbert MD, 1998). Consideration of the institution’s reputation as an asset seems to indicate a more comprehensive approach to ERM as compared to an accounting and finance department authored approach. “A healthcare institution’s reputation is a vital, fragile asset that rests on its
stakeholders’ perceptions of the institution’s quality of patient care and the quality of its stewardship over the resources entrusted to it” (Giniat & Saporito, 2007). Institutions that have already experienced events such that the reputation of the facility suffered are more inclined to value reputation as an asset. As such, the purpose of our research is to determine if the availability of information or past experience lead to the presence of risk responses on enterprise risk management policies.

Hypotheses

H₁ Availability of salient information has a positive effect on the presence of an ERM risk response

H₂ The board of directors’ appetite for risk positively moderates the relationship between availability of salient information and an ERM risk response.

These hypotheses are represented in the model below:

![Figure 1](image)

The venue with which this research question will be answered is infestation – specifically that of bed bugs. Bed bug infestation was chosen for two reasons, the first reason is that bedbugs do not discriminate; therefore every institution is at risk of an infestation. A bed bug infestation is not a reflection on the quality of patient care or the administration of an institution. The occurrence of a bed bug infestation does have litigious implications and would be a major source of embarrassment for the institution. Facilities that have noted reputation as an asset and have an infestation policy or list infestation as part of the ERM process most likely have had an occurrence. Confirmation of a bedbug infestation by area can be tracked through the United States Centers for Disease Control and Prevention as well as reports from local exterminators. The second reason for choosing bed bug infestation is because healthcare facilities are not mandated by law to shut down or report pest infestations. A required public venue for reporting infestations might serve to decrease the public’s perception of repulsiveness of the occurrence. Outcomes of a mandated reporting requirement for healthcare institutions may include adverse public opinion of the cleanliness of the institution and/or an increase the occurrence of litigious activity.

As of 2013, twenty-two states have adopted legislature addressing bed bug infestation for selective properties. For example, legislature exists for rail cars in Illinois; rental properties in the states of Arizona, California, Florida, and Nebraska; migrant labor camps in Iowa, Nevada, and Pennsylvania; and institutional facilities in Michigan, Minnesota, Nebraska, and Wisconsin (as viewed on September 21, 2013: http://www.ncsl.org/issues-research/env-res/state-bedbug-laws.aspx). In general, the legislation for institutions in the four previously mentioned states requires new facilities to be constructed and equipped to prevent bed bug and pest infestations.

In recent years, the hospitality and public housing industries have been a hotbed of litigation as a result of bed bug attacks. In July 2005, Leslie Fox stayed at a Catskills, New York resort. She allegedly suffered over 500 bed bug bites during her stay. She sued the hotel for $20 million, claiming that her “her body and mind were scarred” because of the bites which she never felt (Wenk, 2007). In 2003, Reuejo Ventura claimed that he was mauled by bed bugs while staying at the New York City’s Helmsley Park Lane Hotel. This case settled a year later for $150,000.00 (Wenk, 2007). November 2012 as reported on www.infectioncontroltoday, pest control company, Orkin LLC and the Association for Healthcare Environment revealed that bed bugs and ants top the list of healthcare facility concerns (Harrison & Lawrence, 2009).

Research Methods

The data collection method used for this research involves downloading ERM policies from websites of healthcare institutions from twenty metropolitan areas. The selection of the twenty metropolitan areas is based upon America’s ten most infested cities as reported by a national exterminator, Terminix; as well as ten cities that remained unrated for bedbug infestation by Terminix (Alter, 2013). ERM policies from two, randomly selected healthcare institutions from each city will be evaluated for the occurrence of risk responses that are indications of infestation and reputation. Identifying phrases associated with infestations is relatively simple albeit identifying a concern for reputation is more complex. The expected outcome is that the ERM for healthcare institutions located in the Top 10 cities will have a risk response for infestations in the ERM. The risk response may include a concern for reputation and/or financial loss.

A review of the literature confirms that the variable reputation is a multi-dimensional construct. Davies, Chunk Da Silva, & Roper (2004) developed a corporate reputation scale for employees and customers based on forty-nine elements converging on seven dimensions of corporate personality. The seven dimensions
of corporate personality include agreeableness, enterprise, competence, chic, ruthlessness, informality, and machismo. A review of the ERM policies will include key words and phrases associated with existing corporate reputation scales (Davies, Chun, Da Silva, & Roper, 2004; Walsh & Beatty, 2007; Whelan & Davies, 2007). For example, the frequency with which the phrase ‘quality patient care’ appears may indicate concern which is an element of agreeableness. The frequency in which phrases associated with ‘the organization’s ability to earn, raise, or access capital’ appears may indicate selfish, inward-looking which are considered elements of ruthlessness. ERM documents that reference ‘adverse media attention’ will also qualify as a concern towards the reputation of the institution.

ERM documents that reference a financial loss risk response may do so by referencing interruptions of service such as the need to reschedule procedures or the shutting down of sections of the facility. The norm in risk responses would be statements or phrases referencing minimizing financial loss to the organization. Financial loss responses for a healthcare institution include minimizing interruptions in service and preserving the financial integrity of the organization. Infestations are prone to cause interruptions of service or nuisances through mediation for healthcare facilities.

It is the appetite for risk or the amount of risk the board of directors is willing to accept versus the expected gains that determines the inclusion of a risk response to infestations on an institution’s ERM. Board of directors appetite for risk or risk prioritization will be assessed using the institution’s credit rating (Ai, Brockett, Cooper, & Golden, 2012). A credit rating is an indication of how the institution manages debt. The more comfortable the institution is with a low credit rating the more precarious the institution is with assets hence a greater appetite or tolerance for risk. The creation of ERM is dependent on the institution’s risk culture and strategic goals (Snell, 2010).

Data Collection

The collection of data occurs in three phases. The first phase involves the collection and confirmation the availability of information regarding bed bug infestation in two groups. These groups will be referenced as Top 10 and Unrated. The Top 10 group references the cities in Terminix Top 10 most infested cities listing. The cities in the Unrated group have not appeared on a Terminix Bed Bug infestation list as follows:

<table>
<thead>
<tr>
<th>Terminix Top 10</th>
<th>Terminix Unrated Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Philadelphia, PA</td>
<td>12. Lauderdale, FL</td>
</tr>
<tr>
<td>3. Detroit, MI</td>
<td>13. Tampa, FL</td>
</tr>
<tr>
<td>5. Columbus, Ohio</td>
<td>15. Salt Lake City, UT</td>
</tr>
<tr>
<td>7. Dallas/Ft. Worth, TX</td>
<td>17. Oklahoma City, OK</td>
</tr>
<tr>
<td>8. Chicago, IL</td>
<td>18. St. Paul/Minneapolis, MN</td>
</tr>
<tr>
<td>9. Houston, TX</td>
<td>19. Tucson, AZ</td>
</tr>
</tbody>
</table>

Public media searches were done by queries on the Internet for the city and the term bed bug. The information found was in the form of print articles and/or news broadcasts. All media messages were downloaded into the research data base. A comparison of the two groups (Top 10 and Unrated) will be performed to evaluate the differences in frequency or availability heuristics.

The second phase of data collection includes the investigation of the randomly selected health care facilities in the corresponding cities found in the two Groups. Three facilities in each city were chosen as a precaution against a limitation of information, pending acquisitions that involve two of the chosen facilities, or websites that may be down for repair. The data collection for each of these facilities includes: identifying an individual responsible for managing the risk policy or facility care quality; locating a risk management or quality of care policy. These policies report the institutions’ concern for identified areas of risk and patient safety and satisfaction. These policies may or may not be referenced as an ERM policy although they function as such. These policies are downloaded with the internet link noted. Some of these policies are parsed into multiple webpages, yet for the purposes of this research these multiple pages are saved into one document. These documents will then be analyzed using Atlas.ti, a qualitative data analysis software program. An additional search for bed bug documents will be performed on each health care facility website. The occurrence of bed bug publications on the websites will be noted and downloaded for evaluation. The presence of a bed bug document on the facilities website may be a more expeditious way to broadcast the risk.

The final phase involves obtaining the credit rating for each facility. The credit rating is treated as a proxy for risk appetite of the board of directors.

Qualitative Analysis - Interrater Reliability

The risk policies and bed bug documents will be coded and segregated into the key themes of infestation, disruptions of operations as a result of infestations, and concern for facility reputation. After the documents have been entered into the qualitative software program, three judges will work independently to code the documents for
the presence of main themes. Interrater reliability will be assessed using the established procedure of Rust and Cooil (1994).

Preliminary Results

Information on bed bug infested cities is inconsistent, in terms of reach and distribution of the message. Some state and county health departments have publicized protocol for identifying and combating bed bugs. Travel sites and local blogs have propagated cautionary notes and warnings for cities infested with bed bugs. By far, the most publically disseminated source of bed bug information is that of the Terminix publication of the Top 10 Most Infested Cities. During the data collection process the other information was also cataloged to confirm the level of information heuristics. Preliminary findings show that the Unrated group of cities also have travel sites and visitor blogs touting bed bug experiences in various hotels. However, the impact to the hospitality industry in the Unrated group, if any, does not seem to have overflowed into the health care industry.

The preliminary findings also seem to indicate that, within the Top 10 group, the health care institutions with the higher credit rating, hence, lower risk appetite include information regarding bed bug infestation. The bed bug information will appear in their ERM policy, corporate compliance and safety policy, or in a separate published document available on the website.

Discussion

The purpose of our research is to determine if the availability of information or past experience influence risk responses to ERM. Of note, ERM is a relatively new tool within healthcare institutions. This research contributes to practice as it highlights the fact that most healthcare facilities are more reactive as opposed to proactive in their approach to managing risk. The premise of ERM is to be proactive in planning, assessing, and responding to potential consequences (Aven, 2013).

This research also contributes to the conversation of healthcare ERM and explores the decisions that are made regarding which risk consequences are managed and which risk consequences are absorbed. In addition, this research contributes to the ERM body of literature, emphasizing the power of availability heuristics as an influencer of a risk judgment in a healthcare institution’s ERM process. Finally, it raises intriguing questions about how healthcare organizations conceptualize the risk of bedbug infestation

References


College Students’ Perceptions of CSR Programs in the United States and Puerto Rico
Mari Luz Zapata-Ramos, University of Puerto Rico
Yeonsoo Kim, Weber State University

Abstract
Corporate Social Responsibility (CSR) programs are being implemented by many companies in the United States. Puerto Rico, a U.S. territory, is also exposed to those CSR messages created for U.S. audiences. For example, multinational companies found in P.R. such as Jetblue, Procter and Gamble, SCJohnson, etc. make their CSR efforts known to P.R. audiences through their websites and cable television commercials. Not only that, but companies within the island have also created few of their own CSR programs especially targeted toward Puerto Ricans, such as those of Subway Restaurants (Subway Honduras, 2013).

U.S. consumers nowadays expect companies to not only sell them the goods and services at a price and quality that they want, but they also expect companies to help their communities. This has caused CSR efforts to continually grow. However, in Puerto Rico, the trend seems to be adopted at a slower rate. Public relations practitioners within the island recognize the importance of CSR programs (Robles, 2013), however; not many programs are well-known. A qualitative study with PR media stakeholders demonstrated that not many people have heard the term “corporate social responsibility” but could decipher what it meant correctly. It also showed that P.R. stakeholders are not aware of what CSR practices are being conducted by companies within the island – this being due to a lack of practice or a lack of communication. (Gomez, Morales, Vargas-Preciado, & Cea-Moure, 2012).

This study seeks to quantify the perceptions that college students have of CSR programs implemented in the U.S. and in Puerto Rico. It also seeks to compare and contrast consumers’ attitudes and perceptions of the importance and the number of CSR programs implemented within each country. It is important to do so because, although U.S. perceptions of CSR programs have been studied in the past, Puerto Rican perceptions have not been studied. It is important to understand Puerto Rican perceptions because this audience is exposed to the same messages as U.S. audiences and marketers must know and understand if they are effectively reaching Puerto Rican audiences. Also, although Puerto Ricans have the opportunity to be exposed to the same messages, the frequency in which this occurs is less than U.S. audiences. In addition, there is a large diaspora of Puerto Ricans in the U.S. which have already obtained certain attitudes toward CSR programs from the time they spent living on the island. This study will see if that diaspora of Puerto Ricans are leaving with a favorable, unfavorable or no attitude or perception about CSR programs.

Therefore, this study will employ a survey to learn: 1) if college students know what CSR programs are; 2) how important they find CSR programs to be; 3) if they can recall seeing any CSR-programs; 4) how having or lacking a CSR program affects corporate image; and 5) the level of skepticism audiences have toward CSR programs.

References available upon request.
An Application of Stern’s Multidimensional Communication Model to Direct-To-Consumer Advertising of Prescription Drugs
Jeff Foreman, Pennsylvania State University-Harrisburg

Abstract
Stern (1994) proposes a multi-dimensional communication model for advertising involving the source, message, and recipient. The model involves a complex interactive process with multidimensional elements of advertisers, promotional text, and consumers. With this framework as a background, we propose to study the direct-to-consumer advertising of prescription drugs from a new perspective that is transforming total interactive advertising messages of all forms to be analyzed as more complex written text so that interactivity among communication forms may be studied with a single model. The model has the following steps: 1) generic: who--tells what--to whom 2) transform to speech: addresser--message--addressee 3) transform to literary: author--text--reader 4) make relevant to advertising: sponsor--advertisement—consumer. This model will be applied to multiple consumer roles interacting with information sources, both marketer and non-marketer dominated.

References
What the Big Data Didn’t Show: The Role of Qualitative Research in Addressing Healthcare Needs of a Multicultural Community
Sue Y. McGorry, DeSales University

Abstract
Multicultural patients in the United States experience barriers in the delivery of appropriate primary and preventive health care. Barriers to health and health care for the general population are becoming well documented, and national awareness of these obstacles has initiated numerous proposals for health care reform. Multicultural patients in the US face multiple barriers to acquiring effective healthcare. In order to provide access to health care services for this population, it is necessary to understand what if any barriers exist. This is a qualitative case study of a mid-Atlantic suburban region and its multicultural community’s healthcare needs.

Introduction
Health is influenced by many factors external to the healthcare system. These factors, known as determinants of health, include personal behaviors, genetics, social circumstances, economic and environmental factors and access to health care. In order to improve the health of the community, medical centers must dedicate resources to programs that enable individuals to increase control over these determinants of health and improve their health. These components are central to a health promoting organization. Many health organizations are attempting to adopt the WHO Health Promoting Hospital framework. The goal of WHO’s Health Promoting Hospitals is to improve the health of patients, colleagues, and the community by re-orienting health care services toward prevention of illness and promotion of health (World Health Organization, 2013).

Community and regional medical centers can position themselves as regional leaders in disease prevention and health promotion via the WHO program. The United States spends $2.2 trillion per year on health costs; 75 cents of each dollar is spent on chronic disease, such as heart disease, asthma, cancer and diabetes. These diseases often are preventable and frequently manageable through early detection, improved diet, exercise and treatment (World Health Organization, 2013).

Multicultural Communities and Access to Care
Differences in health status, use of health care services and health care quality have been documented across a wide range of demographic and socioeconomic subgroups (Komaric et al., 2012; Kirschner, Breslin, and Iezzoni, 2007; Parish and Huh, 2006). Minority groups experience a variety of barriers in the delivery of appropriate primary and preventive health care. These barriers exist exclusive of insurance coverage (public or private insurance coverage). Barriers to health and health care for the general population are becoming well documented, and national awareness of these obstacles has initiated numerous proposals for health care reform. These same groups experience both health disparities and specific problems in gaining access to appropriate healthcare, including health promotion and disease prevention programs and services. They also frequently lack either health insurance or coverage for necessary services such as specialty care, long-term care, prescription medications, durable medical equipment, and assistive technologies. Although attempts have been made to address some of these barriers, issues remain and may be exacerbated by national policy changes. (Komaric et al, 2012).

These and related challenges will affect the quality of life, productivity, and well-being of greater numbers of Americans as the population ages and the number of minorities increases. Given the recent change in health care policy, it is especially important to understand the complex and interrelated factors that contribute to health and health care inequities for multicultural and minority groups and to identify practical solutions.

As an example, low rates of utilization of oncology services among the Latino community can be linked to numerous complex factors. Previous negative experiences, related to language barriers, discrimination, or poor treatment, impact a person’s confidence in the ability of services to meet their needs. Likewise, Latinos from low socioeconomic backgrounds are at higher risk for encountering a number of challenges in utilizing mental health services. These include time, affordability and transportation limitations (Shattell, Hamilton, Starr, Jenkins, Hinderliter, 2008).

Ethnic disparities are also present in terms of oncology care: screening behavior and follow-up of abnormal findings length of survival, quality of life, adherence to treatment, and access to adequate care and interactions with physicians all to the disadvantage of ethnic minority populations (Hoffman-Goetz L, Friedman , 2005; Mancuso C et al, 2004; Duelberg, 1992.

This study seeks to identify current issues relative to health care access for a multicultural population in a large suburban region of the Mid-Atlantic. Results are
presented with discussion and implications for future research.

Methodology

The study was sponsored by one of the largest community medical providers in a large suburban region just outside of Philadelphia. Caucasians (85.8%), African Americans (4.6%) and Hispanics (4.0%) are the three largest race/ethnic groups residing in the service area. However, there has been an increase in the number of new immigrants who do not speak English seeking services in the area. Clients enrolled in classes one of the centers come from more than 45 countries and speak more than 32 different languages.

In order to begin understanding the health needs of the community, a number of data sources including public health data, behavioral health risk factor surveys, socioeconomic needs assessments and existing programs that had been developed were first explored. The research focused on diverse issues, such as health status and health behaviors, housing, aging, and socioeconomic variables affecting overall health status. The process was designed to identify the most pressing health concerns in the service area with special emphasis on vulnerable populations. Two essential components examined in this process included a study designed to track healthy behaviors and health problems, and another community needs assessment designed to assess health disparity by zip code based on specific barriers to healthcare access.

In order to ensure the data captured the needs of the multicultural, non-English speaking community, qualitative research was also planned. Two focus groups were conducted with consumers of four community medical centers in the suburban Philadelphia region. Twenty-two people participated in two focus groups (10 in one group and 12 in the other). Participants in the focus groups were recruited over approximately ten days; consumers visiting the four community facilities were invited to indicate their interest in participating in a focus group by completing a postcard. Promotional materials were widely distributed and indicated that all focus group participants would receive a $25 gift card to a local food market and light refreshments in appreciation of their participation. Forty-three individuals submitted initial postcards; an attempt was made to confirm participation with each of these individuals via phone one day prior to the scheduled focus groups.

Ultimately, 22 individuals participated in one of the two focus groups. Fifteen of these individuals were women, and 7 were men; a wide variety of ages were included, ranging from approximately early 20s to mid 70s. The ethnic and racial composition of the group was diverse, including individuals from India, Pakistan, Afghanistan, Latin American, and several East Asian countries. Spanish language translation was provided during the focus groups and was employed by two respondents. More than half of the participants spoke languages other than English and in the vast majority of these cases, English was not a first language.

Results

Without exception, the primary challenge facing focus group participants when it comes to accessing health care and health is income; income is the critical link between employment, health insurance, and health care. When asked to provide specific examples of challenges facing families, participants replied: Income. Money. Jobs. Insurance. The same was true among employed and unemployed individuals and was especially frustrating for those who are unable to work due to age or disability, or recently had become unemployed and been unable to find work. Two participants directly commented that recent unemployment facilitated a financially untenable health situation; two others lost insurance (presumably Medicaid) due to a recent move across state lines.

Access to health insurance is inextricably tied to employment. Focus group participants noted that disability and age limit ones’ ability to obtain employment and, therefore, also health insurance. In several cases, inability to work was directly linked to health. One participant noted that he had a “spinal condition” that prevented him from working. “I have no money,” he said, “how can I take treatment from a doctor? It’s a big problem.” Expressing her frustration with being denied Medicaid and the implications of lacking health insurance for securing stable employment, another woman noted, “They make it too hard for people to get health insurance. It shouldn’t be like that. Because if we’re healthy, if we are in good health, it would help us to keep a job or even get a job. And we could take care of our families better if we are in good health. They don’t even want to give us a chance.”

Health of the Community

There was widespread agreement that relying on emergency room care for uninsured or underinsured was one of the primary weaknesses of the health care system. “It just doesn’t make any sense to go to the ER.”

When asked directly to comment on what prevents people in their communities from getting the health care that they need, one woman responded. “You just can’t get it. It’s a simple as that. If you go to the emergency room, do you know what kind of bill you’re going to get? You better not got. I’d rather not go. I’d really rather not go because I don’t have the money for all that...The [BCHIP] clinic does supply my insulin, but there are other things, my cholesterol [medication] ...I’m on two different blood pressure medications. Those things I have to pay for, so we’re just penny pinching. It’s rough.”

An additional area of weakness in the health care system, participants noted, concerns treating chronic health conditions, especially those that require ongoing, expensive medication, such as diabetes. The prohibitive cost of
prescription medication and gaps in prescription drug coverage even for those covered by Medicaid were a frequent refrain. “My doctor gave me a prescription and I took it to the pharmacist. [It was] not covered. Not covered. I changed to a different medicine [and its] not working. This medicine is not working. The other medicine is not covered.”

A few participants also noted that the health care system is confusing to navigate and seemingly unfair, especially when it comes to applying for medical benefits. The system seems to grossly underestimate true cost of living expenses in relation to income in determining eligibility.

**Barriers**

The focus group discussion at this point turned to focus on the costs of living—for example, the high price of food, heat, and rent that make it very difficult to make ends meet. Working parents face exceptionally high costs for day care, making work in order to get health insurance very difficult. Even among those participants who have health insurance through work, participants said they feel the burden of high health care costs.

Participants were probed further and asked if language and cultural barriers in their community limit access to health care and health. At the prompting of this question, the room erupted with “Yes! Yes! Language. Language.” The discussion turned to collective recognition of the diversity of the community, the ongoing ethnic and language diversification of the United States. When asked directly if there are language and cultural barriers in their community, almost all participants, particularly in the morning focus group, simply responded, “yes.”

One gentleman in the group suggested that although communication per se was not too difficult among individuals speaking different languages, understanding medical language could be difficult for those who do not speak English fluently, making it hard to understand physicians’ instructions and obtain adequate medical care. Another participant noted that she frequently asks for [Spanish] translators and it’s “not too difficult to find translators,” but that it is difficult to learn to speak a new language as a prerequisite for work. Another woman indicated that when her doctor sends her home with a prescription, she doesn’t understand “the doctor talk”; in essence, that although at some level, there was communication between doctor-patient, this participant indicated that she left the doctor’s office not really understanding the doctor’s instructions.

Participants were probed on issues of age and transportation. One man indicated that aging does bring additional problems when it comes to health and health care: “Those who are elder. They have no work. They have no insurance. But, with their age, they have problems of pain, eye, ear, teeth—not covered by insurance.”

In contrast to issues related to income, employment, and health insurance, transportation did not register as a huge concern among focus group participants.

**Education and Information**

Respondents indicated that they most often go to the welfare office, the sponsoring healthcare organization did note, however, that she does not know where to go for information: “That’s the question I’d like to ask. I have this question [about where to go for information] and I don’t know where to get this answer.”

One woman chuckled in response to this question, suggesting that information was not the problem. The problem is money and insurance. “It’s not a lot. I had a lot of doors closed in my face when I first came. It’s not a lot...you got the money to pay for that medicine or you don’t get it.” Another communicated a general sense that, after being denied Medicaid, “there’s just nothing.”

An important dimension of health is mental health. When asked whether individuals in the community are generally positive, optimistic, and happy with life, one participant responded, with a smile, “with so many health problems, how can it be that our mental health is [still] so good?”

The conversation in the morning focus group turned to meaningful, purposely work. That is to say, participants seemed to articulate the value of social-interactivity and contributing meaningfully to one’s community. “There’s only so much you can clean in your house,” one participant commented, “I don’t want to be home...It’s depressing,” noting her frustration and sense of loneliness since losing her job.

Another offered: “If there was opportunity in the community for the community to come together. If there was something that could be done for those with lower income with all the jobs that are not made available not made available to most of us. If there is something that we can do and be compensated for in a compassionate sort of way.”

In the afternoon group, the conversation focused on the stress that health conditions and lack of access to adequate health care often creates. In other words, access to health care is important for mental well-being.

Participants in both focus groups did not volunteer information about drug and alcohol abuse, or behavioral health issues. The one exception, interestingly, came from a woman from Afghanistan who noted that in Muslim communities, drug and alcohol use is generally prohibited, and therefore that this was not an issue among her family and friends.

**Discussion and Future Research**

Four primary areas of concern limiting access to health care emerged from the qualitative analysis of the focus groups. Each of these factors is inter-related in a complex web in which employment, income, and insurance determine access to health.
1. Lack of insurance and affordability of health care, resulting in part from restricted eligibility requirements for Medicaid.
2. Lack of employment and/or inability to work due to disability or age.
3. Costs of prescription drugs and lack of adequate prescription drug coverage, particularly for individuals with chronic health conditions.
4. Fear of financial ruin, such as that which may result from the costs of emergency room medical care.
5. Lack of access to particular services, such as specialists and oral health care, even for those covered by Medicare or other forms of health insurance.

Additionally, language and cultural barriers contribute to individuals’ abilities to navigate what often seems to be a complex health care system. For example, several participants noted their frustration concerning welfare and Medicaid eligibility requirements, communicating a general sense of confusion about why, in many cases, they had been deemed ineligible. Long wait times for appointments and access to specialty care are further frustrations.

In some cases, the combined effect of each of these obstacles leads individuals to ignore medication protocol and/or to avoid seeking treatment until medical conditions become medical emergencies. Even in these cases, fear of the costs of emergency room treatment is an additional obstacle for low-income individuals needing health care.

The extent to which focus group participants were able to offer concrete suggestions about additional services and information beyond simple access to health care was stark. Access to basic health care and access to adequate health insurance that covers prescription drugs and treatment for chronic health conditions are clearly the greatest unmet needs of these individuals. Health care and health insurance serve as gateways to general well-being, family stability, employment, and income. Simply put, as one participant noted, “If you don’t have your health, what do you have?”

Future research will need to address the strategy Pennsylvania pursues relative to Medicaid and its impact on access to health services. Research conducted regionally should address cultural and linguistic needs as well in order to truly capture accurate data representative of a local population. Research should include the independent variables of insurance, employment, and income in order to determine covariations in their impact on access to healthcare services.

Summary
An important context for considering the unmet needs of low-income residents living in communities served by these health centers is the eventual implementation of the Affordable Care Act (ACA). Indeed, focus group participants’ comments revealed unmet needs at the systemic level; that is to say, participants communicated basic unmet needs at the level of access to health and health insurance that are, in many ways, independent of the services provided by the centers. Rather, statewide Medicaid eligibility requirements, the inexplicable link between access to health care and employment, and gaps in services such as specialty care and prescription drug benefits, are the root of unmet needs. The sponsoring healthcare organization can continue to work to offset these problems—working to help individuals secure employment, for example, providing financial assistance, and serving additional low income patients through its CHIP clinic—but to extent that the Affordable Care Act will fundamentally change the landscape of health insurance and health care delivery, decisions among government leaders loom large in the organization’s eventual success.

Perhaps most relevant, the ACA requires individuals to obtain health insurance coverage or pay a tax penalty; and provides premiums and subsidies to those with incomes under 400% of the poverty level in order to purchase insurance. A significant piece to the ACA is Medicaid expansion. If PA opts-in to the proposed Medicaid expansion, all Pennsylvanians under the age of 65 with income below 133% of the federal poverty level would be covered by Medicaid. New Medicaid and CHIP eligibility in PA would expand adult eligibility, a further simplification of Medicaid eligibility rules.

It is still not clear how Pennsylvania will proceed with implementation of the provisions of the ACA that will have the biggest impact on low-income, uninsured, and underinsured populations. State legislative leaders have introduced legislation that would block Medicaid expansion in PA; others have introduced legislation that would enable it.

In conclusion, the terrain of the neighborhoods served by this organization will change in the very near future, either in a direction in which more low-income underserved individuals are wrapped into the health insurance system, or in a direction that continues to exclude them, further exacerbating health inequities. To be sure, the imminent decisions that Pennsylvania government leaders make in the next year will have its most significant impact on the very individuals served in the area.

References


The Use of Internet Discussion Boards as a Decision Aid for a Vaginal Birth after a Cesarean: A Content Analysis of Initial Posts
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Rosemarie Whyte, Mount Saint Mary College

Abstract
Pregnant women with a prior cesarean section have the option of a VBAC (vaginal birth after a cesarean). This study explores the use of online discussion forums for this population as an influential tool in the decision making process. We analyzed and compared 300 initial posts on a VBAC forum to 300 initial posts on a general pregnancy forum. Women on a VBAC forum are posting to seek input and advice on how to choose and communicate with their healthcare provider, on their chances of success, and on induction. Women are not only using online discussion forums for support, but are also using the forum to gather medical information.

Introduction
Shared decision making requires both doctors and patients to shoulder the responsibility of medical decision making. This increasingly common model requires a patient to both acquire and comprehend medical information. Whereas medical information used to only come from a practitioner, today, medical information (accurate and inaccurate) is abundantly available on the internet. By simply “googling” a symptom or condition, one can link to a plethora of resources, including discussion boards.

Pregnant women are particularly high information seekers and are especially prone to use the internet for medical information (Lagan, Sinclair, & Kernohan 2011). According to a survey from 2006 (Declercq, Sakala, Corry, & Applebaum), 76% of women used the internet at some point during pregnancy for information, with 19% of mothers reporting 100 or more visits to get information on pregnancy and childbirth; 16% of women report that the internet was their most important source of information. A more recent study reported that 83% of women used the internet to influence their pregnancy decision making (Lagan, Sinclair, & Kernohan 2010).

Women commonly use online discussion boards to connect with other women and to be reassured by other women (Lagan et al. 2011). They can offer a “community” to women who are often limited by geography or hectic work lives to have such a community in person, and often give women the time to ask questions they may feel too rushed or embarrassed to ask their doctor (Cohen & Raymond 2011).

One group of women who may be especially likely to seek such support are women deciding whether to have a vaginal birth after a cesarean (VBAC). This increasingly common group of women can often feel alone in their struggle with this risky decision and often find support in online resources (Romano, Gerber, Andrews 2010). Despite the fact that a VBAC is a “reasonable and safe choice for the majority of women with a prior cesarean” (Guise et al. 2010), women often do not have the support of their healthcare providers. According to a 2013 survey of 2400 women, 48% were interested in the option of a VBAC, however 18% of them were denied because of unwillingness of their caregiver or the hospital (Declercq, Sakala, Corry, Applebaum, & Herrlich 2013). In this study, we aim to more deeply explore why women post to online discussion boards, in particular a VBAC forum.

Method
Two separate internet searches were conducted using a search utility (Dogpile) that includes results from the most used search engines. The searches included the phrases “VBAC Forum” and “VBAC discussion board”. We then selected the first three websites that overlapped on each of the searches, and narrowed down to the “VBAC Forum” hosted on Babycenter.com based on activity level. We started with the January 2013 posts and analyzed the initial posts (we did not go into comments under each post). We then did the same with a “Pregnancy Forum” on Babycenter.com as a comparison. From each forum, we analyzed 300 posts. We coded the posts to extract as much information as possible, including whether and what type of advice or questions were sought, whether and how much information was offered, and what emotions were expressed.

Results
Women posting on the VBAC Forum, just like women posting on the general Pregnancy Forum, often express their emotions on their posts (26%-29%). When doing so, the most common emotion is “fear” (11-12%). Happiness and sadness were the next most common emotions expressed, however, women in the VBAC forum were twice as likely to express happiness in their posts. Posts in the VBAC Forum were also significantly more likely to express indecisiveness than posts in the Pregnancy Forum.
Significantly more birth stories were exchanged in the VBAC Forum—women are both asking for stories more and sharing them more than in the Pregnancy Forum.

About three in four women in both forums were seeking input or advice. However, what they were seeking differed. Women in a general Pregnancy Forum were more commonly requesting advice and information on pregnancy (most often, symptoms), whereas women on the VBAC Forum were more commonly requesting advice on labor (42% of the time it was about induction). Women on the VBAC Forum were often requesting advice on finding or communicating with a healthcare provider (29% of posts).

Whereas the posts in the Pregnancy Forum received 206 “hugs” and 1576 comments, the posts in the VBAC Forum received 537 “hugs” and 2199 comments.

Discussion
An analysis of the VBAC forum suggests that women are largely using the forum to acquire more information, particular on labor, as well as guidance for finding and communicating with a healthcare provider. Women are sharing their stories, and supporting each other. As indicated by the relative amount of “hugs” and comments, there seems to be a great deal of engagement.

While it is important to understand the role of discussion boards in medical decision making in general, it is likely that the influence of discussion boards is particularly salient for the population of women making decisions pertaining to VBAC, who often lack models who have attempted VBAC, and a supportive community.

References
Confronting Stigma: Teens’ Perceptions Surrounding Depression and Suicide and Implications for Suicide Prevention Campaigns
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Abstract
Qualitative data collected via in-depth interviews with teens in Montana indicate that significant stigma surrounding mental illness continues to exist and creates barriers to help seeking behavior. Preliminary findings suggest that “normalizing” feelings of depression and suicidal ideation may encourage teens to talk about their problems and seek help from mental health professionals. Suicide prevention campaigns might achieve greater success in encouraging teens to reach out if they present feelings of despair and thoughts of suicide as within the normal range of adolescent experience rather than as indicative of mental illness.

References available upon request.
A Self-Discrepancy Theory Perspective of Patient Deception
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Abstract
Lying is considered a part of everyday life (DePaulo et al. 1996) and is widely accepted that patients knowingly lie, mislead, and deceive health care professionals who work in their favor (Reddy 2013). The current research seeks to address two basic questions about patient deception: 1) why do patients lie to health care professionals, and 2) how does patient lying affect perceptions of service quality and satisfaction? This research intends to deepen the understanding of patient deception by using self-discrepancy theory (SDT) to examine why patients seek to deceive health care professionals—doctors, nurses, dentists, etc. While no existing research could be found to address the specific issue of patient lying, literature from social psychology suggest that people often lie in an attempt to control how others view them (Goffman 1959), and consumer behavior literature suggests that lying will likely yield negative consequences for consumers (Anthony and Cowley 2012). A conceptual framework for understanding the lying process along with corresponding research propositions is posited.

Introduction
"I don't ask why patients lie, I just assume they all do." -from the television series House M.D.

It is widely accepted that patients knowingly lie, mislead, and deceive health care professionals working in their favor (Reddy 2013). A survey conducted by the health and wellness website, WebMD, found that nearly 45% of the respondents admitted to deceiving their physician; with more than 30% lying about their diet and exercise, and about 40% lying about following the doctor’s treatment plan (Raymond 2009; Reddy 2013). Patient deception regarding socially sensitive topics such as drinking, smoking, drug use, and sexual activity is particularly rampant. When asking patients about alcohol consumption, for example, physicians in training are often taught to automatically double whatever patients say (Downs 2004). While physicians do their best to provide patients with quality care, patient deception can not only affect service quality and patient satisfaction, but also physician effectiveness and medical outcomes.

Patients play a vital role in this important co-production experience. The relationship between the health care consumer and the physician is unlike the relationship between the customer and other service providers. Health care consumers maintain a significant portion of responsibility for the service outcome. The physician must rely on the patient to provide information regarding medical history, symptoms, treatment adherence, and treatment affects or reactions. Inaccurate information can confuse the doctor and “lead to misinterpreted symptoms, overlooked warning signs, flawed diagnoses and treatments—potentially endangering a patient’s health, even life” (Ravn 2009 p. E1).

Open and honest communication between the patient and physician is critical to a successful co-production experience. Extant research finds that when there is reciprocal communication in the doctor-patient relationship, patients evaluation of service quality (Chang et al. 2013) and satisfaction is higher (Perloff et al. 2006; Talen et al. 2008) and more favorable outcomes are likely (Talen et al. 2008). Research has also shown that a patient’s poor or deceptive communication can adversely affect the physician’s attitude toward the patient (Talen et al. 2008). Doctors may seek to retaliate against patients who lie by withholding treatment, which can in turn lead to patient seeking financial or legal retribution (Palmieri and Stern 2009).

The majority of extant research on patient lying either confirms the prevalence of the problem (Castelo-Branco et al. 2010), considers ethical implications of lying (Palmieri and Stern 2009), or investigates relationship dimensions such as power (Fainzang 2002) and trust (Hall et al. 2002). No published research was found in a review of the literature that investigates the antecedents and consequences of patient lying from a marketing perspective. The current conceptual paper seeks to address two basic questions about patient deception: 1) why do patients lie to health care professionals? and 2) how does patient lying affect perceptions of service quality and satisfaction?

This paper intends to deepen the understanding of health care consumer (patient) deception by using self-discrepancy theory (SDT) to examine why patients seek to deceive health care professionals. Research from the fields of social psychology, health care, and marketing are utilized to develop a conceptual framework along with corresponding research propositions. The current research contributes to the marketing literature by providing future scholars a framework to understand the antecedents and consequences of patient lying. This framework would benefit researchers and managers by providing a more complete framework for understanding the patient-physician relationship. In addition, the research provides
practitioners with potential means of reducing patient deception and/or mitigating its affects.

The following section provides the theoretical background and research propositions. This is followed by a discussion of managerial and research implications.

**Theoretical Background**

The framework posited for this research suggests that self-discrepancy leads to self presentation, and subsequently negative outcomes (see figure 1).

**Figure 1 – Conceptual Framework**

![Figure 1](image)

**Self-discrepancy Theory**

Self-discrepancy theory (SDT) seeks to explain how emotional discomfort can be caused by conflicting beliefs about one’s self (Higgins 1987). SDT postulates that there are three basic domains of the self—the actual self, ideal self, and ought self. The actual self consists of the attributes that one believes that she actually possesses. The ideal self is the representation of the attributes that one would like, ideally, to possess. The ought self is the representation of attributes that one believes she should or ought to possess. Higgins (1987) suggests that unlike attributes of the ideal self which are optional or desired; attributes of the ought self are obligatory. It is further posited that the self can be viewed from one’s own personal standpoint (i.e., self-reflection) and the standpoint of some significant other (e.g. father, mother, spouse, friend). Thus, six separate self states can exist: actual/own, actual/other, ideal /own, ideal/other, ought/own, ought/other (see figure 2). The actual self states (actual/own and actual/other) constitute one’s self-concept. The remaining self states are self-directive standards or self-guides by which an individual compares his or herself. SDT hypothesizes that people are motivated to reach a state where the self-concept aligns with a relevant self-guide—Higgins (1987) notes that people differ as to which self-guide they are motivated to meet and that number and type of self-guide possessed may vary from person to person.

**Figure 2 – Self-Discrepancy Theory (SDT) Self States**

<table>
<thead>
<tr>
<th></th>
<th>Own standpoint</th>
<th>Other standpoint</th>
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<tbody>
<tr>
<td>Actual self</td>
<td>actual/own (self-concept)</td>
<td>actual/other (self-concept)</td>
</tr>
<tr>
<td>Ideal self</td>
<td>ideal/own (self-guide)</td>
<td>ideal/other (self-guide)</td>
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<tr>
<td>Ought self</td>
<td>ought/own (self-guide)</td>
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When one views their actual self different from their ideal or ought self, a discrepancy arises and there is emotional discomfort. SDT holds that discrepancies between one’s actual and ideal self (A/I discrepancy)—inconsistent beliefs about one’s actual characteristics and those one would like to possess—represents a psychological state in which there is an absence of positive outcomes; that is, the nonobtainment of hopes and desires or the failure to meet personal goals or wishes. As a result, individuals experiencing an A/I discrepancy are likely to experience dejection-related emotions, such as dissatisfaction, disappointment, embarrassment, or shame (Higgins 1987). Discrepancies between one’s actual self and ought self (A/O discrepancy) are uniquely related to agitation-related emotions. Individuals experiencing this type of discrepancy believe that they are not living up to their duties, responsibilities, or obligations. This creates a psychological state of anticipated negative outcomes that result from the association of punishment and the believed violation of prescribed duties and obligations. This is likely to result in feelings of guilt, uneasiness, fear, or anxiety. SDT predicts that the “greater the magnitude of a particular type of self-discrepancy possessed by a person, the more strongly the person will experience the emotion associated with the discrepancy” (Higgins 1999 p. 1314).

**Self-presentation**

Self-presentation was posited by Goffman (1959) as the manner in which individuals attempt to manage how others perceive them. Often used synonymously with impression management, many researchers suggest that this is not accurate given that individuals can manage the impression of other entities (e.g., organizations, brands, other individuals, etc.). Self-presentation, however, is exclusively about the actions one takes to manage one’s own image (Schlenker and Leary 1982; Vohs et al. 2005). Schlenker and Leary (1982 p. 643) define self-presentation as “the attempt to control images of self before real or imagines audiences… It is a goal-directed act designed, at least in part, to generate particular images of self and thereby influence how audiences perceive and treat the actor.” An individual is successful at self-presentation when “others respond in a manner commensurate with the intended impression.” While it can be argued that all behavior can reveal something about one’s self, self-presentation differs from other behaviors in that the actor has a conscious goal of controlling how others to whom the actions are directed perceive the actor.
Self-presentation can be accomplished by both verbal and nonverbal actions. Verbal self-presentation by lying is so pervasive in social interactions that Depaulo et al. (1996 p. 979) suggest it is a fact of daily life and “an everyday social interaction process”. Most of these lies serve to facilitate social relationships and can, as Goffman (1959) suggests, be considered benign fabrications. These lies often include altruistic or compassionate lies told to spare another’s feelings, or sociable lies that allow the actor to adhere to rules of etiquette and politeness. Lies of commission or omission told by patients to their physicians, however, can have significant consequences. In addition to potentially negative medical outcomes as a result of incorrect data provided to the physician, the patient may experience lower satisfaction and service quality as a result.

The following examples illustrate how self-discrepancy might manifest in a doctor-patient interaction: A patient who is relatively healthy may believe in the importance of diet and have every intention of adhering to a healthy diet plan, but fail to do so. The fact that the patient believes that a healthy diet is ideal, but the reality of his diet is less than ideal (and more like “typical”) represents a discrepancy between the individual’s actual and ideal self (A/I discrepancy). This discrepancy will likely cause the patient to experience emotions such as shame or embarrassment when asked about his diet. If the discrepancy is great enough, as a result, the patient may lie in an effort to manage the doctor’s perception of him. In the case of an A/O discrepancy, a patient that has undergone heart surgery after a life-threatening episode will likely receive post-surgical counseling on diet and exercise. Research suggests that a proper diet is vital to managing heart disease and most patients understand that it is their responsibility to maintain such a diet (Salisbury et al. 2011). Research by Salisbury et al. (2011), however, suggest that only about 20% of those who undergo such a procedure do, in fact, adapt a new diet. The discrepancy between the patient’s actual diet and the diet that they ought to maintain in order to manage their heart condition will likely lead to agitation-related emotions. This can, in turn, lead the patient to lie about, or otherwise attempt to deceive the physician about his diet in order to avoid negative reaction.

Thus, the following propositions:

**Proposition 1a:** A/I discrepancies are positively related to the patient deception practices.

**Proposition 1b:** A/O discrepancies are positively related to the patient deception practices.

If the goal of self-presentation is to get a specific reaction, then the patient should be more satisfied once this is achieved; however, Anthony and Cowley (2008, 2012) suggest that consumers may experience negative feelings upon lying and subsequently lower levels of satisfaction. Alternately, if the patient fails in his efforts of self-presentation or if the physician fails to buy into the deception, the patient may experience the negative emotions originating from the self-discrepancy even more intensely. In addition, the physician may react negatively to the patient’s attempt to deceive and even retaliate by withholding services or taking other undesired action. Thus again, the patient is likely to evaluate the service quality and satisfaction of the experience poorly.

**Proposition 2:** Patients who engage in deceptive actions as a means of self-presentation will evaluate service quality lower than those who do not engage in such action.

**Proposition 3:** Patients who engage in deceptive actions as a means of self-presentation will evaluate satisfaction lower than those who do not engage in such action.

**Proposition 4:** Patients who engage in deceptive actions as a means of self-presentation will have poorer medical outcomes than those who do not engage in such action.

**Discussion**

The prevalence of lying in everyday life is widely accepted and has been equally noted among patients in the health care environment. This paper provides a basis for investigating the antecedences and consequences of patient lying. A conceptual framework incorporating self-discrepancy theory and self-presentation is proposed along with corresponding research propositions. In short, it is proposed that a patient’s discrepancy within his/her-self will likely trigger a compulsion to deceive a health care provider in an effort to manage the provider’s image and opinion of the patient. This will, in turn, affect the patient’s evaluation of service quality and satisfaction, and possibly the patient’s medical outcomes.

Improved understanding of the antecedences of patient deception can have a significant impact on medical outcomes for the patient, health care cost, medical examination techniques, and the doctor-patient relationship. With a better understanding of patient motives, health care professionals may be able to identify who will be more likely to engage in deceptive practices and when they might do so. If, for example, a doctor knows that a patient has a significant A/I discrepancy (which will likely cause the
patient to experience shame or disappointment), then the doctor could address these issues, take action to put the patient at ease, and create an environment where the patient feels less pressure to engage in self-presentation. As a result, the patient provides more accurate information to the physician, who will then be able to better diagnose and treat patient issues. More efficient and effective treatment for the patient will aid in the reduction of health care cost and an improved doctor-patient relationship. However, empirical investigation is needed to support this position.

Future research should test the relationship between self-discrepancy theory and self-presentation (lying); as well as the affect self-presentation has on the parties individually and together. That is, the affect self-presentation has on the patient (e.g. perceptions of service quality and satisfaction), the doctor (e.g., empathy and responsiveness), and the relationship between the doctor and patient (e.g., relationship quality).

References


Ravn, Karen (2009), “A body of lies; It’s tempting to fib to the doctor at times. But even a seemingly minor mistruth might lead to a wrong diagnosis or treatment,” *Los Angeles Times*, Los Angeles, Calif., E1.


Relationship Marketing in the Physician-Patient Dyad: Utilizing the Buyer-Seller Framework to Support a Customer-Driven Healthcare Model
Rosemary Ramsey, Wright State University

Abstract
Recent studies on the Patient-Centered Medical Home, intended to save primary care practice and allow the healthcare cost curve to “bend downward,” are encouraging but show decreased patient satisfaction, due at least partly to inadequate patient engagement. A framework to rectify this situation is developed by adapting the marketing buyer-seller model to the physician-patient dyad. A foundation for the model is described, relevant research from marketing is discussed, and possible differences between the buyer-seller dyad and the physician-patient dyad are outlined. Results from a qualitative study are reported.

Introduction
Health care in the United States is in crisis due to the misalignment with the health needs of the American people and the massive, continuously increasing and unmanageable healthcare expense that affects all aspects of the society. Industry, government, education, and communities continue to show grave concern over the declining availability and quality of health care in this country. The most powerful country in the world is troubled with a healthcare system that is ranked thirty-seventh in performance yet number one is health expenditure per capita when compared to other nations (Stange 2009). [This ranking is no longer determined due to the complexity of the process.] Over forty-five million Americans are without health insurance, while many more millions are underinsured, and healthcare providers (physicians, practices, clinics and hospitals) are struggling to keep their doors open. “…[C]hanges are inevitably coming, and many are needed to keep up with the demand for quality and affordability. Increasing pressures on hospitals and healthcare organizations include declining reimbursements, more patients without coverage, and an emphasis on transparency and demands for public reporting” (Carpenter 2007, 4). Although the United States has recently passed a voluminous and controversial healthcare bill, it is uncertain as to what changes will be successfully implemented.

There is also a healthcare backlash from corporations who do not want to continue to provide redundant tests, duplicate x-rays, and excessive referrals to medical and surgical specialists and sub-specialists. Some argue “[I]nstead, we want to spend that money on a primary care physician who will help our employees live healthier lifestyles…and coordinate the specialist care they receive to ensure it is relevantly and effectively performed and the patients can make sense of the consultation they’ve been given” (Walker 2008, 10).

There are several possible solutions to the current healthcare crisis being proposed by politicians, funding agencies, and concerned citizens; it is still uncertain as to what are the best models. For decades, the healthcare industry has struggled with determining the most effective model (e.g. managed care). Many have called for more integrated systems that allow for an all-inclusive approach to individual health care such as Kaiser Permanente and Geisinger. This would include the primary care physician, various other service institutions (specialists, support functions, community groups), as well as the patient and their family, who accept a key role in their own health care. Integrated systems might allow a more person-oriented healthcare model than the current one which over-emphasizes “parts” leading to disregard for the whole patient approach. Our fragmented, “provider-oriented” system leaves the patient also fragmented, confused and relatively passive in the healthcare process.

What has recently been recommended to repair our reactive system is the Patient-Centered Medical Home (PCMH) model for primary care. Within the PCMH model, the key focus should be the primary-care physician and the patient and their relationship. The National Demonstration Project (NDP) (Stange et al. 2010) did not show this yet to be the case. Further developments in the PCMH model and its training are expected to shore up this critical emphasis area. The physician-patient dyad becomes the core component of the healthcare system, with the physician and the patient being jointly responsible for a successful outcome. This dyad takes on an exchange process where both parties are highly involved in the interaction. As a construct, exchange has been positioned as the fundamental marketing process which brings about mutually beneficial interactions and outcomes. This construct has been the driving force in both theoretical and applied approaches to marketing. Typically, the two parties of the marketing exchange are the buyer and the seller, or the buying and selling organizations.

It seems more than reasonable that the healthcare industry should adapt the buyer-seller relationship model to the physician-patient dyad to better understand the physician-patient exchange. In this case, the physician is the...
seller of the health care and the patient is the buyer. This dyad would emulate the professional business-to-business buyer-seller dyad. The “seller” analyzes the situation and determines the best possible solution. The “buyer” provides sufficient and accurate information to the seller so that mutually beneficial outcomes may be reached. One of the most relevant outcomes of this democratic process is a long-term relationship. The current business models are no longer utilizing the “discrete transaction” marketing approach, but rather one of relationship building.

Research has been undertaken for over three decades to better understand the workings of the buyer-seller dyad. It would seem efficient to investigate how this research with its many results and models can be transferred to the physician-patient (P-P) dyad within the PCMH rather than “recreating the wheel.” Just as beneficial outcomes are expected from the healthy buyer-seller relationship, so too are benefits anticipated from the healthy P-P relationship. “[l]iterature suggests several benefits of sustained [P-P] relationships, including greater satisfaction among patients, physicians and staff; fewer and/or shorter hospitalizations; fewer broken appointments; decreased use of laboratory tests; and decreased use of emergency rooms for care. In addition, increased patient disclosure of personal problems, and better compliance with physician instructions have been reported” (Weiss and Blustein 1996, 1742).

It is the purpose of this paper to develop a model of the P-P relationship, using the buyer-seller framework. First, streams of research from the buyer-seller relationship will be briefly reviewed and recommended as a framework for the patient-physician dyad. Various sales constructs that can be utilized in this new model will be reviewed, while proposing what differences may exist in the P-P dyad. Results from a qualitative study about P-P relationships are reported.

Exchange between the Physician and Patient

There has been research published in the healthcare literature that addressed the physician-patient relationship, but rarely has a dyadic “exchange” focus been included, and the PCMH model has yet to incorporate this aspect of health care. Even the PCMH is provider-oriented. The importance of this dyad in health care has been well established for decades:

The practice of medicine in its broadest sense includes the whole relationship of the physician with his [her] patient...The treatment of a disease may be entirely impersonal; the care of a patient must be completely personal. Death is not the worst thing in the world, and to help a man to a happy and useful career may be more of a service than the saving of a life. The good physician knows his patients through and through, and his knowledge is bought dearly. Time, sympathy, and understanding must be lavishly dispensed, but the reward is to be found in that personal bond which forms the greatest satisfaction of the practice of medicine. One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient. (Peabody 1927)

As this quote from the 1920s suggests, research has been undertaken from the more traditional “paternalistic” model of health care with the physician controlling the situation and the patient being relatively passive (Emanuel and Emanuel 1992). Today’s environment in healthcare, as well as in the buyer-seller situation, sometimes includes a well-educated, sophisticated, and capable patient/buyer who may well choose to be involved in his or her own health care. With the development of consumerism in the United States, individuals expect and demand satisfactory service. Consumer patients expect shared decision making and a democratic process. Thus, the buyer/seller exchange relationship may shed light on the physician-patient dyad and the “medical consumer.” The proposed model, which eventually must be incorporated into the larger medical complex, is depicted in Figure 1.
Interpersonal variables have been the mainstay of the buyer-seller research. Interpersonal trust has been incorporated into the sales literature since the 1980s with the seminal work coming from Dwyer, Schurr, and Oh (1987). The healthcare literature has focused to a large degree on how patients trust physicians. In fact, many researchers have proposed that the decline in physician satisfaction is due, in part, to the reduction of trust from their patients. However, in the PCMH model, it is the interaction that is critical and interpersonal trust must be a two-way street; the physician must trust the patient as well as the patient trusting the physician. “…[H]ealthcare providers now have to understand that they are dealing with a much more educated group of caregivers who have much more access to information (although not all of it is accurate)…The lesson: Trust no longer comes automatically with an MD degree. Like other professionals, healthcare providers now have to earn their patient’s trust. Every day” (Roberts and Roberts, xxiv). Further, “…I have witnessed a disastrous severance of trust; one that has led to runaway costs, constrained access, skewed coverage, and diminished quality. We cannot fix the American Health care delivery system until we restore trust in medicine” (Lundberg 2000, xii). It should be noted that most of the “trust” research in the healthcare literature refers to the decrease in trust of the physician; none of it refers to the reciprocal nature of trust.

Other interpersonal variables such as ethical behaviors (Swanson, Kelley, and Dorsch 1997; Lagace, Dahlstrom, and Gassenheimer 1991), commitment (Pettitjohn, Pettitjohn, and Taylor 2007; Morgan & Hunt 1994), conflict management (Bobot 2010; Mooi and Frambach 2009; Plank, Reid, and Newell 2007), social bases of power (Busch and Wilson 1976); and adaptability (Weitz, 1981; Goolsby, Lagace, and Boorom 1992; Bush, Rose, Gilbert, and Ingram 2001) all play roles in the buyer-seller dyadic interaction and would transfer easily to the P-P dyad.

Communication skills have been studied in the marketing literature for several decades. While communication skills may well come under the “interpersonal skills” rubric, there is sufficient research to consider this area as a separate category. Communication competence (Boorom, Goolsby, and Lagace 1998), collaborative communication (Sindhav and Lusch 2008); questioning (Liu and Comer 2007), listening (Ramsey and Sohi 1997), and information processing (Deeter Schmelz and Ramsey 2003) have been researched. Performance measures are plentiful and the buyer/seller literature grapples with the best way to measure various performances. Another significant outcome measure, especially in the case of relationship building, is intention to remain in the relationship (Ramsey and Sohi 1997).

Health care-specific variables that do not, to my knowledge, appear in the buyer/seller literature will, of course, need to be integrated into the model. For example, health complexity or the severity of health concerns will need to be introduced into the model. If a patient is incapacitated (which is not typically the case in the business-to-business buyer/seller interaction), the situation is clearly more delicate and the interpersonal trust, knowledge, and other variables will be more critical than if the patient is seeking assistance from the physician for routines illnesses, or for preventive care.

In the healthcare literature, health literacy (Zarcadoolas, Peasant, and Greer 2006) is an important variable and one that is not prevalent in the marketing area. The lack of this may be due, in part, to the responsibility of not appropriately educating the buyer (patient) by the seller (physician). In situations where the seller is demonstrating a very high-tech, complex manufacturing system, for example, it is up to the seller to insure that the buyer fully understands the system. Clearly in health care, there are massive amounts of highly-technical terms that the patients (buyers) have no knowledge of, nor should they. The healthcare industry needs to address the lack of health literacy in the population. It may be as simple as changing the methods by which terms are coined, but also taking responsibility to educate the public. A somewhat similar construct has been studied in marketing. Research has shown that consumers’ interpretation of health claims and nutrition information from product labels impact consumers’ beliefs, but are independent of each other.

What Do Patients Expect from a Physician-Patient (P-P) Exchange?

While not positioned as a rigorous, scientific study, 45 MBA students were asked about health care. First, “As a patient, how much control would you prefer to have over your own health?” and second, “What value comes from a physician-patient relationship?” Both questions related to aspects of the Patient-Centered Medical Home. These were asked and answered on a questionnaire that was distributed during an MBA Marketing Strategy class. All students participated and were given no
The results left little room for doubt. Only 15% of the respondents did not want control of their health care. The vast majority want to be given full disclosure and then to make their own decisions. The types of decisions go so far as to not have surgery if they prefer not to do so. This is a clear change from the former paternalistic approach, to one where the physician and patient are partners in the experience. Our subjects clearly saw the value is the physician-patient relationship. Exchange of information and trust formation were common responses, with improved health care being the outcome.

Obviously, MBA students are not typical of most patients. They are in the process of becoming well educated, and usually looking for advancement in organizations and leadership roles. They would suggest that they are perhaps more assertive than most and want control and feel they are capable of making decisions. Not only do they want control of their health, they feel it is their right to be involved and to have a significant part in decision making. However, the answers to Question #2 suggest that the relationship they develop with their physician is important to them and that they are willing to work on that relationship.

There are implications for the public policy sector. Training programs for all citizens should be provided. Perhaps differences in training in medical schools are also suggested. Finally, a mindset shift on the part of health care providers is needed that accepts that there will be a shift in power in the patient-physician dyad. The patient is now demanding more control.

This is not to say that all individuals want control or respect the importance of the patient-physician dyad. There are, no doubt, segments of the population who are content with being told what to do. They prefer to remain passive. This places an enormous burden on the physician to determine what “type” of patient each individual is. This demands adaptability on the part of the physician; another construct in the buyer-seller marketing literature. The seller (physician) must constantly attempt to adapt to buyer (patient) differences and peculiarities.

Table 1 – Sample Responses

<table>
<thead>
<tr>
<th>“As a Patient, How Much Control Would You Prefer to Have Over Your Own Health?”</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I should have the right to know about my health and to decide what to do about it. On the other hand, I would like to have the right to be treated without having to worry about money.”</td>
</tr>
<tr>
<td>“As a patient, I have the right to know everything about my own health. I should know the information on the diseases, the medicine I use, the operation I get, the benefits and side effect from my therapy. I also should have the right to choose how to treat my disease, including the right not to treat it.”</td>
</tr>
<tr>
<td>“As a patient, I want to know everything about my health.”</td>
</tr>
<tr>
<td>“It is very difficult to answer such a question, but I will say 20% or less.”</td>
</tr>
<tr>
<td>“I would like to have 80% of control over my health and the rest of it could be controlled by the professionals in the matter.”</td>
</tr>
<tr>
<td>“A little.”</td>
</tr>
<tr>
<td>“I would like to have total control, but then that would make me a doctor or healthcare professional, which I am not.”</td>
</tr>
<tr>
<td>“Reasonable, but not 100% because doctors know better after all.”</td>
</tr>
<tr>
<td>“I want complete control. I lived in France for a while and found the lack of control frustrating. It takes a while to schedule an appointment. The upper class pays for additional healthcare such as private doctors.”</td>
</tr>
<tr>
<td>“I would prefer to have control as far as where I receive the care and what procedures are performed on me, but I would follow the recommendations of a trusted healthcare provider.”</td>
</tr>
<tr>
<td>“Except for unforeseen events, I should take care of my own health. No fancy doctor visits.”</td>
</tr>
<tr>
<td>“At least I would like to choose who is going to be my primary care provider”</td>
</tr>
</tbody>
</table>
Table 2 – Sample Responses
“What Value Comes from a Physician-Patient Relationship?”

“A good physician-patient relationship can help the physician get more feedback from the patient. This will help improve the diagnosis efficiency of the physician and it will then help the patient to recover sooner and better.”

“The inherent and powerful therapeutic values come from a good physician-patient relationship. The trust between a doctor and his/her patient comes from a good relationship.”

“The patient can trust the physician and be more cooperative. They can communicate better. It will lower the entire cost of health care.”

“Trust and honesty.”

“I think it is like the customer and the seller.”

“None. Doctors prescribe meds because drug companies give them a kickback. Doctors drain patients for as much as they can.”

“Trust, information exchange.”

“Trust. Going to a different doctor is frustrating because they do not know your entire history.”

“Warm and fuzzy feelings.”

Conclusions

Health is the biological, social, and psychological ability that affords an equal opportunity for each individual to function in the relationships appropriate to his or her cultural context at any point in the life cycle.

Fine and Peters 2007, xx

Unfortunately, the United States has the highest healthcare spending as a percentage of GDP and some of the most dismal health measures. If, indeed, as the Fine and Peters quote suggests, health is about relationships, and functioning in those relationships, it is no wonder that we have some many problems in our healthcare system. The U.S. health care tends to focus on mechanics and technology, and person parts rather than on the person as a part of his/her community. One of these relationships that we should attend to is the patient-physician dyad – the vehicle through which the patient tends to and maintains healthy relationships.

The Patient-Centered Medical Home (PCMH) has been recently tested as a possible solution to the healthcare situation. PCMH can be defined as “…a team of people embedded in the community who seek to improve the health and healing of the people in that community” (Stange et al. 2010, 601). The results of the PCMH tests, however, suggest that the patient is still disengaged, and that there has been no improvement in the patient experience (Jaen et al. 2010). It is not because the patient-relationship has not been investigated in the healthcare literature; “…there have been many more years, indeed, centuries, for reflection on the elements that constitute the ideal physician-patient relationship” (Emanuel and Dubler 1995, 323). Even so, research suggests that the patient is clearly not satisfied with aspects of the relationship (Murphy et al. 2001). This is still far from a democratic relationship with shared decision making.

The overview offered in this paper brings a body of literature from the marketing literature to the healthcare researchers. If you will, this provides a framework for studying the patient-physician dyad much as the buyer-seller is studied in the business world. Many of the characteristics of these two dyads are extremely similar; the dynamics of the two parties are very much the same. In fact, there appear to be more similarities than differences in the two. For example, Lau and Chin (2003) investigated the Five C’s of the buyer-seller dyad (commitment, competence, conviction, courage, and character) while Emanuel and Dubler (1995) studied the Six C’s of the physician-patient dyad (choice, competence, communication, compassion, continuity, and (no) conflict of interest.

We offer opportunities for healthcare researchers to utilize the buyer-seller framework to investigate the patient-physician dyad. Our qualitative research supports the importance of this dyad, as well as readiness of some segments of the population to pursue a mutually beneficial relationship with their physicians. It is hoped that insight might be gleaned from the discussions offered, and that work may continue in this area. While it is important to make sure that the “wheel” is functioning correctly, there is no need to completely reinvent it.

References available upon request.
Patient Reported Outcomes (PROs) in Managing Patients with Chronic Conditions: Potential and Challenges
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Knut Hoversten, University of Utah
Jennifer Tabler, University of Utah
Tatiana Allen, University of Utah
Julie Day, MD, University of Utah
Michael K. Magill, MD, University of Utah

Abstract
Assessment of the impact of care on patients has traditionally relied on clinical outcomes. Patient reported outcomes (PROs) offer another important source of information. Patient-centered outcomes research (PCOR) recognizes the importance of including the patient’s perspective in understanding health-related outcomes. Patients’ reports of their perspective on their health status are the only valid source for some types of information. This information can be very helpful in delivering personalized healthcare. PROs can facilitate goal-setting and monitoring, as well as inform strategies to enhance patient engagement.

Our aims are to document our experience with developing the capabilities to capture and use patient reported outcomes, examine trends in the collection of PROs over time and changes in assessments in relation to health status, and assess the experiences of care managers in using PROs to gain an understanding of obstacles to and benefits of their use in practice.

Background
Over the past decade, University of Utah Health Care’s (UUHC) Community Clinics (CC) have implemented a new patient-centered medical home model of care called Care by Design™ (CBD), that incorporates three major elements: Appropriate Access, Care Teams, and Planned Care, all supported by an EMR. We have implemented a care management program to enhance care for patients with chronic conditions including those with diabetes mellitus (DM), coronary artery disease (CAD) and congestive heart failure (CHF). Care managers (CM) are the newest members of our care teams. Beginning with the hiring of 2 CMs in January 2011 we now have 7 CMs working in 9 of our 10 clinics. To support care management, we have built goal-setting templates into our EMR to document patient goals and monitor progress. We have built self-monitoring tools into MyChart, the patient portal to our EMR, for weight, exercise, blood glucose and blood pressure.

CMs use several assessment tools to track the impact of our care management program on patients:

- PAM (Patient Activation Measure), which assesses a person’s beliefs, motivation, and actions for self-care,
- PHQ-9, which measures depression severity, and
- RAND 36, which measures a patient’s perceived well being in physical, mental and social domains, and highlights functional limitations to daily life.

PAM was selected as a tool for assessing patients’ readiness for change with regard to taking actions to improve their health. The scores provide guidance to CMs as to the interventions that might be most helpful to move individual patients toward higher levels of self-management. Scores on repeat assessments were expected to be correlated with improved health status measures. This provides a tangible demonstration to patients that their efforts are paying off. The other measures were used to obtain patient generated information about how they felt (RAND) and whether they were showing any signs of depression (PHQ9). Depression typically goes undetected. If it is diagnosed it can be treated and if improved may have positive relationship to improvements in other areas.

During initial care management visits, care managers work with patients to complete these assessments entering data into the EMR. Repeat assessments, either during a care management visit or as patients complete the assessments electronically, help care managers track patients’ progress toward goals. Patients can also use the self-monitoring tools to track their own progress with regard to weight, exercise, blood glucose and blood pressure. Our goal is to have patients actively engaged in their own care by completing the assessments at least twice during their participation in the care management program and by making regular entries into the self-monitoring tools.

As of May 31, less than 5% of the patients in the care management program had completed all three tools more than once. We examine use of the care management support tools, assess utilization specifically of the PROs and patient progress on those, and explore the experience of CM in using these tools.

Method
Utilization of our assessment and self-monitoring tools has been tracked from implementation of our care
management program through May 31, 2013 using data pulled from our EMR. Changes in patients’ assessment scores are calculated with data from multiple administrations of the tools. Patients’ use of the self-monitoring tools is tracked through EMR data.

CM experience is captured during regular CM meetings in which implementation issues and patient stories are discussed. In addition, semi-structured interviews were conducted with six CMs at six of the UUCCs. Questions sought to understand CM experience with the PRO surveys. Specifically, interview questions explored the incorporation of PRO instruments into CM workflow and the perceived value of the surveys in patient care. Additionally, at least one patient encounter was observed at each clinic.

Results

At the network level, the percent of consented patients completing each assessment tool, as well as the number of times the assessments are repeated varies. Completion of repeat assessments is related to the number of care management visits. Among patients participating in our care management program and who consented to our use of their responses in our research, 68% have completed the PAM and the PHQ9 and 64.9% have completed the RAND. As the completion rates for each of the PROs presented in Table 1 illustrate, tracking responses over time has presented some problems.

For the 46 consented patients who have had multiple PAM assessments, there has been a positive change in activation level between the first and most recent assessments (p=.057). Changes between the first and second administration of the PHQ9 and RAND 36 show significant improvement for some of the summary measures: PHQ9 severity and symptom scores decreased between first and second administration (t-test p<0.01); RAND 36 improved between first and second administration on general health (t-test p<0.001), social functioning (p<.004), and energy/fatigue (p<.011). See Table 2.

Among the 73 care management patients who had taken the PAM two or more times as of March 2013, 41% had moved up at least one PAM level indicating an increase in their activation. Preliminary data indicate both the average care management population baseline score (59.5) and most recent average re-measurement score (63.0) put our patients in PAM Level 3 – “Beginning to Take Action.”

This category is defined by a PAM activation score of 56.4-66.0. For norms, 36.5% of individuals typically fall into Level 3. Essentially, we have moved patients from the bottom of Level 3 to the top of Level 3. If we continue in this vein we will soon break through to Level 4 – defined as “Has Difficulty Maintaining Behaviors over Time”.

The experience of one CM with a patient over time suggests that improvements in health status are accompanied by improvements in PROs.

Mr. X became a care management patient in May 2012. As an 81 year old widower living alone, his diabetes was out of control with an HgA1c of 15.0. After seven care management visits, Mr. X has learned to give himself insulin and has changed his lifestyle successfully enough to have an HgA1c of 5.9 as of 11/16/12. His health surveys indicate improvement in his perceived general health by 10 points, depression indicators changed from mild depression to no depression and his patient activation measurement has gone from having difficulty maintaining behaviors over time to beginning to take action.

Upon his last Care Management visit on 1/9/13, he reported that his cardiologist and dentist told him he was doing so well that he would not need to be seen for another year, [this had] never happened before.

Self-monitoring tools were implemented in MyChart in Dec 2011. CMs place an order for each tool in our EMR allowing a patient to access the tracker and enter their self-monitoring results. Patients must first be signed up for MyChart, then have the tools ordered, and finally become engaged in using the tools. Uptake has been slow but utilization is increasing. Each step in the process requires attention. See Figure 1.

Goal-setting templates were built into our EMR to document patient goals and monitor progress. Use of these tools is increasing, especially among patients with DM. See Figure 2.

Analysis of our qualitative data led to the identification of three specific themes with regard to the CM experiences in using the PROs:

1. CMs described a complex patient population:
   - Low literacy: refugees, prisoners, non-native English speakers
   - Mental illness: “patients in crisis”
   - Heterogeneous population: Pre-diabetics not comparable to diabetics
   - Patients Unreliable: “get a lot of no shows”;
     “patient’s are not ready to make any changes”

2. CM expressed concerns about the validity and reliability of PRO results. CMs consistently valued the PAM over the PHQ-9 and the RAND 36. They found the PAM easier for patients to complete and PAM data more clinically useful. Qualitative evaluation suggests that the length of the RAND36 may be an obstacle to its utilization by CMs.

3. CMs reported that as the care management program has evolved so has their role; this on-going change may impact their follow-through on obtaining repeated assessments.
   - Shifting program emphasis
   - Care team integration
   - Physical location of CM office
Discussion

We experienced several challenges in developing the capacity to collect and use PRO effectively. Specifically, developing the infrastructure and capability to capture and integrate PRO into the EMR proved to be more time consuming and resource intensive than anticipated. Experience with the PRO was needed before the reporting capabilities could be developed to support CM access to and use the PRO. Reports had to be developed that helped CM interpret and use the results.

When PROs were collected multiple times throughout the care management program, changes in the desired direction on all the assessments were observed and these changes were statistically significant (p<.05). It is important to ensure that the first care management visit is used to obtain baseline assessments as this increases the opportunity to obtain re-assessments.

The PAM tool is particularly helpful in monitoring patients’ progress on self-management. With a baseline assessment, the CM can focus on techniques specifically designed to move a patient to the next level of activation. Our experience of high variations in completion and reassessment rates led us to explore how the tools were being used in practice.

It appears that work flow and the time required to complete the various assessments are key factors that influence completion of the assessment tools. Thus, process redesign and CM and patient education can help improve completion of PRO. The protocol for the first care management visit is particularly important to ensure there is sufficient time and a clear process for PRO administration in order to increase PRO completion. Education, and re-education, of CM about the importance of using PAM scores to reinforce patient progress toward goals is needed as on-going operations may distract CM from this specific component of their roles. The PAM scores can give patients concrete feedback about their developing self-confidence. The usefulness of the PAM to the CM can be enhanced by providing specific follow-up recommendations for patients at different stages of PAM and targeted strategies for improvement of patients’ scores. Increased use of phone-based care management encounters including the completion of PAM via MyChart can also improve completion rates.

Further investigation with both CM and patients is needed to understand their motivations for completing PRO assessments. CM comfort level in seeking informed consent and patients’ participation in assessments vary. More training for CMs may be needed. Participation by patients in repeated assessments may be related to their success in dealing with their health issues. Patients who are making progress towards goals may be more willing to repeat the assessment. This may lead to a self-selection bias. Patients may not adopt/use patient portals and on-line self-monitoring tools as readily as we think/hope they will.

Conclusions

PRO complement clinical information for the management of patients with chronic conditions. PRO provide important feedback for patients regarding their progress and for CMs to work with patients to reach their personal goals. Building capacity to collect and use PRO contributes to benefits for patients.

References


Table 1 – PRO Completion Rate

<table>
<thead>
<tr>
<th>Assessment Tool Completion Rate</th>
<th>All sites combined, n = 518</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients</strong></td>
<td><strong>1 Time</strong> *</td>
</tr>
<tr>
<td>PAM</td>
<td>68.0%</td>
</tr>
<tr>
<td>RAND36</td>
<td>64.9%</td>
</tr>
<tr>
<td>PHQ9</td>
<td>68.0%</td>
</tr>
</tbody>
</table>

*unique patients, mutually exclusive categories

Table 2 – Results

<table>
<thead>
<tr>
<th>PRO Measure</th>
<th>Earlyst Score (S1)</th>
<th>Most recent score (S2)</th>
<th>T-Test Change S1 to S2</th>
<th>t- statistic</th>
<th>probability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHQ9 n=40</strong></td>
<td></td>
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<tr>
<td>Functional Impairment</td>
<td>Mean 0.775</td>
<td>0.525</td>
<td>1.57</td>
<td>0.12</td>
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<tr>
<td></td>
<td>Std Dev 0.15</td>
<td>0.14</td>
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<tr>
<td>Severity Score</td>
<td>Mean 8.72</td>
<td>5.69</td>
<td>3.52</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Std Dev 5.76</td>
<td>5.11</td>
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<td>Symptom Score</td>
<td>Mean 2.51</td>
<td>1.24</td>
<td>3.63</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Std Dev 2.19</td>
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<td><strong>PAM n=46</strong></td>
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<tr>
<td>Raw Score</td>
<td>Mean 39.72</td>
<td>42.79</td>
<td>3.39</td>
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<tr>
<td></td>
<td>Std Dev 4.03</td>
<td>4.75</td>
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<td>Activation Score</td>
<td>Mean 59.80</td>
<td>64.30</td>
<td>-1.95</td>
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<td></td>
<td>Std Dev 13.37</td>
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<tr>
<td>Total Score</td>
<td>Mean 39.45</td>
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<td>3.00</td>
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<td></td>
<td>Std Dev 4.54</td>
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<td><strong>RAND 36 n=36</strong></td>
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<td>General Health Score</td>
<td>Mean 38.19</td>
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<td>&lt;0.001</td>
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</tr>
<tr>
<td></td>
<td>Std Dev 19.39</td>
<td>20.77</td>
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<tr>
<td>Social Functioning Score</td>
<td>Mean 66.32</td>
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<td></td>
<td>Std Dev 29.40</td>
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<td>Energy/Fatigue Score</td>
<td>Mean 40.83</td>
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<td></td>
<td>Std Dev 20.96</td>
<td>23.47</td>
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</table>
Figure 1 – Utilization of Self-Monitoring Tools

Goal: 50 patients make at least 3 entries into at least 1 MyChart self-management tool

Result: 55 patients have made at least 3 entries into self-management tools. Uptake in utilization of the tools was slow to start but has been steadily increasing.

Figure 2 – Completion of Goal Setting
From Whether to Why: Democracy and Infant Mortality within India
Nisha Mukherjee Bellinger, Montana State University-Billings

Abstract
How does democratic politics affect infant mortality? The bulk of existing research has debated whether democracies have lower levels of infant mortality than non-democracies. Yet infant mortality varies as much within countries as it does between countries, suggesting that the political processes affecting infant mortality operate at the subnational level. To shed new light on the debate this paper examines how three core democratic attributes affect infant mortality within a single democracy: India. I argue that higher levels of political representation, citizens’ participation, and electoral competition provide political incentives for elected representatives to reduce infant mortality. The theory is tested with an error correction model on an original times-series dataset from 28 Indian states between 1981 and 2010. The results suggest that the core attributes of democracy reduce infant mortality.

Introduction
Infant mortality varies nearly as much within India as it does across the entire globe. For instance, in 2010 the infant mortality rate in India’s capital city Delhi was 30 deaths per 1000 live births, comparable to developing countries such as Guatemala and South Africa. But the infant mortality rate more than doubles just South of the Delhi border in the state of Madhya Pradesh, where infant mortality was 62 in 2010, comparable to low-income countries such as Haiti and Ethiopia. Far away from Delhi, on the Southern tip of India, is the state of Kerala with an infant mortality rate of 13, which is not only much lower than Delhi or Madhya Pradesh but is also comparable to infant mortality rates in the developed world. The presence of such extreme variation within a single country demonstrates the importance of understanding the subnational determinants of infant mortality.

Yet the existing political science literature primarily focuses on national-level conditions such as regime type, which do not vary significantly within countries. At the heart of the literature is the idea that democracies outperform non-democracies on public health outcomes such as infant mortality (Lake and Baum 2001; Przeworski et al. 2001; Bueno de Mesquita et al. 2003; Gerring, Thacker, and Alfaro 2012). However, contradictory scholarship questions if there is any relationship between democracy and infant mortality at all (e.g., Ross 2006). This controversy may be partially driven by the variation in infant mortality prevalent within regime types.

Recent scholarship focuses on this within-regime variation by demonstrating that the size of the winning coalition and the selectorate (Bueno de Mesquita et al. 2003) and the duration of democratic rule (Gerring, Thacker, and Alfaro 2012) influence infant mortality rates, enabling us to better understand the relationship between political regimes and infant mortality. Adopting a similar approach, this paper offers a novel theory that not only sheds light on cross-national and within-regime variations in infant mortality but also accounts for subnational variations within a democracy—India. I posit that politics plays a crucial role in determining welfare outcomes such as infant mortality in democratic societies, where political representatives are primarily driven by the desire to win office (Downs 1957; Riker 1962) and perform better to enhance welfare outcomes when performance becomes crucial for political survival (Bueno de Mesquita et al. 2003). I argue that incentives to perform well are affected by three core democratic attributes: political representation, citizens’ participation, and electoral competition. These attributes collectively make up the very essence of democratic politics. I hypothesize that greater political representation, citizens’ participation, and electoral competition motivate political representatives to perform better and enhance human welfare, thereby reducing infant mortality.

The theoretical argument postulated in this paper is theoretically innovative for two reasons. First, the concept of democracy is disaggregated to more precisely specify the causal mechanisms that link democracy with infant mortality. This represents a break with the bulk of the existing literature by moving beyond assessing whether democracies perform better than non-democracies to addressing an equally if not more important question of why they might do so. Second, I specify causal mechanisms that vary at both the national and subnational level, shedding new light on the controversy over the role of democracy at the national level, while breaking new ground by elaborating on a subnational theory on the politics of infant mortality within democracies. In doing so the paper simultaneously fills a notable void in our current

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1 Guatemala and South Africa had infant mortality rates of 25 and 35 respectively in 2010 (WDI 2012).
2 Haiti and Ethiopia had infant mortality rates of 67 and 54 respectively in 2010 (WDI 2012).
3 For instance, the United States had an infant mortality rate of 6.5 in 2010. Moreover, the average rate of infant mortality in the OECD countries between 1960 and 2010 is approximately 12 (WDI 2012).
understanding of infant mortality at the subnational level, while addressing one of the most prominent theoretical controversies in the literature.

The implications of this research stretch beyond the domain of infant mortality to address how democracy affects human welfare in general and the plight of the poor in particular. Infant mortality is indicative of various socialills that disproportionately affect the poor such as inadequate housing, lack of clean water and sanitation, indoor air pollution, undernourishment, vulnerability to diseases, female education, literacy, among others, for which data are limited (Lipton and Ravallion 1995; Sen 1999; Victoria et al. 2003). More broadly, infant mortality is one of the primary indicators of human welfare (Moon and Dixon 1985; Ross 2006; Przeworski et al. 2000; Lake and Baum 2001; Gerring, Thacker, and Moreno 2005, 2009; Gerring, Thacker, and Alfaro 2012). Thus, this paper sheds light on the political determinants of welfare outcomes in general as well as the precarious position of the world’s poor in particular.

I employ an original time-series dataset from 28 Indian states between 1981 and 2010 to assess how the core features of democracy affect infant mortality in both the short and long-term. Democratic attributes of representation, participation, and competition are measured with the number of parties, voter turnout, and the electoral margin of victory respectively, which albeit imperfect measures, are well aligned with the theoretical concepts. The findings have important implications for improving performance of political representatives among democratic societies.

The Indian Case

India presents a particularly useful case to analyze the relationship between democratic attributes and infant mortality for three primary reasons. First, the astonishing variation in infant mortality among the Indian states is suggestive that subnational politics plays an important role in India. Second, a subnational research design provides methodological leverage by enabling one to hold constant two widely cited national-level factors known to affect infant mortality – political regimes and political institutions. Third, understanding the politics of infant mortality in a developing country such as India helps us to better grasp the determinants of infant mortality in other developing democracies as well.

Indian states present comparable patterns of variation in infant mortality as observed cross-nationally and among democracies and non-democracies alike. Figure 1 displays the dispersion of infant mortality rates from 1981 to 2010 across all four groups. The x-axis identifies these four groups and the y-axis shows the variation in infant mortality rates. One of the most intriguing facts presented in Figure 1 is that a single democracy, India, displays more variation in infant mortality among its states than do all democracies at the national level. The exclusive focus of the existing literature on national-level factors has obscured this crucial variation in infant mortality and has left it unexplained. Thus, understanding the subnational variation in infant mortality at the state-level is imperative. This is especially relevant in the light of the fact that state governments are primarily responsible for providing the welfare goods and services that most directly affect infant mortality in a federal system such as India (Sáez and Sinha 2009). Moreover, survey evidence from India also indicates that citizens hold state governments responsible for the provision of public goods and services than local or national governments (Chhibber, Shastri, and Sisson 2004).

A subnational study on India such as this also offers an important methodological advantage by providing relatively greater comparability between cases such as common historical, cultural, and socio-economic characteristics, which enhances our ability to make causal inferences (Snyder 2001; Gerring 2004). While there are disparities among the Indian states as well, however, on balance, a subnational study provides better control for measurable and immeasurable factors as compared to a cross-national study. In particular, this subnational research design allows one to hold constant two factors that have been emphasized in the cross-national literature as being the primary determinants of infant mortality – regime type and political institutions. The literature emphasizing regime type argues that democracies perform better than non-democracies (Lake and Baum 2001; Przeworski et al. 2001; Bueno de Mesquita et al. 2003; Gerring, Thacker, and Alfaro 2012). However, India’s democratic legacy cannot account for the large disparities in infant mortality among the Indian states. In this paper, I look deeper into the political fabric of the Indian society by holding democratic regime-type constant.

The political institutions literature identifies centripetal (Gerring, Thacker, and Moreno 2005) and parliamentary institutions (Gerring, Thacker, and Moreno 2009) as two democratic alternatives that produce lower levels of infant mortality than their counterparts. Unitary parliamentary institutions with a list-PR electoral system are considered centripetal in nature. India is a greater than 6 are classified as democracies and countries with a polity2 score of less than 6 are classified as non-democracies.

Infant mortality is defined as number of deaths (of infants of one year or less) per thousand live births.

See Gerring, Thacker, and Moreno (2005) for other characteristics of centripetal institutions.
parliamentary democracy, which is the only centripetal feature present in the country since it has a federal structure with a single member district plurality (SMDP) electoral system. Institutions at the subnational level in India mirror those at the national level. The Indian states have state parliaments where the state governments are collectively responsible to the state parliaments. Similarly, the SMDP electoral system is used for both national and state parliamentary elections. Since political institutions remain the same at the national and subnational levels, they cannot account for the subnational variation in infant mortality. Holding political institutions constant enables me to focus on alternative factors that vary both within and across democracies.

Lastly, this study on India is able to shed light on the determinants of infant mortality in other developing democracies as well. Developing countries are the most common income-group today with 67% of countries in the world comprising developing economies as compared to 32% of developed economies. India is a large developing country, accounting for approximately 18% of the world’s population (WDI 2012). Democratic regimes are the most common regime-type in the world today with approximately 68% of countries being categorized as democracies as compared to 32% being classified as non-democracies. India has sustained its democratic legacy over time and has been categorized as a highly democratic country with an average polity2 score of above 8 since independence (Marshall and Jaggers 2011). Thus, this study on India can shed light on an issue of high salience such as infant mortality for a large subset of countries in the world since it is a developing democracy.

Democratic Attributes and Infant Mortality

Infant mortality has been a subject of study in a variety of disciplines. For instance, existing development and health-related scholarship demonstrates that hospital infrastructure and quality (Aguilera and Marrufu 2007), income distribution within societies (Hales et al. 1999), water pollution (Jorgenson 2004), environmental factors and condition of mothers (Folasade 2000), family health programs and female illiteracy (Macinko, Guanais, and Marinho de Souza 2006), and infrastructure (Fay et al. 2005), among others are some of the proximate determinants of infant mortality. This literature sheds light on several policy alternatives available with political representatives to influence health outcomes. An imperative question however remains unanswered, namely, what motivates elected officials to adopt any of these policies? I emphasize that politics plays a fundamental role in the provision of welfare goods and services and I focus on the political motivations that enable political representatives to perform well and enhance welfare outcomes. I argue that three core democratic attributes—political representation, citizens’ participation, and electoral competition—fundamentally shape the incentives for political representatives to reduce infant mortality.

Political Representation

Parties are the quintessential agents of representation in a democracy and they play the key representational role of linking citizens with their elected officials (Diamond 1997). Scholars such as Schattschneider (1942, 3) assert, “democracy is unthinkable save in terms of parties,” while Lipset (1996, 169) refers to parties as “the core institution of democratic politics.” Existing studies on India that emphasize the role of political parties focus on the nature of party systems. For instance, Chhibber and Nooruddin (2004) argue that two-party states are likely to spend more on public goods and divert greater resources towards developmental expenditure because political parties in this system have a larger winning coalition to please and public goods become more affordable for political parties as the winning coalition increases. In multiparty states on the other hand, political parties rely on a smaller winning coalition and therefore tend to use club or private goods to keep supporters happy. In contrast, Sáez and Sinha (2009) argue that multiparty states signal political uncertainty, as a result of which political parties spend more in these systems to keep their constituents happy as compared to two party systems.

These two studies make theoretically plausible yet contradictory predictions about the relationship between party systems and government expenditure such that the effect of the number of parties on public expenditure within India seems unclear. I focus on a different theoretical perspective—the representativeness of party systems—to analyze its effect on a primary indicator of welfare outcome—infant mortality. Democracies display variation in the extent of representativeness and party systems can capture this variation in representativeness within and across democracies.

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7 I use the World Bank classification of high-income, upper-middle and lower-middle income, and low income categories to calculate percentages of developed and developing countries. As per the World Bank 2013 classification, there are 31 high-income OECD countries, 39 high-income non-OECD countries, 54 upper-middle income, 54 lower-middle income, and 36 low-income countries. I categorize all the high income countries as developed and the rest as developing.

8 I use the polity IV data to classify regime-types (Marshall and Jaggers 2011). Polity2 score 6 and above are categorized as democracies and the others are categorized as non-democracies.

9 With a brief interlude between June 1975 and March 1977 when the Prime Minister, Indira Gandhi, declared a state of emergency.

9 I use the polity IV data to classify regime-types (Marshall and Jaggers 2011). Polity2 score of 6 and above are categorized as democracies and the others are categorized as non-democracies.

10 Parties also perform other essential tasks such as articulating interests, proposing policy alternatives, and forming governments, to name a few (Norris 2004; Diamond 1997).

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Interestingly, changes in infant mortality seem to correlate with the effective number of parties fluctuating over time. As an illustrative example for instance, the Congress Party had a stronghold on the state of Tamil Nadu since independence from 1947 to the 1960’s, with a support base that primarily consisted of the landed and the upper castes (Maniyan 1992). Gradually, regional parties such as the Dravida Munnetra Kazhagam (DMK) emerged in the late 1940’s and the All Indian Annadurai DMK (AIADMK) emerged in the 1970’s to represent the interests of the poor, lower castes, and women (Wyatt, 2002). Smaller caste based parties such as the Pattali Makkal Katchi (PMK), Toiling People’s Party (PT) party, the Pudhiya Thamizhagam (PT) party, the Makal Tamil Desam Katchi party, among others emerged in the 1980s and the 1990s to represent different caste-based groups (Wyatt 2002). In spite of an increase in the number of parties within the state, the absence of multiple parties that are well-informed about the needs of diverse groups will likely result in those groups’ general welfare needs being ignored.

As an illustrative example for instance, the Congress Party had a stronghold on the state of Tamil Nadu since independence from 1947 to the 1960’s, with a support base that primarily consisted of the landed and the upper castes (Maniyan 1992). Gradually, regional parties such as the Dravida Munnetra Kazhagam (DMK) emerged in the late 1940’s and the All Indian Annadurai DMK (AIADMK) emerged in the 1970’s to represent the interests of the poor, lower castes, and women (Wyatt, 2002). Smaller caste based parties such as the Pattali Makkal Katchi (PMK), Toiling People’s Party (PT) party, the Pudhiya Thamizhagam (PT) party, the Makal Tamil Desam Katchi party, among others emerged in the 1980s and the 1990s to represent different caste-based groups (Wyatt 2002). In spite of an increase in the number of parties within the state, the effective number of parties fluctuated over time. Interestingly, changes in infant mortality seem to correlate with changes in effective number of parties within the state (ENP). Between 1981 and 1990, ENP was over 2 and infant mortality during this period reduced by 35%. ENP fell to under 2 between 1991 and 2001 during which time infant mortality reduced by only 10%. Post-2001 to 2010, ENP gradually increased to over 3 and during this period the state witnessed the steepest decline in infant mortality, 51%. This was especially significant considering that the national infant mortality reduced by 25% between 2001 and 2010, a considerably lower rate of reduction than that of Tamil Nadu. This example illustrates the representational impact of an increase in the number of parties on infant mortality.

The structure of the party system also provides incentives for political parties to reduce infant mortality. Multiparty systems are not only indicative of an inclusive or better-represented society but they also engender a more competitive political system where parties are compelled to perform better because there is a greater risk of replacement for poor performing incumbents given the presence of multiple political parties. Poor performance can result in the erosion of electoral support with citizens easily switching their allegiance to alternative parties. This is especially plausible in a country with cross-cutting cleavages, such as India. Cross-cutting cleavages enable parties to mobilize a larger number of supporters by appealing to different cleavage identities (Chandra 2005). This adds a dimension of fluidity to the support-groups of parties since citizens can identify with alternative political parties. Thus, political parties have to perform well in order to retain or even enhance their support-base.

For instance, the Akali Dal party and the BJP (Bhartiya Janata Party) formed a coalition government following the 1997 legislative elections in the state of Punjab and performed poorly while in office (Verma 1999). Infant mortality increased in the state by 2% from 1997 to 2002. The Akali-Dal and the BJP have traditionally used ethnoreligious issues for electoral gains but poor performance in office eroded their support-bases (Jodha 2001). The Akali Dal party lost support of certain sections of the Sikh community, its traditional support-base, while the urban Hindus, who primarily supported the BJP switched their allegiance to the Congress party in the 1999 parliamentary elections. The ENP increased steadily from 2.2 in 1997 to 2.4 and 2.9 in subsequent years, indicating the emergence of parties that garnered the support of the dissatisfied voters in the state in an attempt to fill the void left by the ruling coalitions’ poor performance. Between 2002 and 2010, as the ENP increased further, infant mortality reduced by 27%, a considerable improvement in

11 Effective number of parties takes into account each party’s seat-share in the legislature. The measure is discussed in greater detail in the data and methods section below.

12 While Chhibber and Nooruddin (2004) argue that two-party states are more competitive in India, Wilkinsin (2004) postulates the contrary, namely multiparty states in India are indicative of more competitive political systems. The argument in this paper is consistent with Wilkinson’s perspective. Assuming that political parties not only want to come to office but to enhance their support and remain in office, they are more likely to be replaced if they have to compete with additional parties. This motivates them to perform better. As such, this theoretical argument is similar to that postulated by Sáez and Sinha (2009), who posit that multiparty systems lead to political uncertainty among political parties, motivating them to spend more on public goods such as education expenditure.

13 Cross-cutting cleavages are those where individuals have multiple identities such that political parties can easily appeal to these distinct identities to mobilize support.
the state’s performance. The Akali-Dal and the BJP have come to rely less on identity politics and are gradually making broader appeals to the electorate by emphasizing developmental issues that benefit society at large (Kumar 2004). The case of Punjab illustrates that increasing the number of parties presents incentives for political parties to perform better, thereby reducing infant mortality. This discussion of political representation and infant mortality suggests:

\[ H1: \text{All equal conditions, an increase in the number of parties reduces infant mortality.} \]

**Citizens’ participation**

Citizens’ participation has been referred to as “the heart of democracy” (Verba, Schlozman, and Brady 1995). Indeed, widespread citizens’ participation is essential for a vibrant and flourishing democracy where the masses have the opportunity to influence the governing process. Cleary’s (2007) study provides evidence of a positive relationship between citizens’ participation and responsiveness of elected officials among Mexican municipalities. I emphasize that participative citizens are able to induce accountability from elected officials regardless of the institutional or cultural differences between countries. This study on India provides an opportunity to assess the relationship between citizens’ participation and infant mortality in an Indian context.

Citizens’ participation can take various guises, ranging from voting in elections, referendums, holding peaceful protests, demonstrations, and attending public hearings, among others. Democratic societies display tremendous variation in citizens’ participation. I specifically focus on citizens’ electoral participation and argue that high levels of voter turnout reduce infant mortality for two primary reasons. First, voting presents an opportunity for the citizens to hold their political representatives accountable by sending clear electoral signals. Second, high voter turnout is also indicative of an active public who are capable of inducing responsive behavior from the elected officials.

Voting is a frequent and collective activity that can influence broad outcomes within society (Verba, Nie, and Kim 1978). It provides a mechanism through which political representatives can be held accountable. However, even though “practically all adults have the right to vote” in a democracy (Dahl 1989), not all eligible voters exercise their right to vote. High voter turnout mirrors a society where citizens take advantage of the electoral mechanism to send clear signals to their representatives about their performance in office. Citizens can either reward or penalize political representatives for their performance during elections (Powell 2000). By rewarding political representatives, citizens extend the electoral mandate to incumbents who perform well in office. Voting also enables citizens to penalize incumbents for poor performance in office by voting for alternative political representatives. More generally, using the electoral mechanism to reward or replace incumbents also informs political representatives about policies that may or may not work to influence public health outcomes such as infant mortality. Lower voter turnout on the other hand indicates the presence of voters who do not use the electoral mechanism to send electoral signals to elected officials. This makes it easier for poor performing incumbents to remain in office, especially if those dissatisfied with their elected officials do not vote-out the poor performing incumbents.

High voter turnout is also indicative of participative citizenry who are active in other aspects of political life as well (Inkeles 1969; Verba, Schlozman, and Brady 1995). This is especially applicable to countries where voting is not compulsory, such as India. Not only do these citizens participate in periodic elections but also use their democratic right to organize collectively in the form of protests, demonstrations, among others to induce better government performance. The state of Kerala, in India, provides evidence of a politically active populace, where the people vote in large numbers and participate in various other aspects of politics. 14 The state has the highest levels of unionization in both the formal and informal sectors, which include the upper and lower classes (Heller 2000). Moreover, the citizens have been known to act collectively to monitor the functioning of schools and health centers (Franke and Chasin 1997), so much so that the absence of a doctor at a primary health center can often result in demonstrations being held by the people at the local government office in Kerala (Mencher 1980). 15 Thus, high levels of voter turnout are indicative of an active citizenry, who are vigilant, participative, and proactive. 16 An active citizenry induces political representatives to meet the needs of their supporters lest the masses reprimand them in public or draw attention to their incompetent performance, thereby

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14 Kerala has one of the highest voter turnouts among the Indian states.

15 Conventional wisdom asserts that high-income people are politically more active as compared to low income groups (Verba, Schlozman, and Brady 1995). However, in the case of India, numerous studies suggest that the poor are becoming more politically active than the rich (Harris 2005; Chatterjee 2004). Thus, citizens’ participation in India is not restricted to the upper stratas of society only.

16 It is important to note that no one form of citizens’ participation is necessarily better than the other for inducing good performance from elected officials because while in some cases protests may be a more effective tool for the citizens, in other cases, voting may be a better mechanism to redress grievances (Benjamin, Blue, and Coleman 1971). However, forms of political participation such as participation in protests, demonstrations, etc. may be useful mechanisms to exercise pressure on the political representatives but are not the official mechanisms to install political representatives into office and may often be insufficient to remove the latter from office (with few exceptions where public demands have coerced a political representative to resign from office). Thus, using citizens’ electoral participation as a proxy for politically active populace is most appropriate as compared to its alternatives.
motivating them to perform better and reduce infant mortality. Low levels of voter turnout on the other hand connote a passive populace who do not use the electoral mechanism to apply the necessary pressure on government officials to induce responsiveness and are not as participative in other aspects of political life either. This may be tantamount to political representatives taking an indifferent attitude towards the needs and preferences of their supporters, resulting in higher levels of infant mortality.

For instance, the state of Uttar Pradesh has had an average voter turnout of approximately 50% from 1981 to 2010, one of the lowest in the country compared to the national average of 68%. Uttar Pradesh also has one of the highest levels of infant mortality in India. The average infant mortality rate in the state has been 98 infant deaths per 1000 live births, while the national average is 57. In contrast, the state of Nagaland has had one of the highest rates of voter turnout in the country, averaging 84% from 1981 to 2010. It also has one of the lowest infant mortality rates in the country, averaging 19 infant deaths per 1000 live births during the same time period. Uttar Pradesh and Nagaland provide preliminary support to the theory, where politically inactive citizens are unable to induce better performance from their political representatives, resulting in higher rates of infant mortality while vigilant citizens who participate in the political affairs of the state provide incentives for political representatives to perform well, thereby reducing infant mortality. This discussion of citizens’ participation and infant mortality suggests:

**H2: All else equal, an increase in voter turnout reduces infant mortality.**

**Electoral Competition**

Free and fair elections are the basic prerequisites for a democracy (Dahl 1971). Elections provide an opportunity for citizens to choose the candidates who are best suited to satisfy the needs of the masses. While elections are a regular phenomenon in all democracies, they do vary in their degree of competitiveness where some elections are more competitive than others.

Existing studies on electoral competitiveness and government performance provide inconclusive evidence. While Cleary’s (2007) study of Mexican municipalities does not find a significant relationship between competition and performance, studies of the U.S. do find evidence of a positive link between electoral competitiveness and political performance (Griffen 2006; Konisky and Ueda 2011). These contradictory findings are intriguing since both Mexico and the U.S. have a single-member-district plurality (SMDP) electoral system. This study enables one to revisit the impact of electoral competitiveness in a similar electoral context since India also has a SMDP electoral system. I argue that more electoral competition, as captured by a small margin of victory, leads to lower levels of infant mortality because it signals to all parties the presence of strong competitors who can replace a poor performing incumbent, thereby providing incentives for parties to perform well.

Competitive elections provide incentives for the incumbents and the challengers to appeal to the electorate with the promise of better performance. The incumbents are aware of alternative challengers who could potentially displace poor performing incumbents. Competitiveness prevents elected officials from governing poorly and exercises the necessary pressure on them to be proactive in their performance. Given the incumbent’s desire to remain in power, political representatives have to perform well in office in a competitive environment. Challengers, on the other hand, constantly strive to come to power. Given the competitive nature of the elections, they need to appeal to the electorate with the promise of better performance than the incumbents and demonstrate their commitment to address the shortcomings of the incumbents.

Electoral incentives for better performance are even greater in a SMDP system such as India’s, making competition intense among political representatives. In this electoral system, since representatives are competing over a single seat in a constituency, they need to work harder and perform better in a competitive environment to maintain or gain representation. Inability of candidates to win the single contested seat due to a small support-base may also provide incentives for prospective candidates to appeal to larger swaths of society. Given India’s cross-cutting cleavage structure (Chandra 2005), contestants can use different cleavage dimensions to garner the support of diverse groups. If elected, political representatives have to satisfy the needs and preferences of multiple segments of population and they can do so by implementing policies that enhance societal welfare as a whole.

For instance, extreme electoral competitiveness in the state of Andhra Pradesh in the 2004 elections propelled political parties competing in the state to provide greater welfare benefits (Elliott 2011). The 2004 state assembly elections in Andhra Pradesh were very competitive, with a margin of victory (vote share) between the winner (Indian National Congress Party- INC) and its primary challenger (the grand alliance led by the Telugu Desam Party - TDP) competitive on an important welfare outcome such as infant mortality still remains to be evaluated.

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17 Moreover, none of these studies assess the impact of electoral competitiveness on infant mortality. Thus, the impact of electoral competitiveness on an important welfare outcome such as infant mortality still remains to be evaluated.

18 It is plausible that none of the political parties are able to attain a majority of seats in the state legislature, which necessitates the formation of a coalition government. This does not change the electoral incentives for good performance. The coalition parties need to cooperate while in office and deliver on their promises to ensure that they are able to win office in forthcoming elections as well.
being less than 1%. Between the years 2004 to 2010, the reduction in infant mortality in Tamil Nadu was 41% as compared to a 16% aggregate reduction in infant mortality among all Indian states during the same time period, indicating a steep decline in infant mortality in the state following competitive elections.\textsuperscript{19} In the 2009 election campaign, the INC (Indian National Congress) proposed to provide free health-care services for serious illnesses, subsidized housing projects, pension scheme for widows, scholarships for relatively deprived sections of society, among others. The Telugu Desam Party, the primary competitor of the INC, in an attempt to appeal to the electorate, proposed to provide free health-care to a broader range of illnesses than those proposed by the INC and give cash transfers to the poor families, among other things. Even though the INC won the 2009 elections, the competitiveness of the election motivated the challengers to appeal to the electorate with the provision of broader welfare services. This example demonstrates that electoral competitiveness motivates incumbents to perform well and propels the challengers to appeal to the electorate with the promise of providing for their needs.

Alternatively, in a relatively uncompetitive system where there are no viable challengers who can replace the incumbents, there are fewer incentives for the incumbents to be responsive to the needs of the populace. The lack of government initiative to generate development in the state of Bihar demonstrates the consequences of an uncompetitive system. Bihar was under the rule of the Rashtriya Janata Dal (RJD) party from 1990 to 2005.\textsuperscript{20} Elections were relatively less competitive with the incumbents winning elections over these fifteen years with approximately 12.5% margin of victory. There was an 18% reduction in infant mortality during this time period as compared to the national average of 42% reduction in infant mortality among all Indian states during the same time period, indicating poor governmental performance in the state. Moreover, there was no discernable improvement in the condition of the incumbents’ supporters, namely the rural poor (Robin 2004) and fifteen years of misrule and poor governance retarded the development of the state (Sharma 1995).\textsuperscript{21} Thus even though there were periodic elections, they were insufficient to motivate the incumbents to satisfy the needs of the populace. The 2005 elections finally witnessed a turnover in power with the National Democratic Alliance (NDA) assuming office. Governance in Bihar has gradually improved since then with a 21% reduction in infant mortality between 2005 and 2010 as compared to a 14% national reduction among all Indian states. This discussion of electoral competitiveness and infant mortality suggests:

\textbf{H3: All else equal, a reduction in margin of victory reduces infant mortality.}

\textbf{Data and Methods}

This paper analyzes the impact of three core democratic attributes on infant mortality on a sample of 28 Indian states from 1981 to 2010. The primary dependent variable is infant mortality, which is measured by the number of infant deaths (of one year or less) per thousand live births. The data for infant mortality are available from the Sample Registration System surveys published by the Census of India (various years). The primary independent variables are the three democratic attributes – political representation, citizens’ participation, and electoral competition. Political representation is measured with the effective number of parliamentary parties.\textsuperscript{22} Effective number of parliamentary parties takes into account each party’s seat-share in the ‘Vidhan Sabha’ (lower house of the state legislature).\textsuperscript{23} Citizens’ participation is measured by voter turnout, which is calculated as a percentage of registered voters that vote during elections to the ‘Vidhan Sabha’. Electoral competition is measured with the electoral margin of victory. Margin of victory is the percentage difference in vote share between the largest and the second largest recipients of votes.\textsuperscript{24} The data for the three primary independent variables have been calculated from the Election Commission of India (various years).

\textbf{Figures 2, 3, and, 4 about here}

Figures 2, 3, and 4 show scatter plots with fitted values between infant mortality (y-axis) and effective number of parties, voter turnout, and electoral margin of victory (xaxis) respectively. The scatter plots are consistent

\textsuperscript{22} Alternative ways of measuring the number of parties may include the effective number of electoral parties or counting the number of all existing parties. However, the theoretical link between political representation and infant mortality focuses on the role of political parties in state legislatures. Thus, effective number of parliamentary parties is an appropriate measure of political representation.

\textsuperscript{23} The measure of effective number of parliamentary parties is constructed using Laasko and Taagepera’s formula (1979): \textit{ENPP} = \frac{1}{\sum si2}, where \textit{s} is the percentage of seats won by the ith party at the legislature. Independent or ‘others’ are treated as a single party.

\textsuperscript{24} Most Indian states are unicameral with the exception of six states that are bicameral. Bicameral states have a Vidhan Sabha (lower house) and Vidhan Parishad (upper house). I calculated the effective number of parties, voter turnout, and margin of victory of the lower house for the states that are bicameral. Effective number of parties, voter turnout, and margin of victory are only likely to change in an election year. Therefore, I use the same values of the three variables for the intervening years between elections.
with the hypothesized relationship between the theoretical variables of interest. In figures 2 and 3, the downward sloping fitted lines indicate a negative correlation between effective number of parties, voter turnout and infant mortality suggesting that multiple parties and higher levels of voter turnout are associated with lower levels of infant mortality, consistent with hypotheses 1 and 2. In figure 4, the upward sloping fitted line indicates a positive correlation between margin of victory and infant mortality suggesting that a larger margin of victory is associated with higher levels of infant mortality, consistent with hypothesis 3. The scatter-plots thereby provide preliminary support to the theory.

I now put the theory to a more rigorous test by conducting a quantitative analysis by using a single equation error-correction model (ECM) to assess the short-term and long-term effects of the three primary independent variables on infant mortality. The error correction model (ECM) is shown in equation (1):

\[ \Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \beta_0 \Delta X_t + \beta_1 X_{t-1} + \epsilon_t \]  

where annual changes in infant mortality (\( \Delta Y_t \)) is modeled as a function of the constant (\( \alpha_0 \)), a one-year lag value of infant mortality (\( \alpha_1 Y_{t-1} \)), the changes (\( \beta_0 \Delta X_t \)) and lagged levels (\( \beta_1 X_{t-1} \)) of all right-hand side variables, and an error term (\( \epsilon_t \)). \( \Delta \) is the difference operator. The error correction rate or the rate at which infant mortality adjusts to changes in X is given by the coefficient on the lagged dependent variable (\( \alpha_1 \)). \( \beta_0 \) reflects the immediate effect of a change in X on Y and \( \beta_1 \) reflects the long-run effect of a change in X on Y.

I draw on the existing cross-national literature to account for alternative explanations of infant mortality. Income per capita is a standard control in most studies (Przeworski et al. 2000; Ross 2006; Gerring, Thacker, and Alfaro 2012). Income may influence infant mortality where states with higher income may have more resources to address the welfare needs of its residents. I measure income with the log of per capita state domestic product at constant price. The data are available from the Reserve Bank of India (various years). Population size is yet another factor that may influence infant mortality where states with larger populations may find it difficult to provide health services to all its residents (Zweifel and Navia 2000; Enikolopov and Zhuravskaya 2007). I use the log of population and the data are available from the Census of India (various years). In the models that contain voter turnout, I include a dummy control variable that accounts for election years where incidence of severe violence during elections adversely affected voter turnout in certain states (Baruah 1986; Singh 1992; EPW 2002).26 State and year dummies have been included in all models to guard against the possibility of any one state or year influencing the relationship between the primary dependent and independent variables.

### Findings

Table 1, models 1, 2, and 3 show the impact of effective number of parties, voter turnout, and the electoral margin of victory on infant mortality respectively. Model 1 shows that effective number of parties has a statistically significant short-term and a long-term effect on infant mortality, where higher effective number of parties reduces infant mortality. The finding is consistent with the hypothesized relationship between the two. Higher effective number of parties suggests a more representative society that enables diverse societal interests to be incorporated in policy-making. It is also indicative of a competitive political environment that provides incentives for all parties to perform better to survive in office. These incentives to perform well are prevalent both in the immediate future and in the long-term, which further confirms the significance of political representation in democratic societies.

Model 2 indicates that voter turnout has a statistically significant effect on infant mortality in the long-term, where high voter turnout reduces infant mortality. The finding is consistent with the theoretical expectation. High voter turnout indicates that citizens use the electoral mechanism to hold political representatives accountable by rewarding or penalizing political representatives for their performance. Additionally, it is also suggestive of an active citizenry who are involved in other forms of collective action such as organizing protests, demonstrations, attending public meetings, among others. Political representatives in turn perform well as they are under constant scrutiny of a vigilant public, thereby reducing infant mortality. This effect however is primarily witnessed in the long-term where citizens who are known to be proactive over a period of time are better able to induce good performance from the elected officials.

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25 Population data for Indian states are only available for decades. I impute the population data for the intervening years to have a complete dataset.

26 Assam and Punjab are two states where voter turnout was especially low during elections. Assam witnessed conflict in the 1983 elections where turnout was 32% as compared to a 75% average turnout rate in other legislative elections in the state. Punjab witnessed violence in the 1992 elections with a 24% turnout as compared to 67% average turnout in other legislative elections in the state. Conflict during elections in the state of Jammu and Kashmir has also affected voter turnout in the state, which was particularly low in the 2002 elections with a 43% turnout. However, I do not control for conflict in election years for Jammu and Kashmir because the data for Jammu and Kashmir are only available from 2003 onwards and the state dummy can account for low turnout during elections for this state.
Model 3 shows that the electoral margin of victory has a statistically significant short-term and long-term effect on infant mortality, where a smaller margin of victory reduces infant mortality. Given the competitive nature of elections both incumbents and challengers have political incentives to act proactively in office and perform well to enhance societal welfare. Model 4 includes all the three primary independent variables in one model. The results remain unchanged for effective number of parties and voter turnout – where effective number of parties remains significant in the short and long-term and voter turnout remains significant in the long-term. Margin of victory, however, is only significant in the short-term. This suggests that once all the theoretical variables of interest are included in one model, competitive elections only have an immediate effect of alerting the political representatives to perform well as the effect of competitive elections on infant mortality dissipates in the long run. A plausible explanation may be that elected officials initiate policies that only have short-term benefits, possibly because they are shortsighted and invest in policies that enhance their electoral prospects only in the immediate future.

The total effect (the immediate and the long-term effect) of the independent variables on infant mortality can be estimated by calculating the long-run multiplier (LRM). I use the coefficients in model 4 to calculate the total effect of all the independent variables since it includes all the theoretical variables of interest. The coefficient on the lagged dependent variable gives the error correction rate, which is the rate at which infant mortality adjusts to changes in the independent variables. LRMs can be calculated by dividing the X coefficients by the coefficient of lagged infant mortality. However, this does not generate standard errors. Thus, I employ the Bewley (1979) method to calculate the overall impact of the independent variables. The last column presents the LRMs for all independent variables.

Effective number of parties has a statistically significant total effect on infant mortality. In substantive terms, a 1 party increase reduces infant mortality by approximately 4 infant deaths per 1000 live births. Voter turnout also has a statistically significant total effect on infant mortality. In substantive terms, a 2% increase in voter turnout reduces infant mortality by approximately 1 infant death per 1000 live births. Given that the median cross-national infant mortality is 15 deaths per 1000 live births, the impact of effective number of parties and voter turnout is non-trivial.27 Number of parties and voter turnout capture democratic attributes of political representation and citizens’ participation and these findings demonstrate the significance of the two core democratic features in influencing performance of political representatives.

Margin of victory, which captures electoral competitiveness, does not have a statistically significant total effect on infant mortality. Other studies of electoral competitiveness and government performance also provide inconclusive evidence of a relationship between the two (Cleary 2007; Griffen 2006; Konisky and Ueda 2011). However, margin of victory is only used as a proxy for electoral competition in this paper and the effect of electoral competition needs to be explored further before casting aside the effect of this core democratic feature. Overall, the number of parties has the strongest effect on infant mortality, further attesting to the crucial influence of political parties in particular and political representation in general in enhancing societal welfare.

State domestic product per capita and population do not reach statistical levels of significance in most of the models, including the total effect as captured by the LRMs. Models 2 and 4 include a violence dummy for states of Assam and Punjab where violence during election years prevented people from going to the polls. The coefficient is negative and significant, suggesting that violence during elections reduces infant mortality in the short and long-term. While this is a counter-intuitive finding, a plausible explanation could be that the states of Assam and Punjab that witnessed violence during elections have performed better than the national average in terms of infant mortality, which could possibly explain why violence during election years in these states did not increase infant mortality. Moreover, instances of violence during elections were shortlived and restricted to the election period with the intention of preventing people from going to the polls, thus not adversely affecting infant mortality. Lastly, the total effect of election related violence as captured by LRM is insignificant, indicating the tenuous nature of the relationship between the two. Overall, despite the stringent nature of the analysis, the results suggest that democratic attributes play an important role in influencing infant mortality.

**Robustness tests**

The baseline analysis assessed the effect of democratic attributes on infant mortality among all 28 states in India. As a robustness test, I conduct the analysis on 15 major states only, which is consistent with the recent studies on India (Chhibber and Nooruddin 2004; Sáez and Sinha 2009). The findings in table 2 are similar to the baseline results. The theoretical variables of interest, namely effective number of parties and voter turnout remain significant. Substantively, a one party increase in ENP reduces infant mortality by almost 4 infant deaths and a 2% increase in voter turnout reduces infant mortality by approximately 1 infant death. Margin of victory again has no significant overall total effect on infant mortality. As an alternative robustness test, I re-estimated the baseline models after controlling for party dummies for states where

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27 Based on data presented in figure 1.
one of the three primary national parties held a plurality of seats in state legislatures, namely the Bhartiya Janata Party (BJP), the Congress, and the leftist parties namely, Communist Party of India (CPI) or Communist Party of India, Marxist – CPI(M). These parties indicate distinct ideological underpinnings where the BJP is considered right of center, the Congress is considered centrist, while CPI/CPI(M) is considered leftist (Chhibber and Nooruddin 2004). The findings are presented in table 3. The Congress party is associated with higher levels of infant mortality in most of the models. However, the LRM of the political parties suggest that the total effect of the Congress party as well as the other political parties do not reach statistical levels of significance. More importantly, even after accounting for party ideology, the effective number of parties and voter turnout continue to have a significant effect on infant mortality. The total effect of margin of victory remains insignificant.

Conclusion, Implications, and Future Research

The spread of democracy has been a global phenomenon (Huntington, 1993). Democracy is no more reserved for the rich developed countries. As it has been spreading to the developing world, a number of imperative questions have arisen, namely - how have these developing democracies performed? Have they been able to address the welfare needs of their citizens? Understanding how democratic politics affects government performance is a core theme in comparative politics and political science at large (Lijphart 2012; Dahl 1971; Bueno de Mesquita et al. 2003) and the spread of democracy around the world makes this research question as substantively important as it is theoretically intriguing.

This paper focuses on the political incentives that motivate elected officials to perform well in office in a developing democracy – India. I argue that these incentives to perform well are contingent on the variation in three core democratic attributes – political representation, citizens’ participation, and electoral competition. This paper makes a theoretical contribution to the existing cross-national research on political regimes and infant mortality by demonstrating whether and why democracies perform better than non-democracies. Empirically, the paper explains the vast subnational variations in infant mortality among Indian states.

The primary implication of this study is that instituting a minimalist democratic regime that barely permits representation, participation, and competition may be insufficient to motivate political leaders to perform well. Democratic regimes need to be more representative, participative, and competitive in nature to meet the welfare needs of the citizens. Ensuring that multiple segments of society can voice their concerns during the policy-making process through their elected representatives can enhance political representation. The onus of ensuring high levels of citizens’ participation in politics eventually lies with the citizens who need to use the opportunity given to them in a democratic society to hold the political representatives accountable. While it may be difficult to directly influence electoral competition but insofar as political representatives can compete with each other in free and fair elections, it increases the likelihood of competitive elections. Thus, a concerted effort by political leaders, citizens, and policymakers to make democratic countries more democratic in nature can induce better performance from elected officials.

While this paper seeks to explain disparities in infant mortality among Indian states, its implications go beyond that of India. The theory postulated in this paper can be used to explain variations in infant mortality between democratic countries. Much like Indian states, democratic countries also vary in essential democratic attributes of representation, participation, and competition. Thus, future research can empirically test the extent to which variation in core democratic attributes can account for disparities in human welfare outcomes among democracies.

This theory may also be able to explain variation in infant mortality among nondemocratic countries. Not all non-democracies are homogeneous categories (Merkel and Croissant 2004; Geddes 1999; O’Donnell 1994; Diamond 2002; Hadenius and Teorell 2007) and in fact exhibit varying degrees of democratic attributes. There are non-democracies that hold periodic elections and permit restricted representation and competition. Do these countries perform better than their counterparts that do not exhibit any of the democratic attributes? This is yet another avenue of research that can be explored in the future.

References


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28 There are states where regional parties hold a majority of seats in state legislatures but the ideology of these regional parties is relatively difficult to classify and have thus not been included in the analysis presented here. Inclusion of a regional party dummy however, does not change the results.

29 Even though margin of victory, which measures electoral competition, did not have a statistically significant effect on infant mortality, it would be premature to conclude that electoral competitiveness does not matter. As mentioned before, the effect of electoral competition on government performance needs to be explored further.


Figure 1: The Distribution of Infant Mortality: Globally, among Non-Democracies and Democracies, and among Indian States from 1981-2010

Note: Democracies indicate countries with a polity2 score of six or higher.

Figure 2, 3, & 4, plus Table 1, 2, & 3 to be added.
Purpose
The relationship between socioeconomic status (SES) and health has been well researched in most developed countries; unfortunately, the same cannot be said for many developing nations. The correlation between SES and health has been thoroughly documented in academic literature (Adler et al., 1994; Adler et al., 2002; Mansyur et al., 2008; Williams and Collins, 1995); however, measures of household income, highest level of educational attainment, and occupation are the most commonly used variables when determining an individuals’ ranking on a socioeconomic scale. In underdeveloped nations, many challenges arise when measuring socioeconomic status based on similar variables, most notably the absence of formal employment and the likelihood of households relying on subsistence farming for their livelihood. This research investigates the relationship between relative poverty and health in a rural community in southwestern Uganda and is based on household level data collected by staff and volunteers at the Bwindi Community Hospital in Mukono, Uganda.

This research was completed by first applying a poverty scorecard (Schreiner, 2011) as a proxy socioeconomic indicator to household level data, and then exploring the relationship between poverty and health. The scope of this research is limited to investigating health as the presence/absence of disease, access to healthcare as estimated by enrollment in eQuality, the local insurance program, and awareness of prevention measures for regionally relevant diseases. The overall aim of this study is to help inform policy and practice in better targeting communications about, access to, and delivery of healthcare with respect to these preventable leading causes of morbidity and mortality. The results indicated that the most marginalised households in an already resource poor environment do, in fact, have higher disease burdens, and lower insecticide-treated net (ITN) ownership rates, indicating a need to implement pro-poor targeting of communications and programming. Interestingly, poverty was not correlated with enrollment in the eQuality insurance program, indicating that healthcare utilization is a more relevant public health issue than access to healthcare for the hospital’s patient population.

This research utilizes household level data collected in a household health survey by the Bwindi Community Hospital (BCH) in Mukono, Uganda. With the cooperation of the BCH and the hundreds of Ugandan volunteer Village Health Promoters in the region, a household health survey was administered in early 2012, resulting in data on 13,301 individuals from 2,311 households in BCH’s catchment area. The data utilized in this study are from the third biennial household health survey administered by BCH. The data resulting from these surveys are typically used only to examine morbidity and mortality in the community. This research aims to better utilise this data set by examining populations based on their poverty rankings and to look for differences in access to healthcare, overall disease burden, insecticide-treated net (ITN) ownership, and knowledge about disease prevention.

The Bwindi Community Hospital (BCH) is a 112-bed facility located in the Mukono District of southwestern Uganda. The hospital serves a catchment area of approximately 300,000 people in rural southwestern Uganda in and around the Bwindi Impenetrable Forest, home to the Batwa Pygmies and the largest population of the world’s remaining mountain gorillas. The region is just north of Rwanda and borders the Democratic Republic of the Congo to the west. The region is mostly densely forested and mountainous. The Uganda Protestant Medical Bureau has ranked Bwindi Community Hospital among the best performing hospitals in Uganda for the past three years. BCH employs a staff of approximately 125, including four physicians who provide 24-hour medical care at the hospital.

The BCH is primarily funded through grants and donations; however, the hospital has made significant progress in implementing a community-based health insurance plan called eQuality. This self-funded low-cost insurance program is intended to enable better access to care for the community and to help move the hospital towards a fiscally sustainable model. Bataka groups, or burial groups, join the insurance scheme as a collective. Bataka groups formed during the peak of the HIV/AIDS epidemic throughout much of Uganda. Villages could no longer properly mourn deaths of their members, so smaller ‘burial’ groups formed to enable mourning of the dead. When a member of the Bataka group would die, the remainder of the group would spend the culturally appropriate seven days in mourning. Bataka groups have a senior male leader and were formed based on geographic proximity; the socioeconomic status of the members varies considerably. More than 95% of the individuals in BCH’s catchment area are members of a Bataka group. Bataka...
groups have served an interesting purpose as the BCH has advanced its eQuality health insurance program. Bataka groups sign up for the program as a whole, and the collective cost is shared amongst the group members, no fewer than 80% of the Bataka group members may sign up as a protective measure against adverse selection. The annual cost of the eQuality program is UGX 6,000 per person, approximately US$3 (BCH Annual Report, 2012). This interesting social phenomenon is examined in this research by exploring the relationship between relative poverty and enrollment in the eQuality program.

BCH’s vision statement summarizes their healthcare goals: “A healthy and productive community, free from preventable diseases and with excellent health services accessible to all” (BCH Annual Report, 2012). The areas of focus in this research (primarily HIV/AIDS and malaria) were chosen at the request of BCH’s Chief Medical Officer, Dr. Birungi Mutahunga, as they are primary areas of interest for the hospital.

Research Questions & Methods

The primary objective of this research is to empirically examine the role of poverty and its relationship to central healthcare issues in a poor region of southwestern Uganda. Specifically, this study seeks to answer the following questions:

- Does household ranking on the poverty scorecard (Schreiner, 2011) correlate with individuals’ understanding of HIV/AIDS transmission and prevention?
- Does household ranking on the poverty scorecard (Schreiner, 2011) correlate with ITN ownership and malaria infection rates?
- Does household ranking on the poverty scorecard (Schreiner, 2011) correlate with enrollment in eQuality, the local insurance scheme providing lower-cost access to healthcare?
- Does household ranking on the poverty scorecard (Schreiner, 2011) correlate with overall household disease burden?

The Bwindi Community Hospital first implemented their bi-annual ‘Household Health Survey’ in 2008. The instrument has undergone revisions each year, and the instrument utilized in 2012 represents a respectable attempt to collect health census data; however, the resulting data have been used for little else to date other than simple count analyses. The potential use of household level health data from such a significant portion of a rural Ugandan community is immense (N=13,301). With further analysis of these data, hospital administrators will be able to evaluate the effectiveness of their community outreach and education programs, as well as the impact of relative poverty on their patient population and the relationship between poverty, access to care, and understanding of central health issues.

The poverty scorecard (Schreiner, 2011) utilized in this research is based upon Uganda’s Bureau of Statistics 2009/10 National Household Survey and uses ten simple and verifiable indicators to estimate the likelihood that a given household’s expenditures are below an established poverty line. An advantage of the scorecard is that the data it is based upon are easy to collect, and households’ scores can be computed in the field in less than ten minutes. The poverty scorecard is a reliable and validated instrument for providing a “practical way for pro-poor programs in Uganda to estimate poverty rates, track changes in poverty rates over time, and target services” (Schreiner, 2011). Many poverty measurement surveys are burdensome due to their length, and Uganda’s 2009/10 National Household Survey is a typical example. The instrument is 22 pages long, contains 175 household expenditure items, and takes more than an hour to complete. The poverty scorecard is specifically “tailored to the capabilities and purposes not of national governments but rather of local, pro-poor organizations” (Schreiner, 2011). The poverty likelihoods measured in the Bwindi community through the application of the poverty scorecard will help BCH administrators better understand how to target specific outreach, communication, education, and healthcare access initiatives.

Results & Contributions

Of the 13,301 individual respondents surveyed, 6,345 (48.8%) were male and 6,662 (51.2%) were female. The average age of the sample is 19.34 years, with more than half of the sample under 15 years of age. These age statistics are in line with the national average of 15.1 years, with just under half of the population (49.1%) between the ages of 0-14 (CIA World Factbook, 2012).

Sixty-one percent of the households surveyed are in Kayonza County, while 24% and 15% are in Kanyantorogo and Mpungu Counties, respectively. More than 97% of respondents identified themselves with the primary ethnic group Mukiga, while 1.5% reported Mufumira/Munyarwandan, and 1% responded Mutwa. The primary source of livelihood for the population surveyed was subsistence farming, with an overwhelming 84% of respondents listing this as their source of livelihood. Earned income (6%), business (6%), and other (3%) sources of livelihood were also reported.

The distribution of the poverty scorecard scores followed a fairly normal distribution. While certain values were slightly over-represented, this is not a surprising result, given the scoring mechanism suggested by the scorecard itself. A few notable responses to scorecard items include the following: (a) more than half of the households (50.1%) in the sample population have more than six members; (b) over a quarter of households (27.1%) do not have all children between 6-18 attending school; (c) and
almost a third of households (31.5%) do not have one pair of shoes for each member of the household.

The relationship between access to healthcare, or enrollment in the BCH’s eQuality insurance program, was examined using chi-square analysis as the dependent variable is a dichotomous categorical variable. The chi-square test showed no statistically significant relationship between poverty scorecard scores and enrollment in the eQuality health insurance plan, $\chi^2(67, N=2,311) = 70.9, p = .348$. Just over 77% of the households surveyed are currently enrolled in the eQuality insurance program and, while almost 23% are still not enrolled, this empirical analysis suggests that households’ socioeconomic status is not the limiting enrollment factor.

The relationship between poverty scorecard scores and overall household disease burden was also examined. Overall disease burden is a summated categorical variable intended to measure overall illness in households, with the totals representing the number of instances of household members suffering from any one or more of the following: pneumonia, diabetes, epilepsy, cough lasting more than three weeks, excessive thirst that is not normal, excessive urination that is not normal, unexplained significant weight loss, symptoms of oral thrush, symptoms of herpes zoster, persistent tooth ache, bleeding gums, or diagnosed malnutrition. This overall disease burden was analysed separately from malaria, which was examined as a separate categorical variable calculated by summing the diagnosed cases per household. Malaria was examined separately from overall household disease burden since the BCH’s Chief Medical Officer highlighted his particular interest in malaria infection rates and the diseases’ overall health burden on the Ugandan medical system.

The third relationship explored in this study is the impact of poverty scorecard scores on insecticide-treated net (ITN) ownership. The hospital has engaged in free net distribution and education programs to try to reduce malaria infection rates, although the effectiveness of these programs relative to a household’s poverty status has not been studied. The poverty scorecard scores were split into quartiles for this analysis, given the goal of targeting specific populations for pro-poor programs.

One-way ANOVAs were used to test for differences in the variables described above and the categories of household poverty scorecard scores. Examining overall household disease burden indicated that poorer households are more likely to suffer from greater overall disease burdens, $F(3, 2305) = 15.535, p = .000$; poorer households are also likely to suffer from higher malarial infection rates, $F(3, 2305) = 23.101, p = .000$. Additionally, poorer households are less likely to own ITNs, $F(3, 2305) = 21.44, p = .000$. The Table of Homogeneity of Variances shows that Levene’s Test of Homogeneity of Variance is significant for all tests, indicating homogeneity of variances.

According to the Global AIDS Response Progress Report: Uganda, produced by the Uganda AIDS Commission (2012), the “HIV/AIDS epidemic is still predominantly heterosexually transmitted with 80% of infections attributable to heterosexual transmission. Mother to child transmission accounts for 20%, while blood borne and other infections account for less than 1%”. Additionally, “the UAIS indicated that comprehensive knowledge of HIV/AIDS is at 33.8% for women in age group 15-49 and 41.1% for men in the same group”. The BCH has made considerable education efforts in the communities surrounding the hospital. While there is still progress to be made, the results of the analyses conducted here are promising from a pro-poor perspective.

The relationship between poverty scorecard scores and the composite indicators used to measure male and female heads of households’ understanding of HIV/AIDS prevention was analysed using one-way ANOVAs. There was no statistical relationship between household poverty scorecard scores and male head of households’ understanding about prevention and treatment of HIV/AIDS, $F(3, 1153) = 1.116, p = .341$. There was also no statistical relationship between household poverty scorecard scores and female head of households’ understanding about prevention and treatment of HIV/AIDS, $F(3, 1379) = 2.237, p = .082$. The Tables of Homogeneity of Variances shows that Levene’s Test of Homogeneity of Variance is significant for both tests, indicating homogeneity of variances.

Bwindi Community Hospital certainly exemplifies a community-based health organization whose vision and values are readily evident, given the institution’s commitment to improving education about, access to, and utilization and delivery of healthcare. The lack of a significant statistical relationship between poverty scorecard scores and enrollment in the eQuality health insurance program suggests that the program is benefiting members of the BCH’s patient population equally. This is likely due to the enrollment of Bataka groups as collectives, with their substantial intragroup variation in socioeconomic status and health risks (elimination of adverse selection), which helps set the program up for long-term success. The BCH should continue to offer the program to Bataka groups willing to sign up for the insurance program if at least 80% of their members consent to join, as the hospital has done since the inception of the program (BCH Annual Report, 2012). Bataka groups, effectively a social by-product of the HIV/AIDS epidemic in Uganda, have created community structures that have enabled equitable access to eQuality insurance for community members, regardless of their poverty level.

Despite fairly equitable enrollment in the eQuality health insurance scheme, poor households in the BCH catchment area still suffer more from overall disease burden than their less-poor counterparts. This finding may suggest
that future pro-poor communication and education programs on disease prevention and treatment should be specifically targeted at the poorest quartile of the households in the BCH’s patient population. Research of this nature, which was based upon community-specific household level data, will be critically important in determining the most appropriate form for these outreach programs to take.

Additionally, the relationship between family size and poverty has been well documented and raises an interesting challenge from a policy perspective. Larger families are more likely to be poor and to have more children in the household; consequently, those children are more likely to suffer disproportionately from the morbidity and mortality associated with the greater disease burdens borne by their families. Considering the impact of this observation on children’s health is critically important. Interestingly, eQuality enrollment among poor families may improve access to but not usage of healthcare services for this marginalised population. While examining child health was not within the scope of this project, future research addressing the childhood disease burden in this region would be valuable for improving overall community health.

The statistically significant relationships between poverty scorecard scores and ITN ownership, as well as malarial infection rates, were expected, but still interesting, results. Insecticide-treated nets have been distributed throughout the BCH’s catchment area free of charge, a program that presumably would have negated the relationship between poverty and ITN ownership, which does not appear to be the case. This finding suggests that the BCH may want to evaluate its policies on ITN distribution and malaria education initiatives with a goal of pro-poor targeting.

The lack of a statistically significant relationship between households’ poverty scorecard score and both heads of households’ HIV/AIDS composite indicator suggests that government and the BCH’s HIV/AIDS outreach and education initiatives do not disproportionately favor households based on their poverty status. This result may be a function of Uganda’s national HIV/AIDS initiatives; however, the BCH plays an extremely active role in addressing HIV/AIDS education, prevention, and antiretroviral treatment for individuals in their catchment area. The national statistics indicating that Uganda’s HIV/AIDS infection may be rising again are likely tied to deep-seeded cultural and social constructs that warrant considerable further study.

Perhaps the most fascinating result of this research was finding the absence of a relationship between poverty and enrollment in the eQuality insurance scheme, but very clear significant relationships between poverty, overall disease burdens, malarial infection rates, and ITN ownership. Enrollment in eQuality should enable access to care for the most vulnerable and compromised households in the community; however, this access does not appear to be utilised to the extent it should be, given the disease burdens the poorest households suffer from. Moving forward, policy changes aimed less at equitable access and more at addressing equitable use of healthcare and equitable health outcomes would serve this region well.

The relationship between socioeconomic status and health has been thoroughly examined in developed nations, but less empirical evidence exists for un- and under-developed nations. Research like that presented here is burdened by many operational challenges and limitations, but it represents an important advance by providing household level empirical data to enable evidence-based decision making and inform policy development moving forward.

References available upon request.
The Triple Aim Program with Special Reference to Economics, Culture, and Education

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Abstract

The Triple Aim was articulated in a Health Affairs paper by Berwick, Nolan and Whittington in 2008. It provided a conceptual underpinning for the Affordable Care Act calling for improved health outcomes, better satisfaction and lower per capita costs. While most health economists have emphasized moral hazard, information asymmetries, tax distortions, public goods and other market problems for the inefficiency of the health sector, the Triple Aim is premised on a tragedy of the commons argument. Lack of coordination in healthcare calls for government intervention to unitize resource use much as is done in oil extraction or for fisheries.

Triple Aim related policies do hold promise for improving efficiency in production. But it, and especially the Affordable Care Act, are arguably not well positioned to systematically address allocative efficiency, the identification and prioritization of the most cost-effective and worthwhile uses of scarce resources. The United States has a political problem with this and we are making insufficient progress determining what is not worth paying for. This study provides a theoretical backdrop to the Affordable Care Act and explores the strengths and weakness of various policy measures. It also emphasizes the importance of culture in transforming the health sector. Cultural and education change is needed and expected among physicians, managers, patients and insurance beneficiaries. These changes will impact undergraduate and graduate health related education. The case of graduate healthcare management is explored with a focus on the shift back to business schools and the rise of clinical education for the management arena.

References available upon request.
Exploring the Health Behavior of the Poor and the Role of Social Capital, Health Locus of Control, and Gender
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Introduction
The poor in developing countries remain less health conscious as compared to the affluent and the urban people (Nettle 2010; Phelen et al. 2010; Casey et al. 2001). Not only has research on preventive health behavior of low-income population is sparse, but most studies have focused on linking economic conditions with health status and research on the role of the social dimensions on preventive health behavior of the poor in developing countries are scarce (Hudson and Brown 1983; Harpham et al. 2002). Therefore, the current study examines the direct and indirect effects of social capital on the preventive health behavior of underprivileged families in a developing country context.

This paper contributes to the extant literature in several ways. First, compared to most of the studies that examined the impact of social capital on preventive health behavior (PHB) of ‘individuals’ in developed countries, the present study tests social capital theory (SCT) and its impact on PHB in the context of low-income families headed by husband and wife in a non-western context. Second, existing literature focused primarily on one or few specific aspects of preventive health behaviors (e.g., nutrition, exercise behavior, life styles, smoking behavior, alcohol consumption, cancer screening, HIV/AIDS, etc.) and have relied on a single-item measure embodying a specific aspect of PHB. Treating PHB as a generalized construct, the present study examines the role of social capital on health and wellness in a family context and embraces multiple aspects of health needs and health behaviors. Finally, a number of studies have noted that specific health conditions (cancer, diabetes, HIV/AIDS, etc.) increase the likelihood of engagement in PHB (Leiferman and Pheley 2006; Ransford 1986).

In recent years, social capital has been theorized as having a positive influence on health (Kawachi et al. 1999; Szreter and Woolcock 2003; Kawachi 1999, 2006; Putnam 2004; Veenstra 2000; Yip et al. 2007). Research has shown that some forms of social capital such as social networks, social participation, trust, and reciprocity are widely believed to influence health outcomes. However, the focus has been to measure the self-reported health status of individuals in developed countries (e.g., Kawachi et al. 1999; Veenstra 2000; Fisher et al. 2004) while the preventive health behavior of the poor has received limited attention. The evidence supporting the concept of social capital as a determinant of health has also remained ambiguous (Ziersch 2005). While some researchers have argued that social capital has either no or a negligible impact on health (e.g., Muntaner et al. 2000; Lynch 2001; van der Linden et al. 2003), others have found just the opposite (e.g., Baum 1999; Kawachi et al. 1999; Veenstra 2000; Yip et al. 2007). Yet, very little empirical evidence exists concerning the influence of different forms of social capital on health (Campbell 2001; Ziersch 2005; Ferlander 2007), especially the poor in developing countries (Harpham et al. 2002; Baum 1999; Yip et al. 2007). In this context, the proposed empirical study is expected to make a
contribution to health literature and also aid public health programs that promote PHB in developing countries.

**Hypotheses**

**Social Capital and Health Outcomes**

Coleman’s (1988) social capital theory (SCT), which encompasses social relations and networks, can provide a basis for understanding the role of social capital on health outcomes. SCT suggests that social networks and relationships between individuals within and outside family circles, can promote the exchange of information and sharing of experiences. Individuals who exchange information through formal and informal networks can facilitate inter-individual coordination and cooperation as well as the acquisition and diffusion of information for mutual benefit. SCT assumes that the more the people possess social ties, the larger pool of confidants they possess; the more the people connect with others, the more they trust others and the greater the likelihood to receive social support and health-related information (Putnam 1995; Umberson and Montez 2010).

Research indicates that social environments can influence an individual’s cognition and behavior (Bandura 1986; Wood and Bandura 1989). Since learning can take place through social interactions or observation of others within a social setting, social capital such as social ties can improve an individual’s learning about health through peer or reference group influence. Kawachi et al. (1999) suggested three potential pathways by which social capital can influence health behaviors, calling for further empirical research. They postulated that social capital can influence: (i) by promoting the rapid diffusion of health information, (ii) increasing the likelihood that healthy norms of behavior (e.g., physical activity) are adopted, and (iii) exerting social control over deviant health-related behavior.

Social capital can also promote better access to health care by improving community accountability mechanisms, increasing access to local services and amenities, providing affective support, and acting as a source of self-esteem and mutual respect (Wilkinson 1996; Kawachi et al. 1999; Hendryx et al. 2002). Social capital can also facilitate the flow of information about public health goods and improve individual’s perceptions of the value of health and public health goods and their willingness to engage in preventive health behavior. Our premise is that the more the people maintain social network and relationships with others, the more they are likely to acquire and adopt health-related information from others and engage in preventive health actions. Based on the above discussion, we hypothesize the following:

**H1:** Individuals with higher levels of structural social capital will exhibit higher levels of: a) health value; b) public health goods value; c) health motivation; and d) preventive health behavior than those with lower levels of structural social capital.

**H2:** Individuals with higher levels of cognitive social capital will exhibit higher levels of: a) health value; b) public health goods value; c) health motivation; and d) preventive health behavior than those with lower levels of cognitive social capital.

**Health Locus of Control and Gender as Moderators**

Health locus of control (HLC) can be defined as consumers’ enduring beliefs that health outcomes are controllable (Rotter 1966). Research has shown a significant moderating effect of health locus of control on the relationship between health outcomes and their determinants (e.g., Quadrel and Lau 1989; Christensen et al. 1996). Research also suggest that individual personality characteristics (e.g., conscientiousness, health locus of control) can moderate the relationship between social capital and health behavior (e.g., Quadrel and Lau 1989; Christensen et al. 1996; Umberson et al. 2010). The traditional beliefs and perceptions that low-income families, especially in developing countries, have very little or no control over health outcomes are likely to influence PHB. If the poor depend more on traditional or ‘lay’ sources of interpersonal communication and less on professional sources, one can expect that an individual’s health locus of control will influence the effects of social capital on PHB. Therefore, people with high levels of health locus of control and social capital can be expected to respond more positively to health outcomes. Thus, we predict the following hypotheses.

**H3:** Individuals with higher levels of structural social capital combined with higher levels of health locus of control will exhibit higher levels of: a) health value; b) public health goods value; c) health motivation; and d) preventive health behavior than those with low levels of health locus of control.

**H4:** Individuals with higher levels of cognitive social capital combined with higher levels of health locus of control will exhibit higher levels of: a) health value; b) public health goods value; c) health motivation; and d) preventive health behavior than those with lower levels of health locus of control.

The effects of social capital on health outcomes can vary by gender (Kawachi and Berkman 2001). A study by Chuang and Chuang (2008) has indicated that gender can moderate the effect of social capital on preventive health behavior. The influence of social capital on health also is higher for women than for men (Stafford et al. 2005; Chuang and Chuang 2008). Such differences are likely to exist as women tend to maintain more emotionally intimate relationships than men, mobilize more social support during periods of stress than men, and provide frequent and more
effective social support to others than do men (Belle 1987). Compared to men, women are more health-conscious and more likely to avoid risk-taking health behavior, engage in information seeking behavior, and take preventive action (Nathanson 1977; Hudson and Brown 1983; Rakowski et al. 1990; Antonucci et al. 1990). Thus, we hypothesize as follows:

H5: Women with higher levels of structural social capital will exhibit higher levels of: a) health value; b) public health goods value; c) health motivation; and d) preventive health behavior than men.

H6: Women with higher levels of cognitive social capital will exhibit higher levels of: a) health value; b) public health goods value; c) health motivation; and d) preventive health behavior than men.

Methodology

Data Collection and Sample

Sample population for this study include rural families based in Tamil Nadu, India who are classified as those living below poverty level (BPL) with a per capita/per day consumption expenditure of Rupees 22.50 (an equivalent of US $0.40 a per capita/per day) (Planning Commission, Government of India 2012). The respondents included husband and wife, or a single parent, living with or without children in BPL households based in villages in Tamil Nadu. To maintain consistency with the BPL concept, the study included only those BPL families that are in possession of Antyodaya Anna Yojana (AAY) ration cards and qualified to receive subsidized food and other services delivered through the government managed public distribution system. The total number of respondents included 635 husbands/wives/single parents from 331 families, excluding 69 families who were either not available or declined to participate. The average age of husbands is 46 (SD = 10.895), and 38 for wives (SD = 10.384) years. Only 4% of husbands, but 61% of wives, were unemployed.

Measurement

Social capital was measured with the Short Social Capital Assessment Tool (SASCAT) developed by De Silva et al. (2006) and specially designed to measure cognitive and structural social capital in low-income countries. The SASCAT measure is a shortened version of the Adapted Social Capital Tool (A-SCAT) originally developed by Harpham et al. (2002). The structural dimensions of social capital include items relating to group membership, support from groups, support from individuals, and citizenship activities. Cognitive social capital was measured using six items relating to trust in neighborhood, social harmony, sense of belonging, and sense of fairness. The preventive health behavior measure was adapted from Jayanti and Burns (1998), which includes a range of 15 preventive health behaviors associated with smoking, alcohol consumption, use of bed nets, etc. To measure perceived health value, a five-item health value scale was adapted from Jayanti and Burns (1998), and we revised it as appropriate to a low-income population in a developing country context. For health motivation, we used a measure adapted from Moorman (1990) and Jayanti and Burns (1998) that includes seven items. The health locus of control construct was measured with a six-item scale adapted from Lau and Ware (1981). Each item was rated on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Because health locus of control is a metric variable, a median split technique was used to dichotomize it into high and low categories (median = 3.06; SD = 0.36). Participants responded to all four health outcome measures (health value, public health goods value, health motivation, and preventive health behavior) on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Factor loadings for all items, ranging from .705 to .953, are above or close to .5, the cut-off value recommended by Hair et al. (2010). Construct reliability of health outcome measures exceeds .6, the threshold value recommended by Bagozzi and Yi (1988).

Results

A series of multivariate analysis of variance (MANOVA) was conducted to determine the main effects of different dimensions of structural and cognitive social capital and interaction effects between social capital and the moderators on the dependent variables. Basic assumptions of MANOVA were assessed before testing the hypotheses. Levene’s test for equality of variances was not significant for each MANOVA (p > .05), suggesting that the assumption of equality of variance was not violated. The non-significance of Box’s M tests (p > .05) ensures that the assumption of equality of covariances among the set of dependent variables is met.

Hypothesis 1 posits that individuals with higher levels of structural social capital would exhibit higher levels of health outcomes than those with lower levels of structural social capital. Multivariate tests reveal the main effects for all four dimensions of structural social capital: group membership (Wilks’ λ = .974, F(8, 1240) = 2.037, p < .05); support from groups (Wilks’ λ = .967, F(8, 1240) = 2.595, p < .01); support from individuals (Wilks’ λ = .953, F(8, 1238) = 3.736, p < .001); and citizenship activities (Wilks’ λ = .966, F(4, 624) = 5.445, p < .001). Univariate tests indicate that individuals who are active members of two or more groups, or those who receive support from two or more groups, have higher health motivation than those who actively participate in only one group, those who do not actively participate in any group, those who receive support from one group, or those who do not receive...
support from any group. Support from individuals has main effects only on health value and PHB. Individuals who engage in three or more citizenship activities score higher on all health outcomes than those who engage in two or less activities. Thus, hypothesis 1 receives partial support.

As predicted in hypothesis 2, multivariate tests show significant main effects of all six aspects of cognitive social capital: trust in neighborhood (Wilks’ λ = .912, F(4, 620) = 7.289, p < .001); social harmony (Wilks’ λ = .936, F(4, 620) = 5.217, p < .001); sense of belonging (Wilks’ λ = .955, F(4, 620) = 3.58, p < .001); sense of fairness (Wilks’ λ = .907, F(4, 618) = 7.687, p < .001); trust in healthcare providers (Wilks’ λ = .954, F(4, 620) = 3.687, p < .001); and trust in community workers (Wilks’ λ = .941, F(4, 616) = 4.793, p < .001). Social harmony, sense of fairness, and trust in community workers are found to be significant predictors of all four health outcomes. Low-income families who trust in neighborhood respond more favorably on health value, public health goods value, and PHB than those who do not trust neighborhood. Sense of belongingness has an effect only on public health goods value. Trust in healthcare providers enhances perceptions about public health goods and PHB. Hypothesis 2, therefore, is partially supported.

None of the dimensions of structural social capital by HLC interaction is significant, indicating a lack of moderating effect of HLC in the relationship between structural social capital and health outcomes. As a result, support is not found for hypothesis 3. However, consistent with hypothesis 4, HLC moderates the effect of cognitive social capital on the dependent measures: trust in neighborhood (Wilks’ λ = .967, F(4, 620) = 2.658, p < .01); sense of belonging (Wilks’ λ = .975, F(4, 620) = 1.969, p < .05); sense of fairness (Wilks’ λ = .958, F(4, 618) = 3.376, p < .01); and trust in community workers (Wilks’ λ = .933, F(4, 616) = 5.449, p < .001). Interestingly, higher levels of trust in neighborhood and community workers result in higher levels of health outcomes when HLC is high than when it is low. Individuals with a high level of sense of belonging combined with a high HLC perceive greater value of health than those with low HLC. Similarly, sense of fairness × HLC interaction is significant for health value, public health goods value, and PHB.

As predicted in hypothesis 5, gender moderates the relationship between structural social capital and the dependent variables. Multivariate tests reveal group membership interactions by gender (Wilks’ λ = .979, F(8, 1240) = 2.367, p < .05), support from groups by gender (Wilks’ λ = .967, F(8, 1240) = 2.615, p < .01), and citizen activities by gender (Wilks’ λ = .979, F(4, 624) = 3.428, p < .01). Women who receive higher levels of group support respond more positively on health value, public health goods value, and PHB than men. Similarly, women who have high group membership and citizenship activity tend to place higher value on health than men. Contrary to hypothesis 6, limited gender difference was found in the relationship between cognitive social capital and health outcomes. When sense of fairness is high, women tend to show higher health motivation than men.

Discussion and Implications

Results of this study provide strong evidence in support of the role of social capital on PHB, and the results are consistent with the findings of Weitzman and Kawachi (2000), Fisher et al. (2004), and Martin et al. (2004). However, the interaction effects between social capital and moderators (gender and health locus of control) on preventive health behavior are mixed. These findings provide support for the proposition that social capital can have an important role in promoting health intervention (Weitzman and Kawachi 2000; Glenane-Antoniadis et al. 2003; Fisher et al. 2004; Martin et al. 2004).

The results of this study also show that two aspects of structural social capital (i.e., support from individuals and citizenship activities) have a direct influence on preventive health behavior. Individuals who receive support from family and other members in the community and those who engage in citizenship activities are more likely to engage in PHB. While the remaining two facets of structural social capital (i.e., group membership and group support) do not have direct effects on PHB, they still predict health motivation, which in turn positively influences PHB. The results also indicate that low-income families who actively associate with groups and obtain support from them have high levels of motivation to engage in PHB as compared to those who do not associate with any group activities. It implies that socially isolated low-income families not only have limited capacity to access resources, but are likely to expose to higher risks of poor health (Umberger and Montez 2010). As the study population consists of a mix of families that belong to different castes, it is quite conceivable that certain segments of population such as Dalits (scheduled castes and tribes) may experience isolation and cultural distance from the dominant caste groups. Coleman (1988) noted that social relations and social structures facilitate some forms of social capital only if actors are able to network and build relationship with a sense of connectedness or “closure” between individuals and communities. Several studies (e.g., Iyengar 2012; Narayan and Shah 2000) have noted that caste inequality, ethnic exclusion, and gender discrimination weaken social ties.

As far as the cognitive dimension of social capital is concerned, the results suggest that a sense of fairness, social harmony, and trust in community health workers (e.g., Anganwadi) are significant predictors of health outcomes. The people who trust their neighborhood have a more favorable disposition about health value, public health goods value, and PHB than those who do not. A sense of belongingness has an effect only on public health goods.
value. Nevertheless, some studies (e.g., Iyengar 2012; Seragelden and Grootaert 1997) have noted that social capital can only be effective if people in the community trust the institutions that engage in improving their health status.

The results show that health locus of control (HLC) moderates the effect of cognitive social capital on health outcomes in such a way that higher levels of trust in neighborhood and community workers result in a more favorable health attitude and behavior when health locus of control is high. Individuals who have a high sense of belonging seem to perceive greater value in health, and it is particularly true if the individual believes that health outcomes are manageable. Since HLC is a predictor of one’s willingness and capacity to change and engage in PHB, it has important implications for health education and social marketing.

In line with Stafford et al. (2005) and Chuang and Chuang (2008), but contrary to Crosby et al. (2003) and Petrovici and Ritson (2006), women are more likely to benefit from increased social capital. Results also show that women who received higher levels of group support respond more positively on health value, public health goods value, and PHB than men. As noted earlier, the public initiatives relating to pre- and post-natal support and integrated child development programs are directly geared towards women. Because women and children are the direct beneficiaries of public health goods and services, it is obvious that gender moderates the relationship between structural social capital and health outcomes. Similarly, women who have high group membership and citizenship activity assigned greater importance to health value.

Given the limitations of conducting major PHB studies on low-income populations in developing countries, researchers could explore opportunities to collaborate research with NGOs, INGOs, and professional organizations. Collaborative research will not only enrich the health literature, it will also generate more evidence-based insights on the role of social capital on PHB of the poor. Future research can be conducted using longitudinal surveys of low-income families across India and other developing countries. The other potential area of PHB research could be testing the efficacy of economic incentives to increase compliance of underprovided populations with the usage of public health goods.

References available upon request.
Preventing Suicide in Montana: The Implementation and Analysis of an Advertising Campaign
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Abstract
This study evaluated a community-based media project to increase awareness and use of suicide prevention resources among youth in Eastern Montana. In Spring 2012 and Winter 2013, attitudinal surveys were administered to high school students in Miles City, MT to evaluate the impact of a youth theatre production, photography workshop, art exhibit, and social media web site designed to highlight suicide prevention resources and enable young people to discuss emotions related to suicide and depression. Surveys were administered online at baseline and follow-up, to n = 224 at pre-test, n = 217 at post-test high school youth. Variables probed on students’ self-reported risk for depression and suicide, awareness of online and local suicide prevention resources, and willingness to engage with such resources and/or communicate with peers, family members or mentors about suicide and depression. A comparison between pre-test and post-test showed high levels of campaign awareness, prompted and unprompted recall, and increased self-efficacy for interpersonal communication about suicide. Quantitative data was supplemented with qualitative research to identify cultural and personal reports on campaign effectiveness and areas for improvement. These results were used to design and implement the project in a larger, more diverse community. The goal is to develop a self-sustainable curriculum that can be used by communities to administer similar community-based media projects for suicide prevention.

Background
Suicide has ravaged eastern Montana, an area known for its sparse population, extreme climate range, and “cowboy up” mentality and culture. In 2005, Montana had the highest suicide rate in the nation. Montana has ranked the top five in the nation over the past 30 years. The rate of suicide in the U.S. is 11.2 per 100,000 people, according to the most recent statistics by the Centers for Disease Control and Prevention taken in 2006 (Xu et al., 2010). In 2006, Montana ranked the second highest – just behind Wyoming – with 20 suicides per 100,000 people. There were 189 reported suicides statewide that year, according to the CDC (CDC, 2010).

Factors exacerbating the distressingly high suicide rate include a lack of mental health awareness, an inadequate availability of mental health services, widespread use of firearms, and social isolation. While people living in Eastern states experience high stress – congested cities, high crime and high cost of living – the suicide rates are much lower than Montana. People in the Eastern U.S. are more likely to seek help on mental health issues. The bottom five states – whose suicide rates were far below the national average – includes Rhode Island, Connecticut, Massachusetts, New York and New Jersey. Washington, D.C., actually had the lowest suicide rate at 5.1 per 100,000 people, the CDC reported. The CDC reports that 66 percent of the suicides in Montana in 2006 involved a firearm (Xu et al., 2010). The average nationally is about 50 percent for firearms used in completed suicides. The Mountain states all share similar qualities that make them ripe for high suicide rates. These states are often socially isolated, have a lack of public services to help with depression and thoughts of suicide and there is often easy access to firearms. Statistics in Montana show that more than 80 percent of the suicides are done by men (Montana Department of Public Health & Human Services, 2010). It's this tough-guy attitude that makes men in Montana unable to admit they need help, experts say (Emeigh, 2010).

In order to attenuate the isolation and deficiency of knowledge in the eastern portion of the nation’s fourth-largest state geographically, an increase in suicide awareness and mental health awareness is needed. In the spring of 2000, the Montana Department of Public Health and Human Services invited a group of private organizations, concerned citizens and government officials to begin the development of a statewide plan for suicide prevention (MDPHHS, 2010). Yet, no intervention has included community-based media projects, which have a proven track record in tackling other sensitive public health issues around the nation. Jepson et al. (2010) reviewed 103 public health media interventions and found small to moderate effects across a range of behaviors in studies published between 1995 and 2008. Interventions that were most
effective included physician advice or individual counseling, and workplace- and school-based activities. Mass media campaigns and legislative interventions also showed small to moderate effects in changing health behaviors.

Examples of success with similar approaches also exist in the realm of suicide. A community based intervention for suicide prevention that focused on improving awareness and care for depression performed by the Nuremberg Alliance Against Depression (NAAD) in Europe was found to be effective in reducing suicidal behavior (MetaConnects, 2012). A CD-Rom designed for suicide prevention administered to local leaders in an Inuit community in Northern Canada effectively increasing suicide knowledge and counseling skills, and willingness to use the computer-based video for future training (Haggarty et al., 2012; Substance Abuse and Mental Health Services Administration, 2010).

While not all interventions reviewed by Jepson et al. (2010) involved the extensive community-based involvement described in this study, a few studies have shown positive health outcomes in response to similar approaches. An evidence-based, community participatory process was used to develop Healthy Foods North (HFN), a culturally appropriate nutrition and physical activity intervention program effectively reducing the risk of chronic disease and improve dietary adequacy amongst Inuit/Inuvialuit in Nunavut and the Northwest Territories in Canada (Sharma et al. 2010). A culturally adapted behavioral intervention designed to lower blood pressure delivered to Latino communities in North Carolina achieved favorable outcomes in physiological, diet, and exercise. After 6 weeks of group motivational interviewing sessions, systolic BP decreased an average of 10.4910.6 mmHg, weight decreased 1.593.2 lbs, BMI decreased 0.390.5, and physical activity increased 40 minutes per week (Rocha-Goldberg et al., 2010).

The Global Health Equity Foundation, an international public health non-profit organization dedicated to closing the gaps in health disparities, launched the first such effort in Miles City in 2012. This project used a three-pronged approach to increasing awareness and access of Montana’s suicide prevention resources: 1) A community-based media intervention to promote awareness and use of suicide prevention; 2) A qualitative study of the barriers to public health models for suicide prevention and to identify modifications to improve community interventions; and 3) A quantitative survey to identify the social support factors related to suicide ideation among youth.

In order to address the complexity of suicide and treatment, it is imperative to assess the complexity through a variety of research and intervention strategies. Preliminary results from a pilot intervention using community-based media projects to increase youth suicide awareness and access of prevention resources showed promising results. Yet the community was racially homogenous (93% Caucasian) and did not yield significant data on minority youth. Due to the high rates of suicide among American Indian communities in Montana, we are therefore eager to replicate the pilot on a slightly larger scale, in the more diverse community of Billings, MT. Community-based media interventions have a proven track record in tackling sensitive public health issues around the nation (Jepson et al., 2010).

**Pilot Study**

In Spring 2012 and Winter 2013, attitudinal surveys were administered to high school students in Miles City, MT to evaluate the impact of a community-based media project on youth attitudes towards and awareness of suicide prevention resources. The project involved a youth theatre production, youth photography workshop, art exhibit, and social media web site designed to highlight suicide prevention resources and enable young people to discuss emotions related to suicide and depression. Surveys were administered online at baseline (May 2012), with a follow-up in January 2013, to approximately 225 (n = 224 at pre-test; n = 217 at post-test) high school youth in Miles City. Questions were designed to assess the impact of the project on awareness, attitudes and behavioral intentions towards suicide prevention resources. Variables probed on students’ self-reported risk for depression and suicide, awareness of online and local suicide prevention resources, and willingness to engage with such resources and/or communicate with peers, family members or mentors about suicide and depression. The intervention took place June – September 2012. This evaluation involved interdisciplinary research by professors in psychology, communication and sociology at MSUB. The quantitative data reported was supplemented with qualitative research to identify cultural and personal reports on campaign effectiveness and areas for improvement.

**Methods**

**Questionnaire.** An online questionnaire was administered to Miles City High School students (ages 14-18) (who have participant assent and parental consent) to assess self-reported history of depression and suicidal thoughts, awareness of suicide prevention resources, awareness of interpersonal resources for suicide prevention, willingness to access resources, willingness to engage in interpersonal communication.
about suicide or depression. After the first round of data collection was completed, a 3-month community-based media intervention was administered to self-selected Miles City youth to raise awareness and self-efficacy around suicide and suicide prevention resources. After the intervention, a second round of data collection was conducted, asking similar questions, alongside exposure questions to assess reach of the intervention. The procedure for the second survey was identical to the first.

**Measures.** To understand expectancies of suicide ideation and access of prevention resources, the respondents were assessed based on the extended parallel process model (EPPM) (Witte, 1992). EPPM, based on its model of perceived threat and perceived efficacy, offers a framework for understanding behavior and attitude change in response to health messages. Witte argues that respondents are more likely to change their behavior in response to a health message if their perceived self-efficacy (behavior-specific self-confidence) and perceived response-efficacy (perceptions of the effectiveness of the recommended solution are high. Therefore, this study sought to assess this two-dimensional concept of efficacy at baseline and follow-up.

Variables for the survey included 4- and 5-point Likert scales (labeled “extremely disagree/agree” and “extremely unlikely/very likely”) to assess self-reported experience with suicide and depression; self-reported awareness of online and community-based suicide prevention resources; self-reported self-efficacy to access online and/or community-based resources; self-reported self-efficacy to communicate interpersonally about suicide and depression.

Questions probed on students’ self-reported risk for depression and suicide, awareness of online and local suicide prevention resources, and willingness to engage with such resources and/or communicate with peers, family members or mentors about suicide and depression. A measure of stress was given to understand the quantity and quality of life stressors that each individual is experiencing. Second, a measure of depression and suicidal ideation were given to understand each adolescent’s individual risk level for psychopathology. Finally, a measure for social support was given to assess each individual’s quantity and quality of support persons available (Cutrona & Russell, 1987). Social support was measured using Cutrona and Russell’s Social Provisions Scale that combines emotional support, network support, esteem support, material support, instrumental support and active support (1987) (items available on request; alpha = 0.55 – 0.99).

**EPPM variables.** The perceived threat and efficacy measures of EPPM were administered directly in relation to suicide and interpersonal communication about the topic (Witte, Myer & Martell, 2001). The direct measures were grouped by conducting factor analysis followed by forming scales.

**Efficacy.** The components of efficacy - response efficacy and self-efficacy - were measured with 6 items for self-efficacy and 5 items for response efficacy for a total of 11 perceived efficacy items (see Tables 2 & 3). The efficacy items were averaged to create an overall index with fair reliability (a = .64 to 73).

**Sample.** Due to the small size of the community of Miles City, and the opportunity to access all teenagers currently attending high school, the sample included all current students (440) enrolled in Miles City High School (est. ages 14-18), who have both parental consent and participant assent to take part in the study. The justification for inclusion is to gain better insight into the factors related to the high risk of suicide among young people statewide, specifically in rural communities in Eastern Montana, in order to identify effective strategies for suicide prevention among youth. Seniors were excluded from the pre-test in order to ensure the same students would be around for the follow-up. Hence, 224 students (freshmen,
In-Depth Qualitative Interviews

Due to the desire to incorporate qualitative findings into the survey and intervention design, in-depth interviews were conducted with key stakeholders to study the issue of youth suicide and depression from a qualitative standpoint. This part of the combined project was designed to explore attitudes among youth in a Montana community toward various treatment/intervention options for depression and/or suicidal ideation. Among adult populations research indicates that social stigma attached to mental illness, the lack of availability of services, and the cultural pervasiveness of the medical model of mental illness shape treatment preferences and behaviors. While the data explore differences across lines of race, class, and gender, little research has been conducted among adolescent populations, despite recognition of the prevalence of depression in teen populations.

This qualitative study consisted of in-depth interviews with 15-20 adolescents focusing on the following primary issues: a) attitudes toward help-seeking behaviors, b) barriers to help-seeking behaviors, c) knowledge about treatment options, d) preferences for particular treatment options, and e) reasons for stated treatment preferences. Interviews were conducted in the Spring/Summer 2012, with independent coding and data analysis occurring in Fall 2012. The findings from this project have the potential to assist in the development of effective public health campaign messages, to inform local and state organizations about the availability of mental health services in the community, and to add to the body of data in the literature on patient attitudes and their relationship to treatment efficacy.

Results

Survey Results

Demographics. In both samples, 95% (n = 200) described themselves as White or Caucasian, 1.9% American Indian or Alaska Native, 1.9% Hispanic, 0.9% African American, and 0.5% Asian or Pacific Islander. The age distribution was fairly even. At baseline, 39% (n = 87) were 17 or older, 34% (n = 75) were 16, 21% (n = 46) were 15, and 7% (n = 15) were 14. The age break for post-test was slightly younger: 22% (n = 47) age 17, 33% (n = 77) age 16, 25% (n = 53) age 15, 20% (n = 42) age 14, and 0.5% (n = 1) age 13. There were slightly more females (61%) than males (39%) in both surveys.

Suicide Exposure. Responses obtained from both surveys showed consistently high levels of suicide and depression, although exposure to suicide and suicidal thoughts was slightly lower in the post-test survey (possibly explained by the younger age of participants): 81% (n = 182) at baseline and 74% (n = 160) at post-test said they knew someone who had committed suicide; 12% (n = 27) at pre-test and 10% (n = 22) at post-test said they were currently being treated for depression. Twenty-two percent (n = 49) at pre-test and 19% (n = 41) at post-test said they had sought help for depression in the past, and 14% (n = 32) at pre-test and 12% (n = 27) at post-test reported having had suicidal thoughts in the past. A full 18% (n = 41) at pre-test and 13% (n = 29) at post-test admitted they had considered killing themselves in the past year. Five percent (n = 11) at pre-test and 4% (n = 9) at post-test said they had actually attempted suicide.

Interpersonal Communication. Most, 67% (n = 151) at pre-test and 71% (n = 153) at post-test said they would feel comfortable talking to someone if they felt suicidal or depressed. The most likely person respondents said they would talk to were (in descending order): parent/family members, friends, teacher/school counselors, health care providers, social workers, or church leaders. Most students (86%, n = 192 at pre-test; 79%, n = 187 at post-test) said they would “very likely” or “likely” tell someone else if a friend approached them about wanting to commit suicide. The most likely people a student would tell were a family member/parent or a teacher/school counselor.

Campaign Exposure. Post-test results showed high levels of campaign awareness, prompted and unprompted recall, and access of online resources: 66% (n = 144) of students at post-test had heard of a suicide prevention media project in Miles City; 36% (n = 76) could correctly identify the campaign name (without prompting) as Let’s Talk or Let’s Talk Miles City (Table 1).

Table 1 displays the three items that were used to measure campaign awareness. A majority, 66%, reported having heard of a suicide prevention campaign. 35.2% of respondents claimed to know the name of the campaign, and 55% said that they had specifically heard of the “Let’s Talk” campaign. Interestingly, there were no negative responses to this question which, with 44.9% of the data missing,
indicates that many respondents preferred not to answer the question. Overall it appears that awareness of the campaign was very high.

Forty percent (n = 60) of respondents reported the campaign had increased their awareness of suicide prevention resources. Sixty-two percent (n = 224) said they would go to the Internet for information on suicide or depression. Thirty-two percent (n = 139) said they knew of specific resources to visit about suicide and depression online.

Prevention Resources. Many (49%, n = 105), although not most, students reported using the Internet to access health information over the past year. Nutrition, followed by substance abuse and depression, were the most likely topics a teenager had searched. Most (48%, n = 102) said they would use the Internet to find information about suicide or depression. Only 18% (n = 39) said they knew of a suicide prevention organization online.

Outcome Variables. Two outcome variables of interest (self-efficacy and response efficacy) were associated with campaign exposure. Table 2 through Table 5 examine mean scores for five point Likert scaled items ranging from 1 to 5, with the higher number indicating greater agreement or affirmation for the item. Table 2 compares the pre and post-test means and standard deviations of six items used to measure self-efficacy (the confidence in one’s own ability to achieve goals and accomplish tasks). The mean of each item was higher in the post-test than in the pre-test, suggesting that that campaign may have had a positive influence on the self-efficacy of respondents. Students were more likely to consider a teacher or school counselor a trustworthy source to communicate with about a suicidal thought or friend (pre-test mean = 2.80, SD = 1.43; post-test mean = 3.06, SD = 1.1; p ≤ .05). Students were more likely to consider a social worker to be a trustworthy source to communicate with 2).

Table 3 examines the pre and post-test means and standard deviations of six additional items also used to measure self-efficacy for communication with another if a friend had confided in them about suicide and depression. Rather than measuring self-efficacy in response to one’s own thoughts about suicide, these items explored this response in relation to the knowledge of someone else considering suicide. The means of four of the items were higher in the post-test than in the pre-test. Teacher/school counselor and social worker were higher in the pretest. In the post-test respondents indicated that if some talked to them about wanting to commit suicide they would be most comfortable speaking with a teacher/school counselor. A significant increase occurred in the percentage who said they would feel comfortable talking to someone else if a friend confided in them about suicidal thoughts or intentions (pre-test mean = 1.56, SD = 1.39; post-test mean = 1.96, SD = 1.02; p ≤ .01) (Table 3). Once again campaign exposure appears to have increased self-efficacy among respondents.

Table 4 examines the pre and post-test means and standard deviations of five items used to measure response efficacy (extent to which a response effectively addresses a threat) by asking respondents to rate how helpful various people or occupational groups would be in assisting young people with depression and/or suicide. Higher post-test means were found with two items (parent/friend and teacher/counselor), while two items had lower post-test means (church leader, social worker) and one was the same (doctor/nurse/healthcare provider). In the post-test response efficacy was greatest for parent/friend and teacher/school counselor, indicating that respondents believed these categories were the most able to help young people dealing with depression or suicidal thoughts. None of the post-test items were statistically significant from pre-test items (Table 4).

Table 5 examines the pre and post-test means and standard deviations of five items used as a general measure of self-reported behavior of accessing the Internet for health-related information. Interestingly, the means of all five items were lower in the post-test than they were in the pretest and both information about nutrition and information about eating disorders were statistically significant (p<0.1). Moreover, the means for both categories were low, indicating that the Internet is used infrequently as a means of accessing information about health-related issues. This is notable considering that the Internet is the primary way that young people gain information. While it is unclear why the use of the Internet for health information by Miles City youth was low both before and after the campaign, several factors may be at work here: 1) Youth may not associate social media with the Web or Internet and hence did not report on social media use in response to these questions (construct invalidity); 2) Internet use for non-school activities may be discouraged at school; hence, students may have been reluctant to report on such activity in a school-based survey (authority bias); and finally, the interpersonal nature of the campaign may have provided youth with increased access to interpersonal sources of health information, thus reducing their reliance on online sources.

Interview Results
Qualitative results indicated students had a strong desire to learn more about how to peer counsel their friends and get help independently of adults. More attention will therefore be placed on peer-to-peer communication in the upcoming intervention. No changes were observed in the number who reported using the Internet for suicide or depression. Preliminary
results from this study also suggest that the medicalization of depression and suicidal ideation among teens might actually prevent help-seeking behavior. Among high school students ranging from age 14 to 18, interview data reveal reluctance among respondents to label depression as illness. Subjects much preferred to conceptualize depression and thoughts of suicide as within the range of “normal” behavior for adolescents. In addition, they expressed a reluctance to seek help from professionals (either physicians or therapists) because, if friends and family learned of their help-seeking, they worried that they would be seen as different, strange, or abnormal. Subjects reported that they would prefer to confide in friends and if they did seek out an adult, they preferred to couch the interaction as “talking about normal problems.” In contrast to data on adults, the teens emphatically rejected medication as a treatment option, on the grounds that it would make it seem like they were “sick.” These findings suggest that schools, family, peers, and mental health practitioners might have more success in encouraging teens to seek help for thoughts of suicide by de-medicalizing depression and normalizing mental health interventions. This might alleviate the fear among teens that they will be seen as “outsiders” if they acknowledge feeling depressed.

Implications

The findings of this project have the potential to inform future suicide prevention campaigns including the benefits of social support for adolescents in similar areas. Such interventions could include family, friends, schools, communities, and social networking sites to implement the intervention. In addition, the potential findings from this study may generalize to other parts of Montana, which could be beneficial for many of our communities. Results may be disseminated via academic conferences and journals. Future research will analyze effects of the intervention on such outcome variables of interest as self-efficacy, response-efficacy, awareness of suicide prevention resources, and self-reported access of health-related Internet web sites. Campaign exposure will be treated as an independent variable, allowing for a comparison of means from pre-test to post-test for each of the outcome variables listed above, controlling for campaign exposure.

Preliminary results show significant increases in students’ self-efficacy (self-reported confidence for specific behaviors). Students exposed to the campaign were more willing to talk to an adult (family member, teacher, social worker, health professional, pastor) about suicide and depression. As noted in the results presented here, students gained confidence in the use of social workers and high school teachers/counselors for communicating about these sensitive topics.

The interdisciplinary approach to understanding the relationship between youth suicide and available prevention resources will hopefully enrich our understanding of how, when, and why students access or fail to access the help available – and which kind of prevention resources would be more useful to them and why. Specifically, pilot qualitative data indicated potential differences in gender preferences and barriers to accessing school counselors and psychologists. For example, female respondents mentioned more barriers to approaching high school counselors than did males. Boys, who routinely access counselors for poor grades, did not express the same levels of shame associated with being seen at the counselor’s office. Some basic logistical recommendations may be implemented by school administrations to increase the use of counselors by both genders. Similarly, pilot results showing a preference among adolescents for handling suicidal complaints among themselves may require more formal instruction and resources for youth disseminated by trained youth leaders/educators. The early results on this creative approach to prevention are promising. Clearly, more information is needed about how to reach under-served populations and how to implement this creative approach on a larger scale. It is our hope that an integration of data from the disciplines of sociology, communication and psychology will not only shed further light on how to engage youth populations around suicide prevention – but will deliver a highly useful approach that can be replicated in other communities.

The results described here are currently being used to implement a new intervention with a more diverse audience in a larger city in South Central Montana. The Billings intervention will also involve a youth theatre production, youth photography workshop, and art exhibit designed to highlight suicide prevention resources and enable young people to discuss emotions related to suicide and depression. It will be administered to high school youth in Billings, MT by students and professionals from Montana State University Billings and the Global Health Equity Foundation, in conjunction with key stakeholders from Billings.

References


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### Table 1

**Campaign Awareness**

<table>
<thead>
<tr>
<th>Item</th>
<th>NO</th>
<th>Frequency</th>
<th>Percent</th>
<th>YES</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you heard of a suicide prevention campaign?</td>
<td></td>
<td>71</td>
<td>32.9</td>
<td>144</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td>Do you know the campaign name?</td>
<td></td>
<td>138</td>
<td>63.9</td>
<td>76</td>
<td>35.2</td>
<td></td>
</tr>
<tr>
<td>Have you heard of the “let’s talk” campaign?</td>
<td></td>
<td>0</td>
<td>0</td>
<td>119</td>
<td>55.1</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Discrepancies are due to missing data.

### Table 2

**Self-Efficacy for Communicating About Personal Suicide Concerns**

<table>
<thead>
<tr>
<th>If I were suicidal</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would feel comfortable talking with a</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Parent/family member</td>
<td>215</td>
<td>3.26</td>
</tr>
<tr>
<td>Friend</td>
<td>222</td>
<td>3.72</td>
</tr>
<tr>
<td>Teacher/school counselor</td>
<td>215</td>
<td>2.80</td>
</tr>
<tr>
<td>Church leader</td>
<td>211</td>
<td>2.71</td>
</tr>
<tr>
<td>Doctor/nurse/healthcare provider</td>
<td>211</td>
<td>2.76</td>
</tr>
<tr>
<td>Social worker</td>
<td>209</td>
<td>2.22</td>
</tr>
</tbody>
</table>

Note: * p < .05, two-tailed. ** p < .01, two-tailed.

### Table 3

**Self-Efficacy for Communicating About Suicide Concerning Others**

<table>
<thead>
<tr>
<th>If someone talked to me about being suicidal</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would feel comfortable talking to</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Parent/family member</td>
<td>218</td>
<td>3.72</td>
</tr>
<tr>
<td>Friend</td>
<td>212</td>
<td>3.56</td>
</tr>
<tr>
<td>Teacher/school counselor</td>
<td>217</td>
<td>3.63</td>
</tr>
<tr>
<td>Church leader</td>
<td>207</td>
<td>3.10</td>
</tr>
<tr>
<td>Doctor/nurse/healthcare provider</td>
<td>207</td>
<td>2.99</td>
</tr>
<tr>
<td>Social worker</td>
<td>204</td>
<td>2.65</td>
</tr>
</tbody>
</table>

Note: * p < .05, two-tailed. ** p < .01, two-tailed.

### Table 4

**Response Efficacy for Accessing Interpersonal Support**

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following individuals can help young people deal with depression and/or suicide</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Parent/friend</td>
<td>219</td>
<td>4.00</td>
</tr>
<tr>
<td>Teacher/school counselor</td>
<td>222</td>
<td>3.59</td>
</tr>
<tr>
<td>Church leader</td>
<td>219</td>
<td>3.58</td>
</tr>
<tr>
<td>Doctor/nurse/healthcare provider</td>
<td>219</td>
<td>3.69</td>
</tr>
<tr>
<td>Social worker</td>
<td>218</td>
<td>3.34</td>
</tr>
</tbody>
</table>

Note: * p < .10, two-tailed. ** p < .05, two-tailed.
Table 5

*Self-Efficacy for Accessing Health Information Online*

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have used the Internet to find</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information About Nutrition</td>
<td>N=222, Mean=3.30, SD=1.93</td>
<td>N=214, Mean=2.97**, SD=1.38</td>
</tr>
<tr>
<td>Information About Pregnancy</td>
<td>N=220, Mean=2.46, SD=1.22</td>
<td>N=210, Mean=2.19*, SD=1.24</td>
</tr>
<tr>
<td>Information About Substance Abuse</td>
<td>N=220, Mean=2.43, SD=1.17</td>
<td>N=209, Mean=2.33, SD=1.26</td>
</tr>
<tr>
<td>Information About Eating Disorders</td>
<td>N=218, Mean=2.44, SD=1.17</td>
<td>N=210, Mean=2.14**, SD=1.18</td>
</tr>
<tr>
<td>Information About Depression/Suicide</td>
<td>N=216, Mean=2.39, SD=1.19</td>
<td>N=211, Mean=2.23, SD=1.22</td>
</tr>
</tbody>
</table>

Note: * p < .05, two-tailed. ** p < .01, two-tailed.
Abstract

Scientists across numerous disciplines have been largely unsuccessful at isolating the specific set of environmental factors responsible for elevated winter levels of influenza. Recent research suggests that cool, dry conditions increase transmission rates of influenza, but there have been few studies linking these conditions to outbreaks of the disease among humans. The goal of this research is to conduct a biometeorological examination across the southwest United States to examine how specific environmental factors impact outbreaks of influenza. We find that dry polar air across the Southwest results in a highly statistically significant increase in influenza two weeks after the conditions are present, often with hundreds of additional hospital admissions being observed. While most studies examining environment-influenza relationships are based in the laboratory, ours is one of only a few to find such relationships within the human population and can be of great use in predicting outbreaks of influenza in advance.

Introduction

Each year, influenza impacts up to 20% of the U.S. population and is responsible for hundreds of thousands of deaths worldwide (CDC 2013; WHO 2009). Until recently, scientists across numerous disciplines have been largely unsuccessful at isolating the specific environmental factors responsible for elevated winter levels of influenza. However, recent research on guinea pigs suggests that transmission of influenza is highly affected by changes in both temperature and humidity, with cool, dry conditions exacerbating the spread of the disease (Lowen et al. 2007, 2008; Mubareka et al. 2009). Although the findings within laboratory settings are clear, there have been surprisingly few quantifiable studies linking environmental factors to outbreaks of influenza among humans. Several recent studies note that influenza rates are highest in the southwest United States, and it is possible that the cool, dry conditions found in the Southwest are responsible (Greene et al. 2006; Kalkstein 2013). Thus, the goal of this research is to conduct a biometeorological study across the southwest United States to examine how specific environmental factors impact outbreaks of influenza. A better understanding of the relationship between environmental conditions and influenza would be of great benefit to the medical community, and the potential exists to provide warnings in advance if conditions are conducive to the rapid spread of influenza.

Data and Methods

Daily hospital admissions were provided by the Arizona Department of Health Services and the Nevada Division of Public and Behavioral Health for four cities across the Southwest: Tucson, AZ, Phoenix, AZ, Las Vegas, NV and Reno, NV. These data span from 1998 through 2011 in Nevada and from 2005 through 2011 in Arizona, and include both inpatient and outpatient emergency room visits. Only the winter season (October through March) was examined, and all admissions, regardless of cause, were included since previous research notes that influenza impacts many types of illnesses including heart attack, stroke, respiratory distress, and beyond (Dushoff et al. 2006; Madjid et al. 2003; Reichert et al. 2004). These data were standardized to remove as much non-climatological “noise” as possible, and we controlled for day-of-week fluctuations as well as long-term population changes. Further, a 15-day running mean was employed to help smooth the inherent variability in daily hospital admissions data.

Daily meteorological conditions were obtained from the National Climatic Data Center and include: maximum, minimum, and average daily surface temperatures, average daily dew point, average daily wind speed, average daily sea-level pressure, and daily precipitation. A daily synoptic weather type (air mass) for each city was obtained from Dr. Scott Sheridan at Kent State University. This daily air mass calendar is created using Spatial Synoptic Classification (SSC), and classifies each day into one of seven potential air mass types based upon a variety of factors including temperature, humidity, cloud cover, and wind (Sheridan 2002). An air mass-based approach is often advantageous in human health studies, as it provides a more complete assessment of the environmental conditions present at a given location.

Results and Discussion

Daily hospital admissions were examined both during and following the passage of various air mass types, and while there was no statistically significant difference between hospital admissions during a particular air mass, there were very strong differences shortly after the passage of an air mass. For example, approximately two weeks following the presence of each air mass, hospital admissions varied significantly based upon the air mass that had been observed. More specifically, dry polar (DP) air consistently resulted in elevated numbers of hospital
admissions, and Analysis of Variance (ANOVA) results reveal that these fluctuations are highly statistically significant. Although the results vary somewhat by city, in many cases, DP air would result in hundreds of additional hospital admissions over a two-week period shortly after its passage.

In all, environmental-health relationships stemming from synoptic air mass type and hospital admissions were surprisingly robust. Further, the results here are consistent with previous research suggesting a possible link between cool, dry air and influenza. While most studies examining environment-influenza relationships are based in the laboratory, ours is one of only a few to find such relationships within the human population. This is an exciting finding that will be explored further in future research, ultimately with the goal of creating a predictive model to warn of impending influenza outbreaks in advance.

References

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The Household Pharmacy: Consumer Treatment of Drugs in the Home
Karen M. Hood, Eastern Kentucky University

Introduction
The purpose of this study is to provide a rich description of consumer behavior in an effort to understand the consumer values associated with the acquisition, storage and disposal of drugs in middle class American homes. Many social and environmental problems are linked to consumers’ tendency to improperly store or dispose of household drug products, especially those that have expired or have outlived their intended use. This study intends to examine the behaviors, beliefs and attitudes consumers hold with regard to storage and disposal of household drug products, especially prescription and non-prescription medications that could contribute to non-medical use or abuse of these substances.

Sample
Twelve participants in two Southeastern US states provided insights through depth interviews and observation in their homes in the tradition of ethnography. Beginning with associates of the investigators, subsequent participants were chosen using the snowball method. The final sample was comprised of seven women and five men ages 21-40, with one exception, a male aged 67. Using a basic interview guide and follow-up probes, investigators performed grand tour interviews (Kvale) lasting approximately one hour each. A variety of family compositions (marital status, number of people in the household, presence of children, etc.) is represented, and all of the participants were employed, educated, middle-class residents of medium sized cities.

Research Questions
This study initially addressed the following research questions:
1) What are consumer attitudes, beliefs, and behaviors around the storage and use of medications in the home?
2) What are consumer attitudes and perceptions about disposal of drug products? How do they decide when something is past its use and how do they dispose of it when it’s time?

Several patterns of behaviors, beliefs and attitudes emerged from participant responses around the acquisition, storage and disposal of drug products.

Classifying “Drugs”
What consumers classify as “drugs” in the household has an effect on how they store these substances. Many participants expressed some confusion about what they considered to be a drug product. Consumers who did view certain products as posing a possible threat did so mainly in the context of potential danger to children in the home, though they took very limited precautions to secure these products out of the reach of children.

“So like vitamins...I guess I don’t consider them drugs. Never really thought about that. Obviously you think about drugs as those things that are proclaimed bad for you, i.e. like pot and heroin, and cocaine. I mean, that’s what I think of when I think about drugs, right? I mean, I don’t necessarily think of aspirin or the things that you’d buy in a pharmacy as drugs... I guess drugs to me have a negative connotation.” – Zachary

Participants also reported that their definition of potentially harmful drugs were limited to illegal substances and that drugs prescribed by a physician are more likely to be viewed as “safe” products.

“You think of drugs and it’s harmful if you do drugs, ok? Meaning you can really screw up your life on drugs. Clinically I know that, prescription drugs are drugs, but we don’t refer to them as prescription drugs we refer to them as ‘Oh! Our prescription.’ We kind of ... dropped off the whole drug equation side off the label, if you will. So we think – Oh, I’m going to get my prescription; I’m not going to get my drugs. So, I guess by that definition and how we delineate between, what a drug is, we kind of have engrained in our head that drugs are those hard core substances: cocaine, heroin, ice, pot, whatever else that’s illegal narcotics. But if a doctor prescribes it, it must be ok.” – Zachary

Consumers shared that their definition of what is considered a drug has been shaped to some degree by commercials seen on television. One commented that direct to consumer advertisements tend to diminish the harmful aspects of pharmaceuticals by the way the products are characterized and by associating them with commonly held feelings of legitimacy and safety associated with medical professionals.
Storage
“I have a place”

Most participants reported that they stored all products they considered to be drugs in one central location in the home. Though many factors came into play in this decision, two locations in the home emerged as the most common choices for medicine storage – the kitchen and the bathroom. Participants indicated these locations made the most sense because they are where most daily routine activities occur.

Convenience

For all participants who claimed to centrally store drug products, the major factors involved in location selection were convenience, efficiency and time saving as they pertain to incorporating the use of important products into their daily lives.

“We spend more time in the kitchen than we do in the bathroom. And honestly, it’s kind of the segue to the rest of the house for us. ...When we leave in the morning its right here; when we come in from work, its right here... It’s the Alpha and Omega; it’s the beginning and the end to our day. It’s a convenient location. We get our water, we get our medicine, and it really helps... I mean, honestly - I’m more regular about keeping on my regimen of medicine by having them here.” – Linda

“I have a Tupperware bin that I label ‘medicine’ very obviously and it’s kept at adult head height in my pantry and it’s not a locked container, but it’s up high and all of the medicines should be in that spot. I wanted to keep it all together...I didn’t want to have medicine over in this bathroom...medicine in that bathroom... you know, I just wanted to have everything in one spot.” - Amy

Reminder of a Routine

Participants also indicated that the storage location selected was critical to the formation of habits around using certain drugs and served to remind them to keep up with prescribed regimens to treat chronic conditions. Remembering to use the product was perceived to contribute to success in daily activities.

“I store them in a cabinet above my countertop in the kitchen. ...It’s easier access here because in the morning...my routine consists of breakfast and water and things like that. So that’s there so that way I remember to take my vitamins daily. So that’s why it’s in the kitchen cabinet right next to the refrigerator.” – Kate

Out of reach of children

Participants also stated that their choice of storage location was heavily influenced by the need to keep products out of reach of children living in or visiting the home.

“There were some concerns when the kids were younger, but the cabinet is, it was, relatively out of their reach. And like I said, we keep pretty good tabs on the medicine levels... There’s always the opportunity if you have teenagers in the house then you have to be mindful of that...” - Linda

“I don’t have any children, but I do keep in mind that I have friends that have children, so I like to keep all the medicines out of the reach of children so it’s on a higher shelf.” - Kate

Tradition

Additionally, some participants identified with traditions in their families, indicating that drugs simply belong in certain locations because of precedents set in their childhood homes.

“They are all in my medicine cabinet which is next to my refrigerator... and that’s where medicine has been since I was born. That’s what my mama did...” Sara

“I guess my thought process was medicine goes in the medicine cabinet, you know, like that’s where the medicine is supposed to go – in the medicine cabinet” - George

All in One Place... BUT...

Almost all of the participants reported that they stored all products they considered to be drugs in one central location in their home. But later in the interviews, most participants mentioned secondary storage sites. On average, each participant stored drugs in at least three and as many as five places in the home.

“There should not be medicine in any other spot in the house ideally. But I know now that you asked me that question...I’m thinking about my husband specifically when he was deployed they gave him like a year’s supply of this ... medicine ...and he came home...he didn’t take hardly any of it, right? And so I think he still has it in his drawer in his bathroom.” - Amy

“No, it’s all in the medicine cabinet in the bathroom. It’s all right there. All in the medicine cabinet. I have some in my toiletry bag... for when I travel.... and Yeah. Oh, I do have some at work, yeah, I have a nice little bottle [of Motrin] at work because that’s pretty much for the most times I use that.” - George
Control

Most consumers reported that adopting an auxiliary storage location for some products provided an additional measure of control over the product in the home and control over health conditions. Some desired control over securing prescription medications to ensure that they would be taken as prescribed to maximize efficacy. Others expressed a desire to exert control over personal privacy and stored medications that they considered to be "personal" in a location obscured from sight.

“I think the one thing that... I do worry about is probably ... my prescriptions I keep close to me because I know I have to take them... not that I fear the people coming into my home are going to be raiding my drug drawers and stuff. But, I mean for those things that I know that I have to take? They stay with me. Versus some of the things that are more common... if you need to take an Advil, just grab an Advil... But you know I don’t necessarily need you taking my pain pills or my antibiotics...if I was prescribed them.” – Xavier

“.... anybody can go in there...say they’re grabbing the salt and pepper... well, they can see my Diflucan. And then they know...I have a yeast infection. So that’s personal... I keep that in my bathroom. So the bathroom is more personal. I keep prescriptions there because it’s personal. Nobody goes in there and that way people don’t know all my business.” – Halle

“At just in Case”

Most consumers reported that they also chose auxiliary storage locations that aided accessibility to products in the event of an unexpected need for them. This behavior was an expression of a desire to be prepared. Concerns about vulnerability to illness and the inability to treat symptoms that could impede their productivity lead to this behavior. Almost all participants described this need to be prepared “just in case” they should be beset with a malady as highly important to them.

“I use it for like when I have a long day standing up and I start getting those pains and so...sometimes I do have ‘em and sometimes I don’t have ‘em so I tend to take it on the onset of the pain and so if I don’t need it I’m not gonna take it, but there’s no way for me to predict in the future if I’m gonna need it. So I have it on hand just in case.” – George

“The Adderall and the...inhalers...typically stay with me wherever I am...just because if I lose my Adderall and/or my inhaler I’m kind of screwed...and so those can stay with me. So those will be stored either by my bed or in my car or in my messenger bag... in a secure place where I happen to be.” – Seth

Avoiding Waste

Consumers frequently chose to hold onto medications that they believed were past their usefulness or efficacy because they had assigned a monetary value to these products. As a result consumers expressed concerns about wasting something of value, and therefore choosing not to dispose of certain medications after their intended use.

“These are definitely expired, you know, and it’s a shame to throw them out. ...Because it’s like wasting money.” Amelia

“So I think that, you know, you almost have to treat it like...either money or some sort of thing of value that you have to protect.” – Xavier

Self-Treatment

Many consumers expressed strong feelings about the challenges inherent in obtaining medications from a prescribing physician. These consumers reported that they often hold onto leftover medications in an effort to avoid these visits.

“Well, it’s frustrating because when you have to take this time out of your day and it’s frustrating because the doctor is making you come in and you go ‘oh, yes, give me your symptoms’ and it’s the same symptoms I gave you over the phone and then you write me the same prescription just so you say that you saw me and charged me $80 bucks just to come in when you didn’t even look at me or check me or anything like that because you could have done this over the phone and saved me [time], now I may go home with strep throat... or Infantigo ... you never know. Time is a big issue for me. Time...money...it’s wasteful. It’s wasting my time; it’s wasting my money. Again, I don’t like being wasteful.” – Sara

“Have I done that before? ...Yes I have done that. ... I had a refill, and I had one left over, like a...capsule or a tablet left over and, it helped to give me relief until I could get in to see the doctor.” – Halle

Disposal

Once participants decided to dispose of drugs in their households, they chose a method of disposal. Most consumers either disposed of drug products in the same manner as other waste expelled from the household or they shared them with others who may need them. The most common methods of traditional disposal among the participants were via the trash, toilet or sink.

“No. I just throw it out like it’s a bottle of soda or something. To me...I’m not thinking about the landfill’s getting harmed any differently than, but I
suppose...I don’t know...Am I supposed to be crossing my name out or anything...or?  I don’t know what other people do, but...I just throw it out.” – Amelia

“If it was a prescription that taken in specific doses could be harmful to someone else then I would flush it...I don’t want to be the cause of someone else injuring themselves...” – Annabelle

“Well, I would probably...well I’d pour it down the drain.  As a matter of fact I just used almost all of our liquid Motrin last night and I rinsed it and put it in the recycle bin.” - Sophie

“I probably would dilute it down with a lot of water and pour it down the sink and then throw the bottle away. ... if you dilute it down with a lot water you pretty much just made it useless. You just, you know, you killed the harmfulness of it so, if it had been opened, you know, I would just dilute it down - a lot of water, pour it down the sink, call it a day.” - Hector

One interesting exception to traditional disposal methods was a consumer who routinely used leftover medication as fertilizer.

“Not for a liquid but for a pill, I mean, it’s like with pills I would just crush ’em up and put them in the fertilizer and, you know, go out in the garden with my grandma.” – Seth

Sharing

Another common disposal practice among consumers is to simply give the products away to others who may need them. Consumers in this study reported only giving away products that were medically necessary and not in support of any recreational or off label application.

“...When somebody says, “Oh, I’m itching really bad,” or “I have, or I broke out in poison ivy,” well I say, “Hey, here have some Benadryl®, ” so I can make it convenient for other people, too.” – Scott

“I think that probably people that are in eighteen to forty year old demographics are probably more inclined to say, “Oh you’re having a problem?  Oh, Well I had that problem last month and I still have some prescription left over, here use mine.” - George

Awareness of Proper Disposal Methods

Few consumers demonstrated awareness of proper disposal methods or of any alternatives to disposing drug products as traditional waste.

“Not at all.  I don’t...I guess I could Google it...I wasn’t really concerned about it. ... So they need to let us know. Awareness is the issue, I think.  I don’t think the average person is aware of they should be doing something different. It’s weird because we treat it so quarantine-ly in the home, but yet I then just go put it in with my massive amount of... my bulk trash... I just don’t know what the alternative is...I just don’t know what I’m supposed to do with it otherwise.” – Amelia

“So [I] heard...you can put ’em in the kitty litter, that helps, you know, get rid of ’em in a safe way. And then, that’s pretty much it.” – Seth

Discussion

The study offers a rich description of the experiences of consumers and drug products they keep in the household. Some of the themes revealed in the interviews include confusion about the nature of drug products in the household, some kind of organization scheme surrounding their storage and confusion about when and how to dispose of them.

Social marketing entails applying marketing principles to influence consumer behavior and is largely employed in the public health arena (Lee, Rothschild and Smith, 2011; Kotler and Lee 2011.) The experiences of the participants in this study suggest the need for several areas in which social marketing application could be beneficial in influencing consumers to more securely store, monitor and dispose of drug products in the household.

First, education and awareness campaigns are essential to raise the salience of the potential for prescription drug abuse related to improper storage. Second, increase the cost and decrease the perceived value of keeping drug products that are beyond their intended use. Further investigation into the perceived value is needed to discover what part mere ownership, monetary cost, psychological costs and other acquisition costs are associated with consumers’ tendencies to store unneeded drugs indefinitely. More products may be made available and accessible to encourage proper storage and disposal, including “expiring” packaging, locking home storage cabinets, and environment-friendly disposal kits. At the community level, safe, accessible and permanent drop off locations may be established, or public policy changed to allow additional locations such as pharmacies to accept unused products. The basis of an effective marketing campaign includes market segmentation and identification of target market(s). While those most impacted by overdose and abuse include children 13-17, more research is needed to understand what segments are most likely to store products in ways that are most accessible.
References


Diagnostic Services in the Realm of Globalization and Sustainability: Key Drivers of Health Wellness and Healthcare Cost Containment
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Abstract
As the forces of “globalization” march on, the societies on the planet continue to prosper as hundreds of millions of people have the opportunity to participate in the process of “wealth creation.” These are people who were formally left out of this process. And this is good. However, the process also has a dark side, represented by the enormous demands being made on the planet’s resources which are needed to create this new wealth. The forces of “sustainability” thus come into play. This paper examines these forces from the perspective of the state of global-health of societies and individuals. More specifically, this article – 1) briefly reviews the interactive forces of globalization and sustainability, 2) uses the understanding of these two forces to explain the rise of a global health care crisis manifest in the spread of obesity, cardiovascular disease, diabetes and other maladies (non-communicable diseases – NCDs) that now threaten societies across the world, 3) provides a possible antidote to this global health crises using the ideas of “long-tail” theory, “mass customization” and the “presumption” in health care prescription, 4) presents an overview of one company that is meeting this challenge (Health Diagnostic Laboratory, Inc – HDL) through its successful business model, 5) hypothesizes that the HDL business model is very applicable to the globalized world (particularly the big emerging markets where it is so needed), and 6) concludes with managerial implications and a call for future research.

Introduction
Globalization and sustainability represent two “super forces” of our time. Together they are shaping our societies and our planet as few historical forces ever have (perhaps the enlightenment or renaissance could be considered rivals in terms of the changes they brought about). While globalization and sustainability have manifest influences across many dimensions (political, social, cultural, environmental), they both have contributed greatly to the opportunities and challenges that the world now faces with respect to health and healthcare. As such, a brief overview of globalization and sustainability is in order.

The First Super-Force – Globalization
When the Berlin Wall fell in 1989 and the Soviet Union came apart in 2001-2002, the old super story of our time – communism versus capitalism (demand oriented markets versus command oriented markets) was replaced by the era of globalization and the barriers and walls that divided our world for seventy-five years disappeared (Friedman 2005). Globalization describes a process by which nations, organizations and people are becoming more interconnected across the globe (Ali 2000). With the old barriers removed, the impact of globalization has accelerated with the aid of 1) falling transportation and logistics costs for goods services and people, 2) diminished trade barriers that portend lower tariff and non-tariff impediments to global business, 3) increasing communication abilities enabled by technology that allow ideas and information to flow and disseminate quickly and inexpensively around the world, 4) an expanding world of investors now able to play in a broader “global” arena in search of promising opportunities and 5) a massive flow of humanity from rural areas to urban areas in search of economic opportunity (unleashed by the force of globalization) and the educational options that allow entry into the environments where such opportunity exists (Zacharia 2008). Globalization means millions, if not billions of formerly “left out” people can now compete in world markets and achieve a better life.

To fully understand globalization two things are useful – 1) a sense of the world today from a broad-perspective and 2) a sense of the monumental changes happening in the emerging markets of the world. Consider these realities. The percent of people living on one dollar a day or less has dropped from 40% in 1981 to 18% in 2004 and will be 12% by 2015 (Zakaria 2008). China has lifted 400 million out of poverty (and poverty is falling in countries housing 80% of the world population). Over the last two decades, two to three billion people have newly entered the world of business and trade. Goldman Sachs (an investment bank) predicts that by 2040 five emerging-market countries – China, India, Brazil, Russia and Mexico - will have a larger economic output than the G-7 countries - the 7 Western nations that have long dominated global affairs including the US, Canada, Great Britain, France, Germany, Italy and Japan (for more details see Zakaria 2011). In brief, globalization, over the last 25 years, has
allowed for the creation of enormous wealth and has given unprecedented opportunities for a better life for billions of people around the world. Globalization has become a “super-force” of our time.

The Second Super-Force – Sustainability

Sustainability is a complex word that is bandied about a lot these days. Everyone has some opinion about it, but few are really sure they understand what it means. The skeptics mock sustainability as a tree hugging, light bulb changing waste of time at best, and an economic disaster at worst (often stating such things as – “there is no global warming and if there were, the human enterprise didn’t create it, so it’s ridiculous to say we can do something about it, and it’s great folly to cut commercial activity to try and stop it”). At the other extreme, true believers of the reality and related wrath of sustainability often expound that - “we are all doomed if we don’t respond now, and in significant ways, to the demands of this super-force,” and if we delay “we will all go the way of the dinosaurs, as our world heats up and floods out due to societies’ cancerous like expansion on our fragile planet. Act now, or die.” Like most “big think” debates, the truth to the matter probably lies in the middle. Perhaps a more productive way of thinking about sustainability is not from the extremes, but from the perspective of how might it make our lives, our careers, our organizations and our communities better (i.e., more productive, more valuable, more meaningful and ultimately – more sustainable)?

Sustainability represents the capacity to endure. In ecology the word describes how biological systems remain diverse and productive over time. For humans, it is the potential for long-term maintenance of well-being (both at the individual and societal levels) which in turn depends on the maintenance of the natural world and natural resources. The Brundtland Commission (1987), formally the World Commission on Environment and Development (WCED), identified sustainable development as that which meets the needs of the present generation, without compromising the ability of future generations to meet their own needs.

Now if we had unlimited resources and we utilized them only in ways that improved our world without any negative side effects, all would be well. But just one quick glance at the realities we face tells us that even if this were the case, the changes we face in the future are going to challenge us in ways few truly comprehend. Indeed, global population is projected to increase from today’s 6.8 billion to 9 billion by 2050, while use of resources and materials will have to improve four-to-tenfold to support such an increase. For the first time in history, more than 50% of the world’s population lives in an urban area. And by 2050, 70% of the world’s population will be living in towns and cities. Many observers are now asking – “will our communities (and our planet as we know it) be sustainable given the problems related to unprecedented demands for food, water, natural resources, and waste disposal (to name but a few), when 5 billion live in cities?” Perhaps the key question in this story is – will the realities of climate change and the resulting “ecosystems” damage being witnessed today be manageable? Consider for example that today many species are threatened with extinction, 75% of genetic diversity of agricultural crops has been lost, 75% of the world’s fisheries are fully or over exploited, up to 70% of the world’s known species risk extinction if the global temperatures rise by more than 3.5°C, one-third of reef-building corals around the world are threatened with extinction and every second a parcel of rainforest the size of a football field disappears (Adams 2011, also see - Environic Foundation International 2013).

Sustainability is indeed the second super-force of our time and the challenges that manifest by this force are primarily driven by the force of globalization. Truly, these two forces – globalization and sustainability - are interrelated and together they offer great promise and significant challenges. They portend possible nobility of the human endeavor (as poverty may be relegated to the dust bins of history), or possible degradation and disaster for the human endeavor and our planet as a whole.

So what does all this mean during the rest of the 21st century and beyond? To many observers, it means that individuals, organizations, communities and nations must be fully cognizant of the realities of globalization and sustainability and must embrace strategies that do good (helps sustain our planet and society) and does well (improves resource utilization at every level). A primary example of such and the focus of this paper lies in the realm of global health and health care cost containment.

Global Health and Health Care Containment in the Realm of Globalization and Sustainability

As globalization gains depth and breadth (spreading to more corners of the world, and reaching further into more and more societies in the world) what some have labeled as another global sustainability mega-trend – obesity - has become global. Some observes opine that obesity is an epidemic that may be the most pressing health challenge facing the world today. It has both a direct impact and undulation effect on chronic diseases, such as diabetes. Obesity rates have doubled over the past thirty years, and globally 1.4 billion people are considered overweight and 500 million considered obese, according to World Health Organization. By 2030, fifty to sixty percent of the population in many countries are on target to be classified as obese. The ultimate ripple from all this may be unaffordable and potentially overwhelming costs for societies around the world.

Apart from tobacco, there is perhaps no greater harm to the collective health in the world than obesity. Indeed, obesity’s health effects are deep and vast—and they have a real and lasting impact on communities, on nations,
As noted, five hundred million people worldwide are obese. Over 115 million of these are in developing nations. Obesity is expected to affect fifteen percent of the U.S. population by 2030. Today, it accounts for at least 3 million adult deaths a year worldwide. There isn’t a region in the world untouched by the obesity epidemic. Once just a problem of wealthy nations, obesity now impacts countries at all economic levels, bringing with it a wave of ill health and lost productivity. Worldwide the rate of obesity has nearly doubled since 1980 with current research indicating over 200 million adult men and just under 300 million adult women are obese. Obesity rates have been steadily rising in children also. In 2010, 43 million preschool children were overweight or obese, a 60 percent increase since 1990. And these jumps in child and adult obesity rates show no sign of stopping (Cawley and Meyerhoefer 2012).

While obesity rates remain higher in wealthier countries (relative to low and middle-income countries), it is indeed a worldwide problem. Of all high-income countries, the United States has the highest rates of overweight people, with fully a third of the population being obese. This rate is projected to rise to around fifty percent by 2030. As with most health issues, the burden of obesity isn’t felt equally across all parts of society. The poor have higher rates than those with higher income. Those with less education have higher rates than those with more education. And certain minority groups—especially African-American and Hispanic women—have much higher rates than other groups (http://www.hsph.harvard.edu/obesity-prevention-source/obesity-trends/).

A large proportion of health care spending is a direct or indirect consequence of obesity, with total healthcare costs more than 40% higher for obese patients than normal-weight patients ($190 billion were spend on obesity related issues in the U.S. in 2005 or nearly 21% of the country’s annual medical spending). The future health, social and economic costs could be overwhelming, especially given high levels of global childhood obesity and growing obesity in emerging markets (healthcare is 40% more expensive for obese people). Generally, although men may have higher rates of being overweight, women have higher rates of obesity. For both, obesity poses a major risk for serious diet-related noncommunicable diseases, including diabetes mellitus, cardiovascular disease, hypertension and stroke, and certain forms of cancer. Its health consequences range from increased risk of premature death to serious chronic conditions that reduce the overall quality of life (Danaei, et. al. 2009).

Some have called for bold, innovative and widespread action to counter this mega – global sustainability trend. Many observers believe the growing cost burden of obesity – on governments, for-profit and not-for-profit organizations, and on specific dimensions of society (see - Mission Readiness 2010) – can only be dealt with effectively if collective actions aimed at its causes are undertaken. These causes include over-consumption of and dependence on processed foods, lack of exercise and sedentary lifestyles, and a lack of pro-active, motivated personal responsibility for one’s individual health condition. The truly address these causes, an integrated approach involving multiple stakeholders and environments, going beyond healthcare providers and including the food and beverage industries, educational institutions, work environments, insurers, and individualized, “mass customized” action-oriented prescriptions for exercise, life-style choices, stress relievers and, if needed, pharmaceuticals. (http://www.foodpolitics.com/).

The Challenge - Controlling the Global Obesity Epidemic:
Expressed in the most parsimonious term, “globesity” is engulfing many sectors of the world (see videos - http://www.abc.net.au/foreign/content/2012/s3547707.htm; http://www.youtube.com/watch?v=XfENV7cW3eE and http://www.youtube.com/watch?v=ONeo9jBcSkq). The World Health Organization began sounding the alarm in the 1990s, spearheading a series of expert and technical conferences, white papers and expert opinions. Public awareness campaigns were also initiated to sensitize policy-makers, private sector partners, medical professionals and the public at large. Aware that obesity is predominantly a “social and environmental disease”, the World Health Organization is helping to develop strategies that will make healthy choices easier to make and is also working to analyze the impact that globalization and rapid socioeconomic transition have on nutrition and to identify the main political, socio-economic, cultural and physical factors which promote obesogenic environments (http://www.who.int/nutrition/topics/obesity/en/).
At the private sector level, many organizations have also recognized the challenge to human “sustainability” while at the same time recognizing that by addressing these challenges (doing good), they can also realize considerable growth and revenue generation (doing well). Three ideas (“long-tail” theory, “mass customization” and the “presumption”) are worth briefly exploring here within the context of health care prescription.

The theory of the Long Tail (http://www.thelongtail.com/about.html) rests on the assumption that both culture and economy are increasingly moving away from a small number of “mass” produced products and services, toward a much larger number of niche products and services (see graphic below). As the production costs drop (driven by new technologies, processes and programs), and supply chain efficiencies continue to drive down logistics costs, there is less reason to group consumer offerings into a “one-size-fits-all” mold. In a nutshell, narrowly-targeted “individualized” goods and services can be as financially competitive as mainstream “mass” options.

The “long tail” refers specifically to the orange part of the sales graph above, which depicts a common demand curve that could represent any commercial enterprise (products or services). The red part of the curve represents a more “mass” oriented products or services, which have dominated consumer options since the industrial revolution. The orange part of the curve represents the “individualized” products or services (niches), which is where many observers predict new opportunity and wealth creation will be realized for much of the future. Customary business theory would advise business to focus on the red part of the curve because of potential economies of scale and scope that can be realized with standardized products and services. But with the advent of on-line options (think Amazon or iTunes) virtually any product or service option can be offered at a reasonable price, and as such the amount of sales (and profits) realized from niche markets may very well outnumber those originating from traditional mass markets. In other words, millions of product or service option that were formally ignored because of profit considerations (those found in the “Long Tail”), can now be produced at a profit even if only a few consumers (or even one consumer) make up the market for such. Consumers are inclined towards niches because they satisfy their specific interests and desires better. In sum, the many offering on world markets are shifting away from mass-produced products and services, to mass customized products and services.

Mass customization means many things (a number of writings exist on this topic, perhaps the true pioneers being William J. Abernathy and James M. Utterback (1978), but also see Joseph Pine II, 2009). An examination of these readings reveals four general categories of mass customizations (including – 1) component-sharing modularity – or using functional parts and processes to create a variety of products at competitive costs; 2) component swapping modularity – where customers can add unique qualities – images, logos, etc. – to customize a specific product like business cards or coffee mugs; 3) cut-to-fit modularity – where larger sized products (candy, soap) are re-sized or down-sized to meet individual customer tastes; and 4) mix or sectional modularity – where customers can mix two or more ingredients to create their own unique product such as frozen yogurt dishes made from individually selected yogurt flavors, toppings and supplements. Again, individuals are inclined towards such options because they satisfy their specific interests better, and they empower them to be both producer and consumer (the presumption effect) of what they chose to purchase and use.

The combination of two activities (and two words), producer and consumer, leads to the term “prosumption,” or the being a producer and consumer concurrently (see - http://www.deseretnews.com/article/865586914/Prosumption-Why-just-about-everybody-unwittingly-works-for-free.html). Prosumption can be witnessed in restaurants, gas stations, airlines, journalism, grocery stores, social media and other industries. The basic idea behind prosumption is to find ways of reducing costs, raising profits and engaging individuals to not just consume but to also be part of the process of producing what they consume, and thus, being empowered to influence, if not control what goes into their life, lifestyles and often society as a whole. This notion is not really new to humanity. Some observers believe prosumption was a “primal condition” existing for thousands of years as what our ancestors produced (what the tribe produced) is what they consumed. The industrial revolution changed much of this by separating what was produced from what was consumed (production took place in the factory, consumption took place outside of the factory. And like the past (where human innovation,
creativity and a desire to be more, drove development) in today’s modern world, new technology, new ways of thinking, better (and more wide-spread) education and a growing demand for and embrace of “individual empowerment” portends great advance in the human endeavor, including that representing health and healthcare.

The three notions of Long Tail markets, mass customization and prosumption illuminate how individuals, organizations and societies can and are responding to the crises of obesity and other NCDs in purposeful and proactively manner. The case of Health Diagnostic Laboratory, Inc. (HDL) provides an example of such proaction with all three notions embedded in its success.

**An Explanation of Diagnostic Services as a Driver of Wellness and Cost Containment: The Case of Health Diagnostic Laboratory, Inc.:**

As noted previously, we are witnessing the increase in urbanization globally, and we are also experiencing an increase in non-communicable diseases (NCDs) which lead to rising rates of morbidity/disabilities and premature deaths (Habib & Saha, 2010). And again, while there are an array of contributing causes of NCDs, “urbanization, commercialization and mass-marketing and aging” play a significant role, estimates focusing on preventative measures have concluded that the costs of NCDs could be reduced by as much as $500 billion/year for low- and middle-income countries (Sacco, et al., 2013). These measures can be as easy as reducing second hand smoke and salt intake. Steps taken to prohibit smoking in public buildings have provided a return on investment (ROI) in health care costs of $10 billion/year. Further health care cost reductions of $26.2 billion in the US can result simply by reducing salt to 1500mg/day.

In 2011, the United Nations declared a focus on “Prevention and Control of Non- communicable Diseases.” Four NCDs, responsible for two thirds of global mortality, were selected - cardiovascular diseases (CVDs), cancers, chronic respiratory diseases and diabetes. CVD has become a leading cause of death worldwide with 80% of the cases in developing countries (Gaziano, 2005). According to the World Health Organization (WHO), about 17.3 million people die each year from the disease and it is estimated to increase to 23.3 million (Cardiovascular Disease, 2013).

Traditionally, the testing used to evaluate CVD has been through the lipid panel – monitoring elevations of the “bad” biomarkers, LDL-C and triglycerides. However, about 50% of the time, patients with cardiac events presenting in ERs have normal lipid levels, specifically LDL-C (Sachdeva, et al., 2009). Thus, this data suggests that there is a need for further testing to evaluate CVD risk in the “normal population.” In the recent years, several independent investigators have shown the significance of additional and advanced biomarker testing, not only to detect disease states early on, but as a means to lower economic burden of chronic disease states.

One independently held company, Health Diagnostic Laboratory, Inc. (HDL), was conceived by its founder, Ms. Tonya Mallory in 2008 (see www.hdlabinc.com). Her work in chronic disease management helped advance the field in cardiology and related diseases into the vanguard of diagnostic care. Although in many ways, still considered a startup company, the company has grown from 11 employees in January 2010 to approximately 700 employees in 2013, performing over 200,000 blood tests each day. More specifically, HDL has developed a business model to provide physicians and their patients advanced testing in order to detect, manage, and prevent heart disease. These markers evaluate where the patient is on the spectrum of CVD and its related disorders, diabetes, insulin resistance, fatty liver disease and metabolic syndrome. In an era of information-overload, opponents may argue that physicians simply do not have time to review results for 25+ tests and that it is not the best investment of resources. HDL provides continuing medical education to physicians, facilitating rapid review of patient results and allowing therapeutic decision-making in only 1 minute. It is about getting the right therapy to the right patient at the right time.

The report itself is categorized by biomarkers; color coded for risk – Green: Optimal; Yellow: Intermediate Risk; Red: High Risk – and provides the patient an easy way to “Go for the Green.” Physicians also have various tools at their disposal such as treatment guidelines including medication, diet and exercise recommendations, and continuing medical education opportunities. HDL has also observed elevated biomarker levels in 76% of patients who have normal cholesterol levels (Mallory, 2012) demonstrating that testing the traditional lipid panel is not sufficient. In a recent publication, HDL has shown that patients (n=443) who received the advanced laboratory testing versus those that did not, not only experienced improvements in their traditional lipid panel, but also had 23% lower total healthcare costs (Thompson, et al., 2013). Furthermore, it also decreased diabetic complications by less than half of that of the control group. The unexpected ROI was seen in only two years of testing.

As previously mentioned, the HDL report engages the patient to understand their own risk visually and to follow their doctor’s recommendations in order to improve their test results (move from Red to Green). Patients may also access a web portal that provides tips on exercise, nutrition and lifestyle, plus the ability to track their lab results. Furthermore, patients have access to clinical health consultants (CHCs) free of charge via this portal, but also via phone and in-person appointments. The CHCs include registered dieticians, nurses, exercise physiologists,
certified diabetic educators and certified tobacco treatment specialists.

In concert with the physicians’ directives, CHCs set small and positive goals to keep the patient motivated to achieve optimal health outcomes and reduce disease burden (Thompson, et al., 2013). Increasing evidence is indicating that professional coaching, in addition to visits to the doctors, plays a significant role in preventing and managing chronic disease (Battista, et al., 2012). HDL conducted a small study (n=628) where patients had at least two rounds of testing in an 18-month window and compared lipid/lipoprotein biomarker results in patients who had counseling versus those that did not (Warnick, 2012). Significant improvement in cardiovascular risk markers were seen in patients that had one or more consults (p<0.05). HDL endeavors to change the way medicine is practiced to a holistic, systematic/disease-based approach in assessing wellness. The key is that certain chronic conditions, if caught early, are reversible and preventable. The strategy is to offer tests that are “actionable” – that is, the patient can take action to improve their results, and in turn their health. While further large-scale research is needed to assess the HDL model, early studies illustrate the value in both health optimization and its overall cost to reduce the burden of such chronic diseases.

Recently, HDL has formed a joint venture with a Canadian company to establish another laboratory, Innovative Diagnostic Laboratory, LLC (IDL), dedicated to early detection of cancer (see http://myinnovativelab.com/). Currently, IDL offers the ColonSentry test used to screen early signs of colon cancer. Because some patients avoid colonoscopy, ColonSentry provides a risk score to help providers and patients make better decisions regarding the need for a colonoscopy.

The Global Market for HDL Services – Doing Good and Doing Well, Implications and a Call for Future Research:

The globalization of the human endeavor and the subsequent rise of awareness concerning the sustainability of human society have brought new ways of thinking, new innovations and new kinds of entrepreneurs to the forefront of many fields of enterprise, including healthcare. The realization of the individual and societal costs of NCDs, particularly obesity, in today’s world has led many observers to realize that remedies to these challenges may lie with an understanding of Long-Tail, mass customization and prosumption theory. The underlying idea is that when all the players in the healthcare industry (governments, organizations, and individuals), fully understand the global issue of obesity (and other NCDs) and fully understand the potential promise embedded in the three notions presented here (again, Long-Tail economics, mass customization and prosumption), then, perhaps, an effective and efficient approach to solving the NCDs challenge can be realized. The potential to do good (impede or stop the obesity epidemic) and do well (generate significant revenues while halting the out of control cost of obesity care) is indeed apparent.

The HDL model works in the U.S. based on the payer system. However, on a global scale, further research is needed to determine how this model can be modified to fit global needs. The 2011 UN Summit set five priorities to streamline action globally – political leadership; prevention; treatment; international cooperation; and monitoring, reporting and accountability – and identified five cost-effective interventions: tobacco use; dietary salt; obesity, unhealthy diet, physical inactivity; harmful alcohol intake, cardiovascular risk reduction (Beaglehole, et al., 2011). Fortifying primary health care measures across the world is needed not only to combat chronic and NCDs, but also to educate and to engage people (to empower people). As urbanization continues throughout the developing world, political, social and individual commitment becomes key for such an action plan to succeed. Another key question is how can such programs (that embrace mass customization, prosumption and the long-tail theory) be made a reality in other countries (particularly those in the big emerging markets) that have different payment systems and different philosophy of health care rights granted by governments (or not)? These issues certainly require and merit further research and investigation.

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The Brundtland Commission, 1987


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Co-Design: Should Customers Be Included in Health Service Design?
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Abstract
This paper will explore the concept and meaning of co-design as it applies to the delivery of health services. The results of a pilot study in health co-design will be used as a research-based case discussion, thus providing a platform to suggest future research that could lead to building more robust knowledge of how the consumers of health services may be more effectively involved in the process of developing and delivering the type of services that are in line with expectations of the various stakeholder groups.

Background
Early studies of marketing focused mainly on the distribution and exchange of manufactured products (Marshall 1927). Marketing scholars directed attention to the functions essential to facilitate the exchange of goods through marketing institutions (Cherington 1920). In the early 1950’s, the functional school began by introducing a decision-making approach to both management and marketing functions with an overarching focus on the customer (Drucker 1954, Levitt 1960). These early approaches had strong ties to the standard economic model (for example see Kotler 1972).

By the early 1980’s, new lines of thought began to emerge in the form of relationship marketing, quality management, market orientation, value chain management, resource allocation and network configurations (Vargo and Lusch 2004a, p 3). Another notable arrival was the break with product marketing and the emergence of services marketing (Shostack 1977). By the 1990’s, some scholars began to recognise marketing as an innovating and adaptive force, that seeks to align the needs of the customer with the offerings of the organisation (Day 1999, Day and Montgomery 1999). At this time there were calls for marketing to move away from its previous dominant logic of the exchange of tangible goods, towards a more comprehensive dominant logic that included the exchange of intangibles, specialised skills, and knowledge and processes (Vargo and Lusch 2004a). Another author summarises the essence of this move towards a universal service and customer centred view of the exchange process (Gummesson 1995, p 250);

Customers do not buy goods or services: they buy offerings which render services which create value...The traditional division between goods and services is long outdated. It is not a matter of redefining services and seeing them from a customer perspective; activities render services, things render services. The shift in focus to services is a shift from the means and producer perspective to the utilisation and the customer perspective.

This change in focus of the exchange process reflected the change away from tangibles and toward intangibles such as skills, information and knowledge, and toward interactivity and connectivity and ongoing relationships. Therefore the interest and emphasis was seen to change from producer to consumer (Vargo and Lusch 2004a). It has been observed that there was a pressure on many service organisations to interact with potential users and obtain input from them during a new service development program (Alam 2002, p 250).

Service Dominant Logic
In more recent times the shift of emphasis to customer centred exchange of value has become known as, ‘service dominant (SD) logic’. It is made up eight foundational premises (Vargo and Lusch 2006, p 44). These premises help guide the application of the SD concept in academic discussion. They are also useful for setting a framework and foundation for applied concepts in practice such as the co-design of health service which is the subject of this paper. The premises are summarised below;

• The application of specialised skills and knowledge is the fundamental unit of exchange: service is exchanged for service
• Indirect exchange masks the fundamental unit of exchange: micro specialisation, organisations, goods, and money obscure the service-for-service nature of exchange
• Goods are distribution mechanisms for service provision: ‘activities render service; things render service’- goods are appliances
• Knowledge is the fundamental source of competitive advantage: operant resources, especially know-how, are the essential component of differentiation
• All economies are service economies: Service is only now becoming more apparent with increased specialisation and outsourcing; it has always been what is exchanged
• The customer is always a co creator of value: there is no value until an offering is used- experience and perception are essential to value determination
The enterprise can only make value propositions; since value is always determined by the customer (value in use), it cannot be embedded through manufacturing (value in exchange).

A service centred view is customer oriented and relational: operant resource being used for the benefit of the customer places the customer inherently in the centre of value creation and implies relationship.

What is co design?

The service dominant (SD) forms the underlying philosophy of the co design concept. It builds off one of the eight premises outlined above i.e. that the customer or user of a service is always the co creator of value in an exchange process. Co design has been described as an umbrella term covering both community design and participatory design. As such, the term refers to the effort to combine views, inputs and skills of people with many different perspectives to address a specific problem (Bradwell and Marr 2008, p17). The term ‘customer engagement’ has also been used in describing new perspectives in customer involvement and management (Verhoef, Reinartz and Krafft 2010).

Some see co design as an answer to the need for constructive meetings between several stakeholders (Albinsson, Lind and Forsgren 2007). Others see a variation to this as a user-centric collaborative process in the form of experienced based design (EBD). This has the distinctive feature of direct user participation in the design process for services and a focus on the designing experiences as opposed to the systems and process focus followed under a traditional management driven organisational development (OD) perspective (Bate and Glenn 2007, Johnston and Kong 2011).

The co design concept is sometimes seen as applying mainly to the development of new products and services (Lundkvist and Yakhlef 2004, Nambisan 2002). Other authors see that customers can be involved in the product or service design process in longitudinal or lateral dimensions (Kaulio 1998). The longitudinal involvement would bring the customer into the development steps of specification, concept development and prototyping. The lateral approach would see different perspectives of customer consideration; design for (customers being the primary input in the design process), design with (customers involvement in providing solutions to design issues), and design by (active participation of customers in design).

Although the application to new product and service management is appropriate and useful, co design has a broader and longitudinal contribution to the ongoing service provider-client service user relationship (van Doorn et al 2010). Hence co design embraces a second premise, that of a customer oriented perspective that emphasises the relational nature between the service provider and service user. This broader application becomes most important and strategic in dealing with organisations that must deliver high quality and customer centric services consistently and on an ongoing basis (Oyedele and Simpson 2011). Such a situation is health service delivery which will be the focus of this paper.

Implications for Knowledge Management

Another important relevant field of study relates to how an organisation’s capabilities and competencies contribute to its survival and success over time (Trushman and Anderson 1986, Hamel and Prahalad 1990). One critical capability will be how an organisation acquires, stores and uses its collective knowledge. Nelson and Winter (1982) argue that practiced routines form an important set of competencies from the knowledge that managers and staff apply consistently to the organisation’s operation.

Hence the knowledge base of an organisation is fundamental to its successful operation and long term survival. Some authors point out the synergistic nature of the collective knowledge of individual contributions, where the sum of the parts can be greater than the sum of individual knowledge bases (Trott 2008, p 194). In addition, it is recognised that external sources and networks form an important and integral knowledge base of an organisation (Adler and Shenhar 1990). Figure 1 shows how customers and other stakeholders may contribute to the knowledge base of an organisation via various links and channels that enable the flow of relevant knowledge. One example of sourcing this external knowledge would be through the co design process where customers are consulted as to how products and services are developed and delivered in line with customer needs and expectations (Ivory et al 2007, p 231). Hence this form of customer involvement can be seen as expanding the knowledge base of the organisation to embrace both internal and external stakeholders.
Co Design and Public Services

A key platform of public sector reform and focus in recent times has been to gain a better understanding of customers needs by making them the ‘heart of policy design’ (Perrott 2009). This trend has stemmed from numerous pressures including a more demanding public, and increased accountability and transparency by those delivering public services. Closer ties with customers has been seen to bring returns by way of a more responsive, fit-for-purpose, efficient public service. More broadly, the co design concept provides an avenue for addressing a disengagement from politics and democracy and building social capital. These conclusions were made following an international survey containing questions about the use and acceptance of co design practice in the public service areas of health, transport, social welfare and education. The survey analysed 466 interviews with public service practitioners in five international regions including the UK, Europe, Asia Pacific and Latin America. Public sector service respondents across these regions were in Health (130), Transport (99), Social welfare (121), and education (116). Key observations included the following (Bradwell and Marr 2008, p 11);

- Co-design is an international movement happening across the globe with enthusiastic support. Over 90% of survey respondents had played some role in a project that involved users in service design or development.
- Co-design as a concept is maturing from principle to practice and moving to the deeper questions of the most appropriate and effective co design for particular applications.
- Established organisations are yet to show changes that support the increased practice of collaborative co design. This seen to happen because of the conflict this new practice has with the traditional top-down service design approach.
- Territorial influences over the development of collaborative design shapes successes and failures in the adoption of supporting practices.

Co-Design and Health Services

Healthcare policy in the 1980’s and 1990’s were seen to focus on structural rearrangements as the means for securing improvements in the efficiency and performance of health service. More recently, from around 1998, policy effort has increasingly been directed at bringing about cultural changes within the organisations responsible for health service delivery. Cultural change is seen to be about shifts in the basic values, beliefs and assumptions that underpin patterns of behaviour in the delivery of care and is usually expected to be delivered through life-long learning and clinical governance (Hyde and Davies 2004).

At the same time there has been considerable effort directed to service redesign that looks to streamline the flow of service delivery (Desombre et al 2006). Central to this concept is the premise that services should be designed more around the needs of patients, hence the label of; patient centred care. An important part of this philosophy is the recognition of the need for patients to be more actively involved in the re design and delivery of organisational structures and processes that will bring a progressive and collective realisation of this patient centred focus (Kendall 2003).
One recent study looked at the impact of a particular variety of co-design in health services in the form of experience-based co-design (EBD). This study attempted to assess the implications of EBD on organisational development (OD) and health care improvement by way of new approaches, methods and processes. This empirical initiative was part of a yearlong study with the English National Health Service (NHS). The research case involved prototyping, piloting and field testing an EBD process part of a wider design methodology in an acute hospital with the aim of improving the care and treatment experience of head and neck cancer patients’ and their careers. This process involved staff, senior managers and physicians working alongside patients and their careers (Bate and Robert 2007 (a)).

EBD is a sub-field of the design sciences with the distinct features of direct user participation in the service design process and a focus on designing experiences as opposed to systems or processes. It is seen to be made up of two core elements, a participatory element, which sees users directly involved in the design and development for a product or service, and an experience element, which focuses on improving the whole experience of that product or service in terms of how it looks and feels (Bate and Robert 2007, p.42). It should be mentioned that this type of participatory co-design is not solely a user-led activity. It has been described as more of a partnership between internal staff and service users engaging in service dialogue as they jointly search for new ways to improve the service and service use experience (Forlizzi and Battarbee 2004).

Key lessons from this EBD case study were seen to be that this approach suggests new value commitments and orientations where the client becomes not only user of the services offered but also part of the organisation. Experience from this case study suggests that there is a strong case for restoring staff to the service design equation to thus bring a better balance and a more away from the one-sided notion of a patient-led design approach to health services. Another finding is that the idea of good design in health services is similar to good design in any sphere in that it will include attention and effectiveness in the three core elements of service function, service engineering design, whilst providing good experience for the user of the service (Bate and Robert 2007, p.64). More recent studies have also pointed out the importance of paying attention to the emotional needs of customers in the successful delivery of services (Schoefer and Diamantopoulos 2009), and to more seriously consider role differences in the service co-creation process (Gill, White and Cameron 2011).

Co-Design Pilot Study

A field trial of a recent project will be reviewed for the purpose of gaining a better understanding of the first hand issues in implementing co-design strategies in health care.

Co-design is seen to be an important evidence based initiative in government-citizen engagement within New South Wales Health. Rather than conducting large surveys to gain insights into patient’s views of the public health system, experienced based co-design is a methodology that is part of the trend towards conducting meaningful discussions about the nature and types of changes that need to be made to improve health service experience of patients and carers.

In 2006 the New South Wales State Plan called for all government services to increase customer satisfaction (NSW Government 2006). In response to this call, New South Wales Health initiated a co-design program to investigate the experiences of patients and carers within the emergency departments (ED) of public hospitals. These were seen to be the ‘front door’ of public hospitals. Emergency departments have unique and taxing demands in this gateway role they play into the public health system as is captured in the following insight (Glatter, Martin and Lex 2007):

Most patients are strangers; they present with atypical manifestations of the vast spectrum of illnesses seen in the ED (approximately 10,000 possible diagnosis) and decisions relating to their care must be made within a succinct period of time. The patient’s history may be sparse or unobtainable and definitive studies are often not available for potentially life-threatening conditions. The EP (emergency physician) must take multiple decisions on a number of patients simultaneously, with differing degrees of acuity. The density of decision making is greater in the ED than any other area of medicine.

The New South Wales Health authority called for expression of interest from the various Area Health Services in that state that would be willing to take part. The objectives of this co-design project were to;

1. define clear accountabilities for different groups of ED clinical and non-clinical staff in relation to the patient and carers experience
2. socialise and reinforce other patient and carer experience measures into ED performance management system to ensure sustainability
3. obtain practical experience in the deployment of co-design tools, including collection of patient and carer experience data and other examples outlined in the experience based literature (Bate and Robert 2007 (b))

Co-design trials were carried out in three public New South Wales hospitals during 2007. The goal was to strongly engage frontline staff, patients and their carers in identifying the best and worst aspects of their experience, and to co-design solutions to improve that experience within the emergency departments of those hospitals. The
sequence of activities designed to evaluate the co design trials, usually followed the following steps;

- in-home patient and carer interviews about their ED experience
- complaint and complimentary records examined
- staff stories and surveyed observations of particular ED encounters
- root cause analysis data (incident records and analysis)
- co-design project staff observations of ED encounters along the seven patient trajectory points, namely: pre arrival, arrival in ED, triage, waiting room, emergency room, transfer, and representation.

Pilot Study Evaluation

An evaluation of a trial was subsequently conducted using data from individual hospital reports on the trials, stakeholder interviews, legislative policy, academic literature, and national emergency Department data. The analysis applied across data sources, was based on thematic discourse analysis (Iedema et al 2004). Interviews with staff, patients, and their carers were seeking answers to the following questions;

- What specific improvements did co design deliver for patients, carers and staff in the emergency departments involved in the project?
- What did it feel like to take part in co design as compared to other redesign approaches?
- What did participants identify as the ‘must do’ or key success factors in co design?
- What can the pilot tell us about the likely sustainability and spread of improvements brought about by co design?
- What lessons can be drawn from this pilot about future co design projects in New South Wales?

Key findings to this evaluation study have been compiled under the subject headings of: consumers as patients, clinical and project staff.

Although consumer response numbers were small due to the transient nature of ED patients and their carers, they were generally appreciative of being asked to participate, but could not always find the time to be involved in longitudinal patient studies. Some thought the forums that were held to discuss ED-patient encounters, were productive and satisfying. Through the interaction processes, they gained insights into the workings of the ED and health service delivery system. Because of strong presence of health professionals, there were at times unsure about the degree and level of participation expected from them. Due to the fleeting nature of contacts with the ED staff, there were suggestions of the lack of continuity in the ED-patient communications process. Key expressions on their individual ED experiences revolved around frustrations with waiting times and the lack of timely information on ED events and activities, and the lack of parking and waiting room comfort.

Clinical and co design project staff was generally positive about the consumer contact made during the trial project. The patient encounters provided a valued consumer perspective and feedback on each ED experience. Interview feedback also allowed clinicians to reflect on their own practice and areas for service improvement. Some interviewers observed that traditional health service cultural values held by some clinical staff inhibited the acceptance of the new co design approach to health service delivery.

Project staff stated that patient involvement as a means to validate staff understanding of patient experience. Interviews were interactive and conducted mainly in the familiar environment of their own homes. Hence staff was able to gain in-depth understandings of consumer observations and concerns.

Implications for Health Managers

The co design survey at the three NSW hospitals provided some early indications of the key issues involved in the design and implementation of consumer focused health service strategies. These early indicators would provide valuable feedback and guidelines for later trials and the eventual role out of a co design policy for the whole NSW hospital network, and beyond to other Australian states and territories.

Some early recommendations included the appointment of a permanent consumer liaison person that maintains a regular schedule of consumer contact using face to face approaches that can yield meaningful, in-depth feedback. However, other forms of consumer contact are seen to be invaluable including attendance at hospital events and relevant meetings. Providing regular feedback on the implementation of plans and other improvements is seen to be critical to building and maintaining positive hospital-community relationships.

Recognising the sometime difficult task of co design project staffs, all future co design projects and activities need to have the strong support of hospital managements and staff before any initiative is implemented. Such pre planning would help prevent inhibitors that sometime occur by way of lack of readiness and awareness of the key participants. Hospital staff that has shown enthusiasm and aptitude for co design involvement could be recruited as ongoing ambassadors to future co design activities. For example the implementation of such staff functional flexibility policy was seen to provide positive benefits in case study reports in the UK public health service (Desombre et al 2006, p 145).

Innovation in service design has been seen to be rooted in traditional new product development practices (Ordanini and Parasuraman 2011). With insights provided by the emerging service dominant logic, new approaches to
health service innovation and development can be expected that are more effective and consumer focused. New ideas and changes need promotion and support if they are to become generally adopted and main-stream. Promotional tools used by individual hospitals and area health service authorities may include communications via newsletters, seminars, social meetings, and subject related emails. Emerging on-line social networks will also provide opportunities to build links with those that may contribute to the progressive improvement in health service design and delivery.

Setting key milestones, benchmarks and relational outcomes are seen to an important aspect of co design planning. This would prevent a shallow or cosmetic adoption of co design principles and ensure that meaningful outcomes were being achieved over time. Results of ongoing initiatives should be made visible through the promotional channels previously mentioned.

Summary and Conclusions

This article has shown that there have been numerous approaches to the idea of involving consumers in the process of product and service design. In the 1950’s the ‘functional school’ in both management and marketing brought with it the idea of the customer as being the focus of an organisation raison d’être. By the 1980’s new lines of customer focus began to emerge including the topics of relationship marketing and value chain management. The early 1990’s saw the emergence of marketing as an adaptive function of aligning the needs of both customer and organisation by moving away from the previous dominant logic of the exchange of tangible goods towards a more comprehensive dominant logic related to the service exchange experience of consumers. This movement is known as service dominant logic. This philosophy recognised that the exchange process that both the organisation and the customers involvement was essential to the eventual delivery of value to both the customer and the stakeholders of the organisation. This approach forms the foundation of co design where customers become actively involved in the progressive improvement of the consumption experience. Figure 2 attempts to demonstrate the key components of a comprehensive co design process. Here an organisation is actively engaged in the ongoing process of knowledge exchange with customers for the purpose of seeking strategies for continual improvement of the consumption experience. A key to the success of this process is to create and manage an ongoing forum where the exchange of ideas between the appropriate organisational staff and representative stakeholders takes place. These ideas then need to be prioritised and effectively actioned through the internal product/service development, modification and delivery processes.
Future Research

In recent times, public service sectors in various countries have gained an active interest in using the co-design concept as one approach to assist public organisations to fulfill new charters which include a more customer oriented approach to delivering government services. One active branch of government interested in moving to a more customer orientation has included public health.

The scope of interpretations of what co-design involves range from seeking one-off customer opinion, to the active customer involvement in the ongoing design and improvement of the consumption experience. This article has reviewed research on one small trial of a co-design experience in public health with the view to gain a better understanding of the practical issues involved in implementing the co-design concept in the delivery of public health services to one Australian state government region in NSW, for the purpose of making a contribution to the co-design debate. Because each health service environment will present its own unique challenges and conditions (Hyde and Davies 2004), opportunities to generalise research findings to other situations need to be made with caution. Future research and comment could look at co-design experiences in other locations and in other public service domains and thus begin the long process of developing sound general principles of good co-design theory and practice.

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Temporality of Health Lifestyle Goals
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Abstract
Traditionally, goals are thought of as a fixed desired outcome within a fixed time horizon. For example, in weight loss, one might want to lose 20 pounds in time for their wedding. However, often in making lifestyle a choice, the frame of the goal exists in a dual temporal space – that of a short-term “programmatic” goal and that of a long-term “lifetime” goal. The temporal distance to the goal can make a great difference in the mindset and ultimately in the achieving of the goal. We will discuss two projects, both in early stages, in the domains of exercise and dieting where we examine how dynamic goal temporality affects reaching the goal.

Existing research in psychology suggests that people tend to focus on the desirability of a goal when the goal lies in the distant future, and that their focus tends to shift to the feasibility of achieving the goal as the “time to completion” gets closer. The first project examines how the names of products that we use to reach goals can affect our behavior and ultimately the progress toward that goal. Specifically, we examine how the name of a pedometer can influence how much participants walk. A name like “the walking pro” may encourage people to focus on the desirability of the goal that they aspire to reach. In comparison, a name like “the walking buddy” may encourage people to focus more about how feasible it is to reach the goal. Our prediction is that a name like “walking pro” would encourage more walking at the start of the program, when individuals focus on desirability, and as time passes and it gets closer to the end of the program a name like “walking buddy” may become more effective in encouraging more steps as individuals focus on desirability.

In a second study, we examine the retreating nature of dietary goals. This work is based on the empirical observation that individuals often slow in their rate of weight loss or even drop out of dieting programs shortly before they reach their desired goal weight. This increased rate of attrition is consistent with folk wisdom stating that “the last 10 pounds are the hardest.” Dietary researchers have suggested numerous factors which lead to this effect: diet fatigue, decreased metabolic rates, and metabolic adaptation. We propose that in addition to the aforementioned physiological issues, a psychological process may also contribute to this undesired outcome. In particular, we examine how approaching the “end” of a lifestyle goal (the pre-determined target weight) actually may trigger the participant to retreat from this goal as the objective shifts from being a specific, short-term target and instead becomes a new, long-term state (a forever goal or a weight that must be maintained for the foreseeable future). This idea that the goal moves from within reach to infinitely far demotivates the individual from goal pursuit and results in program abandonment or drastic slowdown. This is the reverse of the goal gradient effect where motivation to reach a goal increases as a goal becomes closer because people tend to exert more effort the closer the goal. We will explore this hypothesis as well as discuss how to rule out alternative hypotheses such as how perceptions of increased task difficulty may not explain the observed behavior.

References available upon request.