PUBLIC COMMITMENT TO EXERCISE IN COMPUTER-MEDIATED COMMUNICATION

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ABSTRACT

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Due to the absence of an empirical test to confirm the ability of varying degrees of public commitment to affect commitment strength, the present research tests a model within the exercise behavior domain. This study investigated the power of public commitment in a computer-mediated communication (CMC) environment to influence exercise behavior outcomes. Public and private commitment conditions are compared for their utility in increasing behavioral intention to exercise (BI) and exercise behavior. Participants completed a repeated measures questionnaire at the beginning and end of a two week period with physical activity (PA) items from the international physical activity questionnaire (IPAQ). Results revealed a significant increase in exercise behavior for participants that made commitments on Facebook, despite decreases in behavioral intention for both private and public conditions. Findings suggest that a dichotomous measure of publicness is adequate in this web 2.0 context. Unanticipated differences were uncovered between participants' audience size and their perception of how many "friends" viewed their commitment.

Keywords: public commitment; commitment; consistency; behavioral intention

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Public Commitment to Exercise in Computer-Mediated Communication

> In the late 1990s, I asked Fred DeLucca, the founder and CEO of Subway restaurants, why he insisted in putting the prediction "10,000 stores by 2001" on the napkins in every single Subway. It didn't seem to make sense, as I knew he was a long way from his goal, that consumers didn't really care about his plan, and his franchisees were deeply troubled by the competition associated with such a goal. His answer was, "If I put my goals down in writing and make them known to the world, I'm committed to achieving them." Needless to say, he not only has, [sic] he's exceeded them. (Cialdini, 2001 p. 71)

As of January 1, 2012 Subway had over 36,222 restaurants in 98 countries.

LITERATURE REVIEW

Commitment and consistency have been the focus of theoretical research concerning the behaviors that mediate the protection, alteration, or malleability of attitudes (Eagly & Chaiken, 1995; Kunda, 1990; Petty & Cacioppo, 1986). The development of consistency specific theories, including cognitive dissonance theory (Festinger, 1957) and balance theory (Heider 1946, 1958), have informed the psychological process by introducing an evolving self-concept that sources are driven to protect (Cartwright & Harary, 1956; Gibbons, Eggleston & Benthin, 1997). Based on this internalization of self-report, researchers have speculated on the ability of an individual's own message to shape their attitudes and subsequent behaviors. An individual's desire to be viewed as a committed person will cause publicly made statements or stances to be maintained and guarded fiercely (Cialdini, 2001; Schlenker, Dlugolecki & Doherty, 1994; Tedeschi, Schlender, & Bonoma, 1971).

Although less theoretically contrived and more inductively driven, consistency research confirmed the same logic that has driven standard procedures for fraternities, boot camps, Weight Watchers, political rallies, and Alcoholics Anonymous, long before any empirical findings could have informed their strategies. Further demonstrating the importance of PC, in 1955, researchers Morton Deutsch and Harold Gerard established that the public-written word is more powerful than the written word in producing commitment to the message. They simultaneously showed that both the public written word and the written word were more powerful than non-commitment, in increasing loyalty to an answer, even after the answer was shown to be erroneous. Consistency in stance was also confirmed in a study showing that resolutions take longer in 'show of hands' conditions than in 'secret ballot' voting, an indicator of the power of public messages to cement positions regardless of opposition (Kerr & MacCoun, 1985). The present study seeks to generalize this loyalty to a new medium and to test the dimensions of this particular source consistency resulting from self-presented messages (i.e. PC). Perhaps the more interesting question for our present domain is to what extent this consistency can be applied to behaviors (specifically, exercise behaviors) rather than loyalty to ideologies, opinions, beliefs, and consumer commitments. For example, if a subject 'posts' his/her plan to go to the gym with a significant following, will he\she be more likely to follow through than the individual who has fewer connections?

To look like a consistent individual, one who has communicated a visible or 'public' stance has been driven to maintain that stance, thereby protecting those altered attitudes which were strengthened by their unveiling (Cialdini, 2009; Schlender, & Bonoma, 1971; Schlenker et al. 1994; Lee, Quigley, Nesler, Corbett & Tedeschi, 1998). Public commitment has been previously manipulated by varying whether or not the subjects' attitudinal positions were

communicated openly (Ahluwalia, Burnkrant & Unnava, 2000; Halverson & Pallak, 1978). Research indicates public self-reports garner more commitment to a position than do private commitments (Hollenback, Williams & Klein, 1989).

The research concerning committal effects of public self-report suggests that the 'publicness' of a message should determine the strength of the individual's social commitment to that message (Gonzales & Hancock, 2008; Kiesler, 1971). For example, people would be more likely to take a jog or take a trip to the weight room if they had told a group, rather than if they had only written that commitment down in a planner. This intuitive sense of accountability is often used in weight-loss groups. To this point, however, 'publicness' has not been adequately measured in varying degrees of audience size.

This study seeks to reaffirm the power of public commitment over private commitment and to extend the measure by accurately indexing levels of 'publicness' (audience size) and their effects, quantitatively. That is, using the audience size of participants, we will be able to gauge to what extent 'publicness' affects the outcomes of public commitment more accurately than has been attempted previously. Identifying a single whole number to represent the audience size (ex. 100 Facebook friends) will add concreteness and value to the publicness construct, facilitating more robust analysis and more practical applications simultaneously. The domain of exercise behavior has been selected as a worthy context for the study based on the well-established public health issue of low physical activity levels, particularly among college students entering impressionable years (Robinson, 1996).

First, an overview of exercise behavior will illuminate an issue to address before the initiation of a public commitment typology. Next the roots of public commitment will be explored by covering the study of consistency and commitment, respectively. The overlap and

merging qualities of these domains will then be explored. Following conclusions on PC, the nature and implications of study contexts, including Web 2.0 environments in computer-mediated communication, will be discussed along with a particular focus on Facebook.

Exercise Behavior

The burgeoning problem of sedentary lifestyle and obesity is among the most prevalent and damaging issues of our era, for which one of the most salient cures is the promotion of exercise behavior (Booth *et al*., 2000; Kriska & Caspersen, 1997; Montoye, Kemper & Washburn, 1996). Commitment to healthy behavior can oppose preventable causes of death such as tobacco smoking, poor diet, and the target of this study, physical inactivity. These behaviors are "estimated to be responsible for 900,000 deaths annually, which is 40% of all annual mortality in the U.S." (Cohen, Neumann, & Weinstien, 2008; Nyer & Dellande, 2010, p. 10). Specifically, an increase in exercise behavior not only reduces the risk of depression (Wyerer, 2006), cancer (Friedenreich & Orenstein, 2002; Giovannucci, Ascherio, Rimm, Colditz, & Stampfer, 1995), osteoporosis (Valdimarsson, Kristinsson, Stefansson, Valdimarsson & Sigurdsson, 1999), diabetes (LaMonte, Blair & Church, 2005), cardiovascular disease, and stroke (Sesso, Paffenbarger & Lee, 2000), it also improves many other major body functions, including coordination, muscular strength, agility, and aerobic capacity (U.S. Department of Health and Human Services, 1996; Kilpatrick, Hebert, & Bartholomew, 2005). Consequently, the current study pursues the promotion of attitudinal and behavioral change in exercise behavior (EB), as an exemplar for the moderating power of audience size in the commitment-behavior relationship.

The link between behavioral intention (BI) and behavior has been tested and shown to be positively related based on the assertion that BI is a reflection of personal motivation and

planning is a key determinant of behavior (Ajzen, 1991; Biddle & Nigg, 2000). The majority of studies are consistent with this high correlation, however, there are other studies suggesting the relationship is somewhat exaggerated or weak. These conclusions are discussed in meta-analytical studies and the many reviews of the BI relationship (Granberg & Holmberg, 1990; Sheeran, 2002). Considering the current case (exercise behavior), research has demonstrated a consistent and strong relationship between participants' intention to exercise and their actual behavior (Hamilton & White, 2008; (Normn & Conner, 2005). The present study is interested in confirming this link in the health domain with the treatment of PC presumably acting on both subjects' intentions and subsequent behavior.

This study is primarily concerned with contributing to the public commitment model of consistency theory by demonstrating its utility in the social network context and by expanding its explanatory power through the introduction of a continuum rating for publicness. Speculation on the contextual moderation of PC effects suggests that socially desirable behaviors (like EB) may be more susceptible to the influence of PC (Nyer & Dellande, 2010). For example, a number of studies have confirmed the ability of PC to alter behavior including recycling and energy conservation behavior (e.g. Pallak, Cook & Sullivan, 1980; Pallak & Cummings, 1976; Sullivan & Pallak, 1976). Such studies suggest the phenomenon is likely generalizable to the health domain, specifically EB outcomes, though no known study has been executed. Next is a discussion of previous findings relevant to important constructs. An outline of the theoretical framework informing measurement and a synopsis of the health outcomes domain (particularly, EB) follows. Finally, the context of Web 2.0 systems is briefly described and justified.

Public Commitment

Kiesler (1971) defined commitment as "a binding of the individual to the position implied by his act or decision" (p. 190). It is clear that two descriptions of committal are being posited here: one of attitudinal adherence referenced in previous research as 'consistency' and the very same concept as it is applied to behavioral outcomes described as goals, which has been known as 'commitment.' Each body of research was developed independently, yet simultaneously reached the same conclusions about PC based on the original suggestion of Kiesler; specifically, a key determinant of the commitment magnitude is the publicness with which individuals declare their position message (Kiesler, 1971; Nyer & Dellande, 2010). Schlenker and colleagues produced an enduring definition of public commitment in 1994: " A pledging or binding of self (a) to an action or set of actions, (b) to a person, group, or organization, or (c) to an idea, often a set of moral principles for conduct. (Schlenker, Dlugolecki, & Doherty, p. 21). For the purpose of this study we will accept and employ Schlenker's definition (chiefly type a.) because it is an accurate and practical embodiment of the literature on the term.

A number of studies contend that public commitment has been manipulated in the past through varying levels of publicness, when this is simply not the case. Publicness traditionally indicates the degree to which messages are made public (Kiesler, 1971). In practice, the construct has strayed from this defining measure and has been operationalized by directly assigning participants to conditions in which publicness is either present or absent (McCaul, Hinsz & McCaul, 1987; Pallack & Cummings, 1976). This manipulation design lacks levels of publicness and relevant manipulation checks resulting in a categorical construct rather than the intended continuous flexibility of publicness. Such studies specify conditions in which the

commitment message is either public, private, or not made at all, predicting that a difference will occur among these three (e.g., Alhuluwalia, Unnava & Burnkrant, 2000; Halverson, 1978). This dichotomous design represents a difference-hypothesis structure of 'public or not' that fails to address any specified degree of publicness. Each of these studies does, however, provide compelling evidence that making one's commitments publicly available, reinforces the stated attitudes into place, and strengthens consistency to those abstract positions (Hollenback, Williams, & Klein, 1989). It is essential to test the original assumption of publicness by evaluating the moderating influence of audience size.

The studies that have come closest in operationalizing the conceptual definition of the construct have measured publicness by reporting the effect of participants in terms of how public they felt their statements were, yet even these studies only used the measure as a manipulation check (Gonzales & Hancock, 2008; Tice, 1992; Walther, Liang, DeAndrea, Tong, Carr, Spottswood & Amichai-Hamburger, 2011). Gonzales and Hancock replicated the check implemented by Tice which included two items on a five point scale: "'To what extent do you think your presentation in this experiment is publicly identifiable? Do you think anyone might recognize you or know what you said during your presentation (including the graduate interviewer)?' on a five point scale with endpoints labeled *highly publicly identifiable (1)* and *not at all publically identifiable (5)*" (Tice, 1992 p. 439). Recently, Walther et al. approximated the same manipulation check with one additional item and 7-point scales with equal success in verifying conditions. This check served to establish the validity of the public and private conditions in terms of participant perception. These researchers were interested in identity-shift so the design attended to levels of publicness as a means to ensure their context was appropriate for influencing the self-concept of subjects. The present study does not intend to discredit any of

the above mentioned studies, but rather to expand on their work by informing the study of PC. This study is partially a response to the call for additional research on publicness made by Keisler in 1971. The present study will investigate a frequency model of recording message publicness by audience size (a continuous measure) to test the original assumption and inform the further study of public commitment. Brief typologies of both consistency and commitment literature relevant to PC are reviewed next.

Consistency. As previously specified, consistency theories including, balance theory (Heider, 1946; 1958) and cognitive dissonance theory (Festinger, 1957), contributed to the development of PC as a causal variable. To summarize, balance theory proposes that multiplying the valence of affect in a system will provide the direction of the included relationships, and cognitive dissonance refers to the discomfort induced by holding conflicting cognitions. For example, assuming balance theory is correct: "If Mike likes his friends (+) and his friends like exercise (+) then balance would only be acquired if Mike likes exercise (+)." In the most informal interpretation of these theories, as a tactical principle, consistency theories predict that individuals will frame attitudes and manipulate behavior for mental comfort. This management is driven by the urge to appear predictable, which can motivate actions that would otherwise be rejected. For example, a customer purchasing a car may agree to buy the car under the auspices of a low price and to maintain his intention, despite a gross increase in cost. This sales tactic is commonly referred to as 'low balling' and is a variety of the 'foot-in-door' strategy which also leverages customers' desire to appear consistent (Cialdini, 2001).

In the case of this study, a self-presentation aligning with physical exercise represents a single construct that should motivate an individual to retain their stance for the appearance of honesty and integrity before an audience. This alignment of beliefs and behaviors will also

reduce and/or avoid dissonance, a feeling of discomfort brought about by discrepancies in mental constructs (Festinger, 1957), which will be more comfortable for that participant.

Commitment. As consistency was developed and tested, a parallel strain of research explored the applied effects of commitment to goals (especially in industrial organizations), which helped achieve a more directly relevant concept in terms of behavior prediction. Consistency outcomes, by definition (Buchanan, 1974), are internalized attitudes and often these consistency-based attitudes represent an intention to reach a goal (i.e., behavioral intention). When this is the case, the cognition has typically been considered a commitment based on the original motivations of commitment studies, namely increased industrial performance (Mowday, 1998). Internalized outcomes guide behavioral and attitudinal intentions, which are moderated by levels of consistency, i.e., attitudinal commitment (concept-oriented, e.g., Buchanan, 1974; Porter, 1974) or commitment toward that concept (goal-oriented, e.g., Becker, 1960; Kielser, 1971; Salancik 1977).

Commitment research holds a more robust understanding of committal to behavioral, rather than of ideological steadfastness in attitudinal outcomes. This literature consists of 60 years of research focused primarily on applied outcomes in organizations (Becker, 1960, Brown 1996). Commitment, then, has been tested as a form of BI that should influence behavior to a varying degree based on the power of that commitment. It has been noted that social exposure of these attitudes (both ideological and goal-oriented, as well as attitudinal and behavioral) will cause an amplification of the normative influences to maintain those attitudes. Public commitment is the condition in which one's stance is open to evaluation by others, introducing a variety of social pressures.

CMC Context

With the mounting impact of technology on society, communication is increasingly taking place via web 2.0 systems. In conjunction, an exponential spike in the level of 'social' online interaction has been observed. Such direct human communication manifest online takes place through rich platforms called web 2.0 systems which increasingly approximate and impact on offline activities and interactions. Literature suggests that there are six key services or applications common to web 2.0 pages, namely blogs, wikis, social bookmarking, multimedia sharing, syndication (RSS), and podcasting (Anderson, 2007). Public commitment is most directly observed with the actual audience size and message of an individual, both of which are available in the social network environment of online communication. Facebook alone has adopted over 800 million active users, each with their own audience of 'friends' to engage (Olivarez-Giles, 2011). Computer-mediated Communication (CMC) provides a number of unique and optimal conditions under which to study PC and exercise outcomes, specifically.

Communication scholars have taken an active approach to exploring the possibilities of CMC during the preceding decade, realizing the obvious ability of the medium to transcend a number of hard-set boundaries, including geographic location, confidentiality, physical restraints on audience or source size, and the desire to remain anonymous (Braithwaite, Waldron, & Finn, 1999; Dublin, Simon, & Orem, 1997; Mickelson, 1997; Weinberg, Schmale, Uken, & Wessel, 1995; Wright, 2000a). The current proposal seeks to exploit these advantages and to wield their power to illustrate the power of publicness in source commitment.

CMC environments have also been shown to be an appropriate context in which PC will result in attitude change (e.g., Gonzales & Hancock, 2008). Replication of PC studies, verified with standardized manipulation checks, confirm that perceptions of commitment and publicness

are roughly equivalent across, the discussed mediums: face-to-face (FTF), computer-mediated (CMC) and written-word. The focus of these studies has revolved primarily around the effects of publicness (bi-conditional) on subjects' self-perceptions or identities (Kelly & Rodriguez, 2006; Schlenker, Dlugolecki & Doherty, 1995; Tice, 1992; Trice & Treacy, 1986).

These demonstrations of PC advanced such hypotheses as the hyper-personal model, which helped to describe the ability of sources in CMC contexts to be increasingly selective about their messaging and, therefore, to portray themselves in an optimized manner (Bargh, McKenna & Fitzsimmons, 2002; Walther, 1996; Walther, 2007). The original studies speculated that the anonymity of the current web environments was quite strong, which likely drove down the potency of normative effects (Gopinath & Nyer, 2007). With the advent of social networking and micro-blogging sites (e.g., Facebook and Twitter), a plethora of new cues and forums for self-expression are made available. This increase in the prominence and prevalence of personal messages, cues, and presence indicates a drop in the overall anonymity of web 2.0 systems.

This development predicts an amplification of PC effects due to increased perceptions of message publicness, permanence, and accessibility (Short, Williams & Christie, 1976). It is possible to envision a CMC context in which one's network was large enough that some portion of his network remains ambiguous and therefore negligible in affecting BI (Dubrovsky, Kisler & Sethna, 1991). Such a scenario, sabotaged by poor human memory, concentration capacity, and a healthy distrust of strangers, is just as prevalent offline, although it is far more practical to measure it in a CMC environment. This study is not concerned with the effects of particular channels for public commitment, but simply uses the medium as a conduit for public communication about exercise behavior. No known empirical research has examined the course of these committal effects in public CMC forums on behavioral outcomes.

Two lenses clarify the interpretation of CMC. The hyper-personal model suggests that when the audience is identified as individuals, there is not only a rich interpersonal conversation emulating face-to-face interactions, but there is also potential for the communication depth to surpass that of unmediated dialogue (exaggerated self presentations) (Walther, 1996). Similarly, Social Identification-Deindividuation (SIDE) theory predicts inflated perceptions of online audience unity when individuals have less salient identities (Reicher, Spears & Postmes, 1995). These perspectives are only appropriate under a specific set of moderating criteria that describe the way online participants identify with their audiences. More specifically, they refer to social context cues, such as identifying information or prior intimate knowledge. This suggests, one may slide from one framework to the next simply by having less contextual stimuli, a likely result of too many friends.

Web 2.0 environments represent a distinct channel from oral public announcements, from printed community media, and from alternate mediums such as group texting. While the question of how these channels could moderate the effect of public commitment is interesting and should be explored, it falls outside the scope of this study. Previous research has typically used one channel and the most applicable study has given participants the impression they were committing in web 2.0 environments (Gonzales & Hancock, 2008). Given this support, the present study makes use of Facebook as a representative CMC environment and considers the prominent frameworks predicting the nature of self-presentations in this context.

Facebook. Facebook.com, a micro-blogging platform and social network, presents one such CMC context under which the proper manipulations are plausible. This computer-mediated interactive environment is representative of many other common networks, from blogs to email distribution lists, usually centered around self-presentation. Such contexts are public and often

heavily trafficked. It is clear, however, that humans are incapable of realistically differentiating between large and extremely large numbers of people. For example, Seth Godin summarizes decades of study on human networks by suggesting that individuals are limited in their ability to remember, let alone form, meaningful relationships with more than 300 people (Godin, 2010).

Once an unmanageable point is reached, the SIDE model applies projecting the impression that the bulk of one's visually anonymous audience (Facebook friends) is related by a contextually driven (in)group classification (Reicher, Spears & Postmes, 1995). Turner, Grube and Meyers (2001) succinctly summarize Walther (1996): "This exaggerated sense of the relationship is built on social identity-deindividuation (SIDE) theory. SIDE theory predicts that in the absence of face-to-face cues and prior personal knowledge, social context cues present in CMC take on particular value and may lead to over attribution of similarity" (p. 233). The network one creates and its subgroups are all connected in that they are a friend, but the event of a post initiates a new criterion by which groups can be judged; "Do they 'like' or respond to my update?" A grouping heuristic like SIDE would typically lead people to believe their messages would be received in the same way by the entire audience. Since feedback immediate feedback is often lacking in an asynchronous and over populated environment subjects may interpret their audiences' silence as a unified expression that the message is uninteresting, wrong, or boring.

The ease with which posts can be produced and the high volume of messages that are churned out every second in this context serves to make a high proportion response much less likely. To make matters worse, asynchronous posting is the norm and over-responsiveness may very well be perceived as social promiscuity. An individual posting a commitment is likely to receive less than five responses to their message out of a thousand audience members or friends. The uncertainty of this circumstance is likely to decrease the perceived audience size while

simultaneously shifting the communication lens of the posting individual from a more intimate interpersonal framework toward a less personal distribution of content to a largely unresponsive and unidentifiable crowd. When this schema is in place, one would predict that self-presentations would be less effective in driving public commitment to concepts or behaviors. It is likely that a measurable average tipping point exists; a rough number of audience members, that when reached, begins to nullify the social influence of the group on the presenting individual. A projection for this curvilinear relationship is depicted in Figure 1.0. That is, we may no longer view individual members of our friends as identifiable personas to whom we are accountable, but rather, as ambiguous added profiles of little significance.

This study uses Facebook to manipulate public commitment through the varying number of "friends" found in individual public networks. While Facebook provides a popular and practical naturalistic environment, it also introduces a potential confound in that the "public" is not an anonymous group or a perceived group as operationalized in previous PC studies; rather, the public of Facebook is comprised of individuals with different relational levels with a user, including close friends and family, acquaintances, ties from the distant past, and even complete strangers. This audience constitution is atypical for test of PC and introduces many questions.

The audience composition of each Facebook user is as diverse as the methods of compiling them. Specifically, researchers Ellison, Steinfield, and Lampe (2007) found that Facebook "friends" of Michigan State University students included both weak and strong social ties with an unexpectedly large portion of these networks consisting of offline (or previously offline) relationships maintained through the platform. Strong relationships are known to have a greater impact than weak ties on the socially-motivated intentions and identities of the individuals wielding them. Yun and Silk (2011) recently confirmed this principle in a study on

health behavior, suggesting that the social pressure (norms) of a referent group may be divided according to the quality of individuals' relational proximity in their personal networks. Proximal norms (by close ties) were found to be significantly more powerful than distal norms (by weak ties) in influencing intentions to participate in healthy behavior (Yun & Silk, 2011). Results imply that closer relationships are likely more socially binding.

The social norms measures were adapted from conceptual definitions and a call to action featured in Park and Smith's previous study to measure proximal and distal relationships by scoring the influence of "Friends I hang out with" or "The majority of XX University," respectively (Park & Smith 2007). The goal of this study is not to distinguish between different compositions of individuals in a given public (i.e., friends versus anonymous others), but rather to examine the influence of the size (quantity) of public networks. Because Facebook introduces this potential confound, as opposed to previous studies, careful measure of this additional variable should be executed to account for participant perceptions of audiences viewing the commitment. This measurement controlled for variation in results due to audience composition.

Summary and Hypotheses

Previous research indicates that commitment increases BI and potential to execute behavior. Further, it has been confirmed that a self-reported commitment message, which is perceived to be public, is more effective in increasing BI and behavior than a message perceived to be private. Thus, PC also increases commitment levels and alters self-perception. Some results have suggested that the degree to which a message is made public may increase the effectiveness of the message in terms of increased commitment (DeShon, 1997; Gonzales & Hancock, 2008). It has further been demonstrated that public commitment has the power to alter and to strengthen attitudes, including self-evaluations (Schlenker, Dlugolecki, & Doherty, 1994).

No research has been initiated to empirically confirm a positive causal relationship between actual audience size in commitment and BI or behavior execution. Many studies dealing with public versus private commitment have focused on attitude change without mentioning or attempting to influence behavior (ex. Schlender, & Bonoma, 1971; Tedeschi, Schlenker et al. 1994), although a few studies have made the behavioral link (Pallak, Cook & Sullivan, 1980; Pallak & Cummings, 1976). The present study seeks to confirm the power of PC to alter both the intentions and the behavior of practicing individuals. In sum, Keisler's seminal commitment book (The Psychology of Commitment) suggested that the public-private manipulation might also directly affect one's feeling of responsibility for his behavior (1971). Subsequent research has proven his estimate to be correct, while the implied question of whether perceived responsibility varies in degrees of publicness remains to be investigated fully. Using Facebook as the means to vary degree of publicness, the current research posits two hypotheses and one research question based on the previous discussion of research concerning consistency, commitment, and PC:

H1: The public commitment condition will result in more positive change in behavioral intention and exercise behavior than the private commitment condition.

H2: Audience size is positively related to commitment (behavioral intention) and performance (exercise behavior).

R1: Is there a curvilinear relationship between audience size and behavioral intention and exercise behavior?

METHOD

The study employed a pre-test-posttest, between subjects design to evaluate the role of PC in influencing BI and EB. The role of publicness was also explored through subjects' audience sizes for their text based commitment presentations. Participants were requested to type commitments to exercise in either a text document (private or a Facebook status posting (public). Measures of BI and EB were completed before and after the two weeks of commitment in brief online surveys.

Participants

Participants (N = 132) were students at Michigan State University (MSU) who participated in the current research in exchange for either course credit (89%) or a small honorarium (11%). Thirty-two percent were male and the mean age was 21.28 years (SD = 2.10). The participants were randomly distributed between the private commitment (N = 72) and the public commitment (N = 60) stimulus conditions. Table 1 provides a socio-demographic profile of participants that completed the study. The sample was slightly skewed with 73.80 percent of participants identifying as White/Caucasian. Characteristics of the sample matched a common college student population.

Experimental Procedure

The study was conducted completely online. Recruitment emails qualified participants as MSU students with "plenty of room to increase their level of physical activity" before linking them to the first survey. This screening language was also presented clearly along with the informed consent page. Consenting participants proceeded to create a unique ID code to ensure the connection between Time One (T1) and Time Two (T2) data. (i.e., First letter of your mother's maiden name: Toman = T; Month of your birth: February = 02; First letter of last name:

Emington = E; Code: T02E). Next, demographic questions were asked and participants answered a modified version of the short form International Physical Activity Questionnaire (IPAQ) to determine their level of physical activity over the past week. A single item then identified each participant's behavioral intention to increase physical activity. After these initial items, participants were presented with a shape, randomly assigning them to one of two conditions (triangle = private commitment condition or circle = public commitment condition).

The private condition participants were instructed to record their physical activity until the second survey and to commit privately in a Microsoft Word document once per week to confirm their action in the diary. Similarly, the public condition received a request to record their daily activity and, once a week, post their scripted commitment to activity as their Facebook status. These conditions closely reflect the methodological choices of previous researchers in PC (Gonzales & Hancock, 2008; Tice, 1992). Participants were supplied with condition appropriate activity logs to record their physical activity and commitment logs so they could tack their commitments (Figure 2.2). The activity logs were fashioned like a calendar with lines each day noting minutes of vigorous and moderate exercise. The absence of names on these forms, in both conditions, represents an additional methodological improvement by eliminating the potential perception of identification via forms as an additional factor. lowering the To balance conditions and ensure accurate answers, public condition participants, were requested to temporarily add a research assistant to their Facebook network. They were lead to believe that this was so their commitments and "friend" count could be subtly verified.

Two weeks after the conclusion of the time one measures, participants received an email with a link for the second survey including their participant number and their condition shape. On opening the survey participants entered their participant number and condition shape before

answering manipulation checks and repeat measures were taken with additional control questions regarding network relational proximity. Activity and commitment logs were collected with a single email address. After all measures were completed the participants were thanked for their time and the necessary information was obtained to provide them with the appropriate compensation. A copy of all questionnaire pages is available in the Appendix.

Independent Measures

Type of commitment. The construct used to form the conditions was the type of commitment: Public commitment (with an audience) or private commitment (in a Word document). After participants were assigned to one of these two conditions, the research assistant collected (via email) the commitments that were made by participants. The research assistant allegedly reviewed participants' Facebook posts in the public condition, and Microsoft Word documents, in the private condition. The perception of participants that their commitments would be confidentially verified was meant to replicate previous experiments and influence students to be more driven to follow the instructions and more accurately report their exercise and audience size. Using the methods described previously subjects performed self-presentations (commitments) in either public or private environments according to their assigned condition. In contrast, commitment to exercise behavior was operationalized as behavioral intention and was measured accordingly.

Publicness. As discussed in the literature review, the present study employs a novel and necessary innovation to the measurement of publicness by requesting participants' Facebook friend count. Within the public commitment condition, audience size as publicness was operationalized as the quantity of friends a participant had during the testing period (the understood recipients of presented status messages). Participants answered the question, "How

many Facebook friends do you have?" This premise that friends are asynchronously accessing posted messages was verified through the study's manipulation check for publicness. Participants were asked to add the research assistant on Facebook and to note the number of friends they had on Facebook in their commitment log. The questionnaire gave participants the impression that their account would be directly observed and that their commitment logs would be checked. This ensured the consistency of participant reports on the number of friends they had in their Facebook networks.

Dependent Measures

Behavioral intention. BI represents the intention to participate in Exercise Behavior (EB). Behavioral intention was measured by a single item tailored to the specific activity, physical activity, on a 7 point Likert-type scale from unlikely (1) to very likely (7): "I intend to exercise at least 20 minutes a day, 3 days a week, for 4 weeks."

Exercise behavior (EB). Exercise Behavior (EB) was measured as the simple frequency of exercise reported by participants. EB has frequently and globally been measured though a shortened version of the International Physical Activity Questionnaire (IPAQ), which was modified in the present study to exclude walking, as walking is not typically considered a form of intention exercise that one creates an intention to complete. It also expends little energy when it is done in the casual fashion described in this measure and is typically eliminated for studies measuring change in the fitness regimen of participants. The elimination of this section does not suggest that walking is not an appropriate form of moderate or even vigorous activity. If the participants felt that walking fit the definition of moderate or vigorous activity in the measure participants would list that activity in the appropriate section.

Subjects provided the amount of days per week they participate in moderate and in vigorous exercise, and they also provided the amount of time in minutes they spent on those days engaging in the activity. Minutes were converted into a basic score typically used to measure physical activity, which reflects the metabolic equivalent of task – minutes (METs) expended by the participant (Bauman & Craig, 2009). This number serves as a continuous variable, directly reflecting the construct of EB as it is usually considered in terms of its contribution to wellness (Savage & Ades, 2007). Vigorous exercise is equal to 8.0 METs and Moderate exercise is equal to 4.0 METs, so the subjects' days per week and minutes per day were multiplied for a EB score (e.g., Moderate activity 3 days a week for 20 minutes and Vigorous Activity 2 days a week for 30 minutes is equivalent to a score of 720 MET-minutes/week. Equation: (4.0 * 3 * 20) + (8.0 * 2 * 30) = 240 + 480 = 720). Time 1 scores were subtracted from time 2 scores to achieve the measure of improvement.

This instrument has been accepted and tested extensively for high measurement validity, noting a Spearman's r of .76 from a 12 country reliability assessment (Craig, Marshall, Sjostrom, Bauman, Booth, Ainsworth, et al., 2003; Hagströmer, Oja, & Sjöström, 2006). To decrease inaccuracies naturally caused by human memory activity logs were provided with simple lines to record their activity (Figure 2.1). These logs were collected to further emphasize that activity levels should be consistently recorded and match the reports given in the second survey. Threshold EB frequency has been set at regular exercise level of activities performed at least at a moderate intensity three or more times per week for at least 20 min each time (ACSM and AHA Guidelines, 2007, p. 1081).

Network relational proximity control. To evaluate the extent to which network composition (mostly proximal ties or mostly distal ties) may impact the strength of public commitment, a measure of relational proximity in students' networks was selected. A three item 7-point response format (e.g. 1 = *none*, 7 = *all*) determined the proximity of each subject's relational network proximity on a continuum from completely proximal (only close ties) to completely distal (only weak ties). These three items constituted the Network Relational Proximity Scale (NRPS) to control for the impact of differing relationships with personal audience groups; however, reliability of the measures was unacceptable, Cronbach's Alpha .45. Due to the unusable reliability of the scale, the measure was rejected as a viable way of measuring network proximity. The first item, "Of these individuals, how many would you consider your close friends?" was accepted as representative of this variable based on its high face validity.

Manipulation Checks

Commitment completion. It was essential to verify that participants actively presented their commitments. In an effort to ensure the instructions were carried out, commitment and activity logs (virtual documents) were provided and the participants were lead to believe that their commitments would be reviewed by a single research assistant. Beyond ensuring the validity of the conditions, requesting a self-report of participants on their faithfulness in committing to exercise negates the potential confound which could have presented itself in the event that participants in each condition differed in their execution of the treatment instructions.

Perceived publicness. The traditional publicness manipulation check from the literature review was employed to verify the perceived publicness of the conditions and degrees of publicness. A seven point scale was used: 'To what extent do you think your presentation in this

experiment is publicly identifiable?" 1 being "very private" and 7 being "very public" (Gonzales & Hancock, 2008; Tice, 1992; Walther, Liang, DeAndrea, Tong, Carr, Spottswood & Amichai-Hamburger, 2011). This was followed with a request for an average number of how many people the subject believed received their commitments. Results from this item reinforced the publicness measure and provided insight on how effective students believed their communications were on Facebook.

RESULTS

Manipulation Checks

Commitment completion. Conditions were expected not to differ in their behavioral adherence to the instructions delivered in the study, the induction. The cooperation of participants was captured with a single measure presenting three choices. Zero represented no commitments made, one represented a single commitment written and two meant that the participant made both of the commitments they were instructed to make. A two tailed, independent-samples, t-test did not show a significant difference between experimental conditions in the number of commitments confirmed by participants, t (122) = 0.18, p = 0.86. The private condition (M = 1.23, SD = 0.63) and public condition (M = 1.21, SD = 0.61) participated to the same to degree. This control test ruled out the possibility that levels of participation confounded results. To provide additional assurance that participants' failure to follow instructions did not off-set findings, post-hoc analyses were run for each prediction. Outcomes from these tests verified the accuracy of initial findings.

Publicness. An analysis was completed to determine whether participants in different conditions (public vs. private) perceived different levels, or degrees, of publicness. A significant difference was uncovered, t (118) = -2.01, $p < .05$, d = 36. Participants posting on Facebook

perceived significantly greater publicness (M = 3.68, SD = 1.62) than did those posting in a private document (M = 3.11, SD = 1.52).

Because publicness was being directly operationalized in this study as the number of Facebook friends in the network (audience size) of a public condition participant, we also measured participants' perceptions of how many other individuals viewed their commitment statement. Participants from both conditions responded to the question "On average, how many people do you think looked at your commitment statement?" uncovering startling results. Despite large audience sizes (M = 747.74, Median = 700, SD = 522.87) in the public condition, students' felt that very little attention was paid to their status update (M = 46.75, Median = 5, SD = 124.51). Conversely, privately made commitments were shared with a number of people even though subjects were explicitly told to make these statements in a confidential and personal text document (M = 1.72, Median = 1). These frequencies are inconsistent with expectations noted in the literature and the present studies assumptions. Such a disparity suggests that in a field setting the measurement of publicness as audience size may be negated by participants' perceptions that very few people are receiving their messages.

Main Analyses

Hypothesis one. H1 predicted that the private condition and the public condition would differ in their behavioral intentions and their self-reported performance of exercise behavior. A one tailed, independent-samples, t-test was used to test this hypothesis, at a 5 percent level of significance (a = 0.05). The results did not yield a significant difference between the private and public conditions, t (105) = .25, p = .41 on the dependent variable of behavioral intention; the public condition did not have a higher level of behavioral intention (M = -.56, SD = 1.34) than the private condition (M = -.47, SD = 2.32). In regard to the dependent variable of exercise

behavior (measured in METS) results revealed a significant difference between private and public conditions, t (112) = -1.64, p = .05, d = .30. The public condition was more likely to engage in exercise behavior (M = 543.06, SD = 1579.31) than the private condition (M = -75.62, SD = 2499.54). Thus, hypothesis one was partially supported. Results are summarized in Table 3 and pretest-posttest points are shown in the Figure 3.0 plot.

Hypothesis two. H2 predicted that audience size would be positively related to improvement in behavioral intention and exercise behavior. The correlation between audience size and improvement in behavioral intention was not significant, r (44) = .12, p = .43; audience size was not related to increases in behavioral intention. The correlation between audience size and improvement in exercise behavior also was not significant, r (49) = .05, p = .72; audience size was not related to increases in exercise behavior. Therefore, data were inconsistent with the hypothesis. For each H2 and R1 analysis we examined the role of closeness (relational proximity) of participants to their perceived audiences and found the effect was not significant. Also note that all H2 and R1 analyses were preformed with respect to the public condition only.

Perceived audience size was also used as an independent variable to see if it was a significantly related to intention to exercise and actual exercise behavior. Thus, H2 and R1 are replicated here with perceived audience size to establish potential differences between perceived audience size and full potential audience size (publicness). The correlation between perceived audience size and behavioral intention was not significant, r (42) = .06, p = .70; perceived audience size was not related to increases in behavioral intention. The correlation between perceived audience size and improvement in exercise behavior was also not significant, r (44) = .04, p = .78; perceived audience size was not related to increases in exercise behavior. Thus, the data were also inconsistent with the hypothesized relationship. Relationships predicted in the

second hypothesis are plotted in figures 4.1, 4.2, 5.1 and 5.2.

Research question. The research question predicted that the relationship between audience size and improvement in behavioral intention would plot in a curvilinear manner. The research question also predicted a curvilinear regression plot for the relationship between audience size and increased exercise behavior. The plots featured in figures 4.1, 4.2, 5.1 and 5.2 are evidence that this point of inflection was neither well defined, nor dense enough, to be consistent with a curvilinear relationship. These graphs demonstrate the similarly insignificant results when using perceived audience size as the independent variable. A curvilinear regression test, confirmed the absence of any quadratic relationship in any of the four comparisons.

DISCUSSION

The primary purpose of the study was to examine the impact of public commitment in a new context (CMC) while extending previous measures of publicness from a dichotomous operationalization to a continuous variable. Conducting the experiment with the public condition in the Facebook setting and the measure of publicness operationalized as the pure frequency of available audience size expanded scholarly knowledge on public commitment and the contexts to which it can be applied. Results indicated that making a public commitment via Facebook significantly increased exercise behavior as compared to making a private commitment, but not behavioral intention.

The replication of public commitment in the CMC environment expands the application of this phenomenon and raises interesting questions about the process. Although the test did not display especially high power, the mean results show a solid improvement of over one hour per week from the private (M = 38.01, SD = 406.48) to the public condition (M = 109.44 SD = 301.16), and the difference in METS is great enough to move an individual from one health

group (ex. low to medium) to the next according to the traditional IPAQ translation of METS to categorical notation (Craig, 2003). This difference in exercise outcomes is encouraging, especially because millions of sedentary people use Facebook (and other web 2.0 platforms) daily and the low cost of implementing an online commitment strategy as an intervention technique could potentially increase adherence to a plan to engage in physical activity. These data suggest that web 2.0 users can achieve improved results in pursuing discipline in desirable behaviors by simply posting that intention to their online audience.

Given the each subject was measured twice a post hoc paired-samples, repeated measures, t-test further verified the significance of public commitment as a determinant of increased exercise behavior. Because the uneven and large standard deviations reported are typical of distributions that include extreme outliers a post hoc, one-tailed, Mann-Whitney *U* test was conducted to test the same relationship. This statistical procedure is considered more robust and less vulnerable to outliers and irregular distributions than the standard independent samples t-test (Conover, 1980). Results were consistent with greater significance and effect size than the significant effects of the one-tailed, independent samples t-test, $z = -1.82$, $U = 1443$, $p < .05$, $r = -.18$. The public condition recorded higher exercise behavior change with the average rank of 53.90 than did the private condition, average rank 44.8. This finding is consistent with the prediction of hypothesis one concerning exercise behavior as a dependent variable.

The first hypothesis was a dichotomous test of public versus private commitment. The insignificant result indicates that there are likely interesting differences to explore between the induction of publicness in the laboratory setting and the field. Although using Facebook provided excellent external validity, it also introduced a higher chance of unexpected interactions. This context also introduces the factor of familiarity. This study is unique in that it

is the first test of public commitment to include a live audience composed partially of familiar acquaintances, friends, and strangers. Intuitively the introduction of closer friends to the participants' audiences should increase the social pressure and result in greater public commitment. Instead of increasing commitment, relational proximity had no observable impact on the outcomes. One possible explanation for this puzzling lack of impact relates to the recent findings of DeAndrea and Walther (2011); web 2.0 users were more forgiving of themselves and of friends than they were for strangers when misrepresentations (of one's offline self) were exposed in online profiles. These results suggest that proximal individuals enforce less social pressure on, and are more lenient with, one another. Since the potential for social pressure is the primary mechanism of public commitment, the partial familiarity of the audience in the present study may have reduced the overall impact of participants' presentations on their level of commitment. Equally, it is possible that students process publicness differently when they are more familiar with the platform, communicate with higher frequency, or feel more in control of content deletion.

Effect size may also have been limited by the nature of the dependent variable, exercise behavior. As noted in the literature review, many tests were only concerned with affective or attitudinal changes which are considered to be less rigid then behavioral patterns. Exercise specifically is known to be an especially habitual construct which provides additional barriers to finding strong changes in execution, as a dependent variable. As such exercise is considered by many to be a mundane maintenance activity. Other more novel or personally relevant activities could yield more potent results. This is especially true of actions that require less dedication, effort, and repetition. Negative associations are also important in evaluating independent measures. As the theory of planned behavior suggests, the choice to exercise is heavily

influenced by thoughts of soreness, sweat, lost time, and in some cases pain (Ajzen, 1991). Actions of less consequence are also more likely experience positive effects from public commitment. Future research may employ less demanding outcomes with the confidence that public commitment ought to impact them more easily. To summarize, physical activity is a very concrete behavioral outcome variable which may require a more powerful induction compared with more common PC outcome constructs such as identification with a particular affect, opinion, or personal characteristic.

The strength of this consistency effect is known to be secured under the public commitment model by the publicness of the message and its irrevocability (Schlenker, Dlugolecki, & Doherty, 1994, p. 21). A disparity in the extent to which participants in different conditions felt publicly identifiable (the typical check for publicness) was also verified with the same manipulation in the methodology of this study. In 2011 Walther et al. found further evidence for the superior publicness of blogs in relation to private documents. The present findings support this premise and take a step toward expanding the context of this concept to include micro-blogging platforms and web 2.0 environments with highly public media such as blogging communities.

Given the unlimited audience size, ease of use, and high prevalence of contextual cues, Facebook seemed an intuitively appealing setting to operationalize publicness. To add to this appeal large friend counts on Facebook are known to correlate with deeper engagement with the community and dedication to the platform (Ellison, Steinfield, & Lampe, 2007). Logically this scenario should increase social pressure for any presenter. Conversely, these data suggest that regardless of audience size, perceptions of publicness are low in this context. These surprising results may validate the dichotomous measures used in previous studies although it is difficult to

speculate without a test in a context where audience size is more closely correlated with participants' perceptions of that audience's size. It is likely that the perceptions of participants indicating that very few "friends" actually looked at their message could have decreased or diluted both the perceived publicness and perceived irrevocability of their posts. Students under the impression that only a small slice of their online networks are viewing their commitment asynchronously are probably under the impression that they could delete updates before most interested friends had the chance to see it.

Behavioral intention outcomes were a more curious case than exercise behavior with both conditions decreasing their commitment to future exercise. On average the full sample of students became less committed to exercise over this two week period. This unexpected outcome is difficult to explain since all the manipulations employed have demonstrated consistent success in improving participant's intention to exercise. One potential explanation involved the skew of the sample toward individuals that do not have excellent exercise habits. It is possible that inciting increases in exercise in currently inactive individuals may have confirmed their reasoning as to why they have not yet committed to a regimented exercise program. For example, an individual that typically does not run because they find it uncomfortable and are sore for several days may be inspired by their own commitment before rapidly confirming their fears and becoming less committed to continue. The participants were also not provided with any introduction to a support system which would typically accompany a field intervention in a more pragmatically structured health field study. Successful attitudinal programs to increase fitness are typically supported with social groups and this study was done on an individual basis, particularly in the private condition.

A competing view of these results would argue that the discrepancy between a decline in BI and an increase in EB arises from the successful pursuit of the initial commitment. Studies conducted on self control conducted by prominent psychologists have repeated shown that disciplining one's self depletes the amount of mental energy available for subsequent commitments (Baumeister, Bratslavsky, Muraven, & Tice, 1998). That is, commitment to an undesirable behavior requires a focus that is measurable and represents a limited resource. From this perspective, low BI scores on the second survey may represent the mental exhaustion of participants that employed self-controlling energy to fulfill their initial commitments. This is analogous to asking a trained athlete to demonstrate their physical strength immediately following a long and difficult race. While this core strength had been efficiently used in the execution of the behavior, a test of this same feature would erroneously indicate that the athlete had much less strength than they actually have available. The same principle could reveal why participants were unable to produce stronger forward thinking commitment after their two weeks of following a commitment plan to achieve exercise results.

Contrary to the predicted effect of audience size, as publicness, on public commitment no significant relationship was noted between audience size and either of the dependent measures. The continuous measurement of publicness in H2 and R1 was tested with the correlation and regression analyses, and perceived audience size was tested in the place of audience size to explore the differences between potential and perceived publicness. Although the relationships were insignificant the audience size and perceived audience size correlations and graphs are all very similar. The lack of significant relationships between either audience measure and either of the dependent measures suggests that the size of an audience is not as powerful in solidifying public commitment in the Web 2.0 environment as it has proven when demonstrated in lab

conditions or face-to-face. Investigation of why audiences in these mediums might be perceived differently would provide important insights into this phenomenon. Perhaps the environment does differ in the salience of the audience, the quality of the relationships, or the perceived irrevocability of messages.

Ultimately this result supports the assertion that a public condition may only need a single noticeable audience member to constitute an audience. Previous research in the public commitment domain has often concluded with a request to test whether the degrees of publicness matter, or if the publicness is a simple dichotomous induction (Gonzales & Hancock, 2008). These results suggest that the impact of publicness on commitment constitute a binary effect rather than increasing with the size of the audience. It is possible, however, that using the Web 2.0 environment in the field allowed for a unique test with atypical perceptions of audience size.

The research question extended the concept of hypothesis two asking whether a curvilinear plot relationship might be possible between audience size and the dependent variables, BI and EB. As is clear from the plots in Figures 4.1, 4.2, 5.1, and 5.2, there is relatively little density in any of these relationships and the plots become particularly sparse around the area in question. Little speculation is warranted by these results, as the measure of perceived audience size revealed a vast difference between participants' actual audience size and their impression of those receiving their message.

The idea that micro-bloggers are under the impression that their updates are only being shared with a small group (many of them close friends) presents a plethora of interesting questions. Data from our sample suggests that the average student is presenting their messages to over 700 people with the belief that only a handful (median of 5) are reading it. Figure 4 provides an illustration of the difference between perceived friends and friend count. Of these

few people that students perceive as viewing their update, results for the proximity test indicate that only about half of these "friends" are considered close friends. Why is this publically visible platform viewed as a channel with such a limited impact? One potential explanation uses the SIDE model of CMC. Facebook users could be maintaining a small number of strong relationships while viewing the remaining block of "friends" as a single united group. In this scenario, the close friends group would likely participate willingly with one another and communicate in a directed interpersonal fashion as observed in similarly familiar groups with Walther's hyper-personal model (1997). The remaining majority would then be viewed as presenting a single viewpoint and persona which would likely be interpreted by the presenting user as apathetic or uninterested.

If these assumptions hold, the salience of individuals in users' networks would be a key determinant of their perceived audience size. Presence and interest in a Web 2.0 context can be communicated in a variety of ways. In Facebook specifically, these flattering displays of attention include messaging, chatting, "liking," voting, tagging, posting, and commenting. When a user is confronted with one of these highly relevant personal messages the sender is identified by name and at least a portion of their profile including a chosen image. This interaction, especially if repeated, would remove the sender from the crowd and place them in the public audience of the receiving user thereby increasing the user's perceived audience size. This is consistent with the *identification through individuating events process* detailed in the hyper-personal model (Walther, 1997). These models outline a process describing the over-attribution of similarity to a large portion of an online audience. To our knowledge this study is the first to suggest that for the average Facebook user a frequent over-attribution of disinterest may be delivering the impression that they are more isolated and less well heard than they are in reality.

Testing this relationship would be a valuable step toward developing a deeper understanding of privacy and perceived privacy, lack of participation or passion in some web 2.0 environments, and many other common issues. These assertions align with the inductive goals and objectives of marketers and public relations specialist today, aspiring to ultimately create meaningful conversations with their customers and target markets. These data seem to confirm the idea that depth and reciprocation are necessary to truly increase the salience of messages and deveop a relationship of recognition between two parties. On a broader note, some of the most basic issues that psychologists, communication experts, and human relations professionals have grappled with stem from feelings of underrepresentation. The gap between perceived and actual communicative power in Facebook is a prime testing ground for examining the factors involved in a system with the potential to promote feelings of unimportance, loneliness, and worthlessness or facilitate deeper, more meaningful relationships and build self-esteem.

Limitations and Future Directions

There are a couple of clear limitations to the present study that future research should address. The most evident limitation was the relatively low power of the sample resulting from an undesirable sample size. This restriction was primarily an attrition issue. A reasonable number of time 2 respondents delayed for days and some for even longer. This reluctance of subjects to finish the study right away introduces additional error. It is likely that with more rigorous and clear scheduling for respondents and a collection period that fell within a fall or spring semester this internal validity issue could be eliminated. As a means of offsetting this potential error, participants were requested to provide an activity log kept during the two week period. Forty-seven participants returned their documents as requested. More aggressive or wider spread recruitment would be another method of eliminating this mortality concern.

Another important limitation stems from the selected web 2.0 field context. As discussed in the previous section the Facebook context presented a more complicated and unique environment than was anticipated. Due to the scope and considerations of the study, channel differences were not assessed. Future research would benefit from a direct comparison of multiple mediums using public commitment. Such a method would clarify the role of feedback while identifying problematic and enhancing factors across communication methods. The method could also compare contexts with more or less perceived irrevocability to test that definitional PC determinant. Health research would also benefit from application of the public commitment principle as an intervention in environments with more salient audiences.

Findings suggest that the effect of public commitment on exercise behavior is significant in the Facebook context and that publicness may be manipulated as a dichotomous construct. Mean differences with standardized populations indicate that, with a slightly larger sample, the effect on increasing exercise behavior may reach increased significance. Conversely, changes in behavioral intention were insignificant and raised interesting questions concerning the link between behavior and intention over time. A large gap was uncovered between students' Facebook friend count and the number of users they believed to be reading their commitments. Subsequent studies would do well to examine why so many Facebook users are reporting perceived audience sizes that begs the question: "Is anyone listening?"

APPENDICES

APPENDIX A

MEASURES BY CONSTRUCT

Time One

Physical Activity (EB)

Physical Activity Questionnaire

PHYSICAL ACTIVITY QUESTIONNAIRE

The following questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, aerobics, or fast bicycling?

Days per week:

2. How much time did you usually spend doing vigorous physical activities on one of those days?

Minutes per day:

Think about all the **moderate** activities that you did in the **last 7 days. Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis?

Days per week:

4. How much time did you usually spend doing <u>moderate</u> physical activities on one of those days?

Minutes per day:

Intention

Intention to Exercise (BI)

I intend to exercise for at least 20 minutes, three times per week for the next four weeks.

Intention to Exercise: Likely::: 1 2 3 4 5 6 7 ::: Unlikely

Time Two

Physical Activity (EB)

Physical Activity Questionnaire

PHYSICAL ACTIVITY QUESTIONNAIRE

The following questions will ask you about the time you spent being physically active in the **<u>last 7 days</u>**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1. During the <u>last 7 days</u>, on how many days did you do <u>vigorous</u> physical activities like heavy lifting, aerobics, or fast bicycling?

Days per week:

2. How much time did you usually spend doing <u>vigorous</u> physical activities on one of those days?

Minutes per day:

Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis?

Days per week:

4. How much time did you usually spend doing moderate physical activities on one of those days?

Minutes per day:

Intention

Intention to Exercise (BI)

I intend to exercise for at least 20 minutes, three times per week for the next four weeks.

Intention to Exercise: Likely::: 1 2 3 4 5 6 7 ::: Unlikely

Publicness

*Research assistant records the number of friends each public condition participant has on their Facebook profile.

Manipulation Check

Conditions are reviewed with respect to participants' options with a single item:

To what extent do you think your presentation in this experiment is publicly identifiable?

Presentation: Very Private::: 1 2 3 4 5 6 7 :::Very Public

Additional questions verify the RA's observations:

How often did you remember to make your statement of commitment? (What percentage of the time?) [Numeric text field]

On average, how many people do you think looked at your commitment statement? [Numeric text field]

Control Questions

Of these individuals, how many would you consider your close friends ("friends" with whom you regularly interact)?

Close Friends: None::: 1 2 3 4 5 6 7 :::All

How many would you consider acquaintances ('friends" with whom you rarely interact)?

Acquaintances: None::: 1 2 3 4 5 6 7 :::All

Given your answers above, how close do you feel in your relationships with the audience of your status updates overall?

Closeness to Friends: Very close::: 1 2 3 4 5 7 :::Not close at all

APPENDIX B

TABLES

Table 1

Characteristics of Participants (N = 112)

	N	%
Gender		
Male	49	62.9
Female	83	37..1
Race		
White/Caucasian	90	73.8
Black/African American	7	5.7
Hispanic/Latino	4	3.3
Asian	16	13.1
Other	5	4.1
Class		
Freshman	4	3.0
Sophomore	11	8.3
Junior	25	18.9
Senior or Graduate Student	92	69.7

Table 2
Pearson Correlation for Study Variables (N = 33)

	Δ in Exercise Behavior	Δ in Behavioral Intention	Audience Size	Publicness Check	Perceived Audience Size	Network Relational Proximity
Δ in Exercise Behavior	1	1.36	-.059	.064	-.038	.252
Δ in Behavioral Intention		1	.178	.172	-.012	.199
Audience Size			1	.181	.278	.092
Publicness Check				1	.336	.280
Perceived Audience Size					1	.258
Network Relational Proximity						1

Note. There are no statistically significant relationships reported in this table.

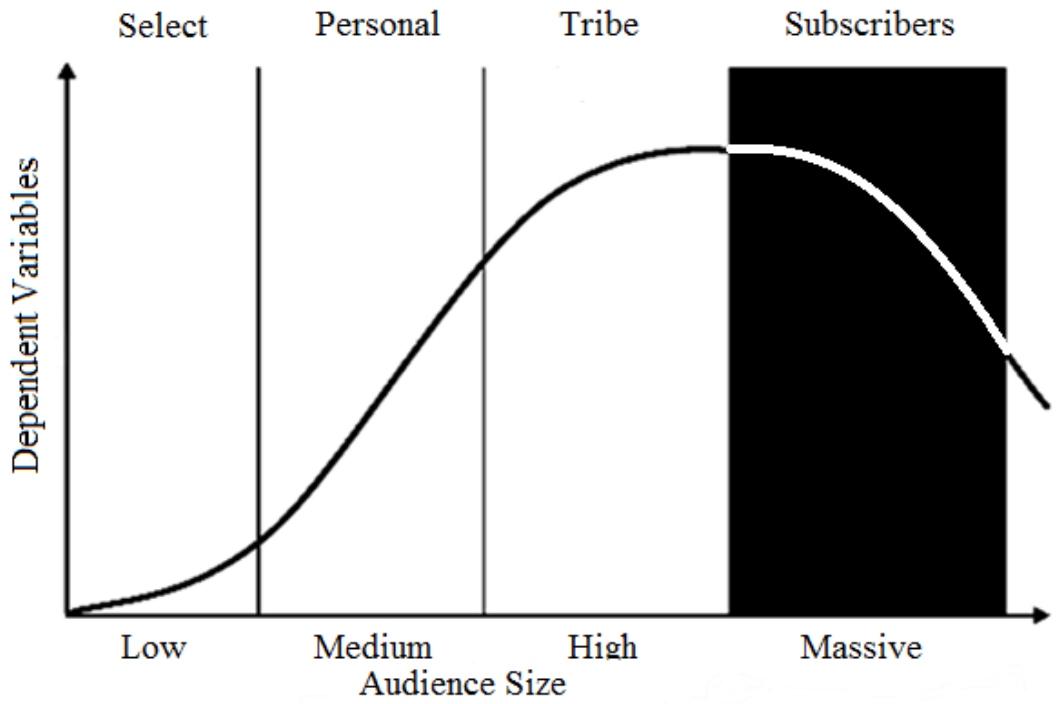
Table 3
Summary of Study Variables

	Mean	Median	SD	N
Δ in Exercise Behavior	201.16	320	2017.40	114
Δ in Behavioral Intention	-0.51	0	1.94	107
Audience Size	747.74	700	522.87	57
Publicness Check	3.38	4	1.58	120
Perceived Audience Size	23.63	2	89.35	111
Network Relational Proximity	3.55	3	1.23	55

APPENDIX C

FIGURES

Figure 1.0 Publicness Growth Curve



Note that the hyper-personal model explains interactions in the select, personal and tribe relationship regions with acceptable audience sizes or networks. Conversely participants with excessive networks are expected to primarily perceive their audience in groups informed by the conditions of SIDE theory.

Figure 2.1 Commitment Log

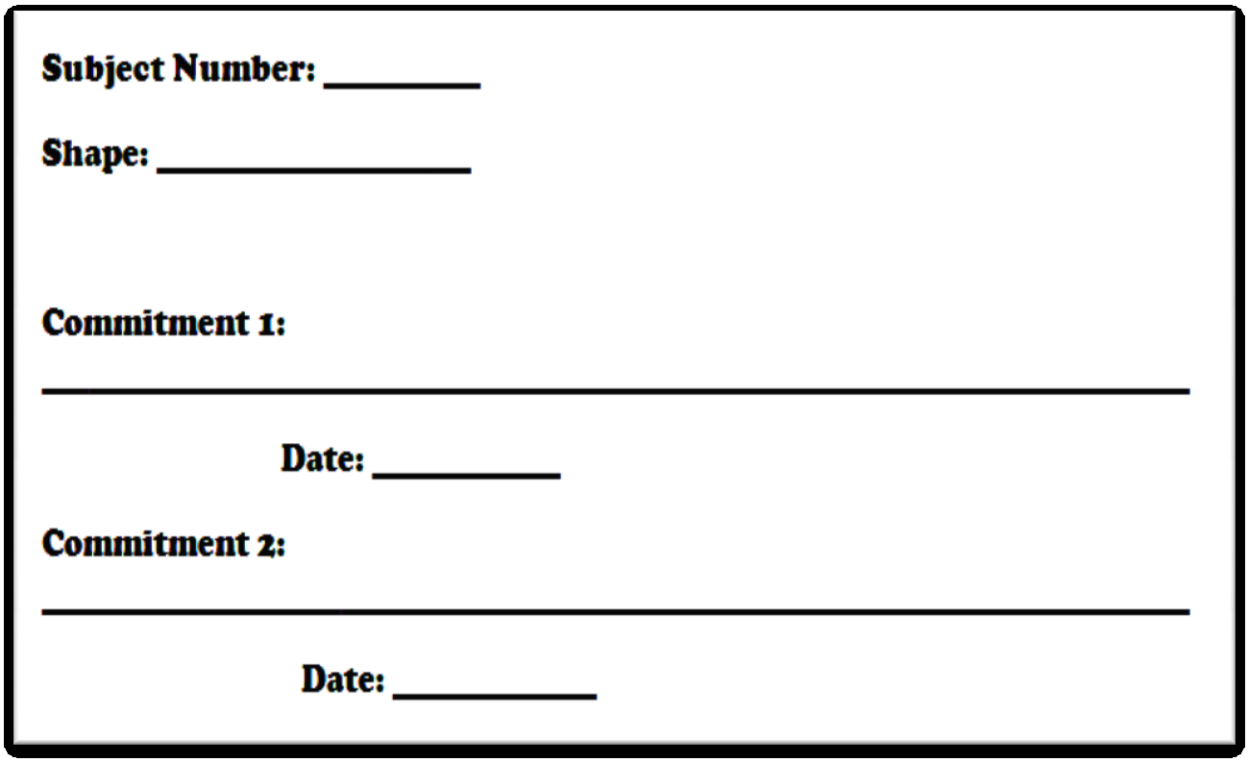


Figure 2.2 Activity Log

Physical Activity Diary			
	Day 1	**Day 2**	**Day 3**
Vigorous Physical Activity			
Minutes of Vigorous PA			
Moderate Physical Activity			
Minutes of Moderate PA			
	Day 8	**Day 9**	**Day 10**
Vigorous Physical Activity			
Minutes of Vigorous PA			
Moderate Physical Activity			
Minutes of Moderate PA			
Commitment # 1			
Time of Commitment:			
Commitment text:			
Commitment # 2			
Time of Commitment:			
Commitment text:			
Number of Facebook Friends:			

Note: Days continue to include all 14 in the two week period.

Figure 3.0 Pretest-posttest Exercise Behavior

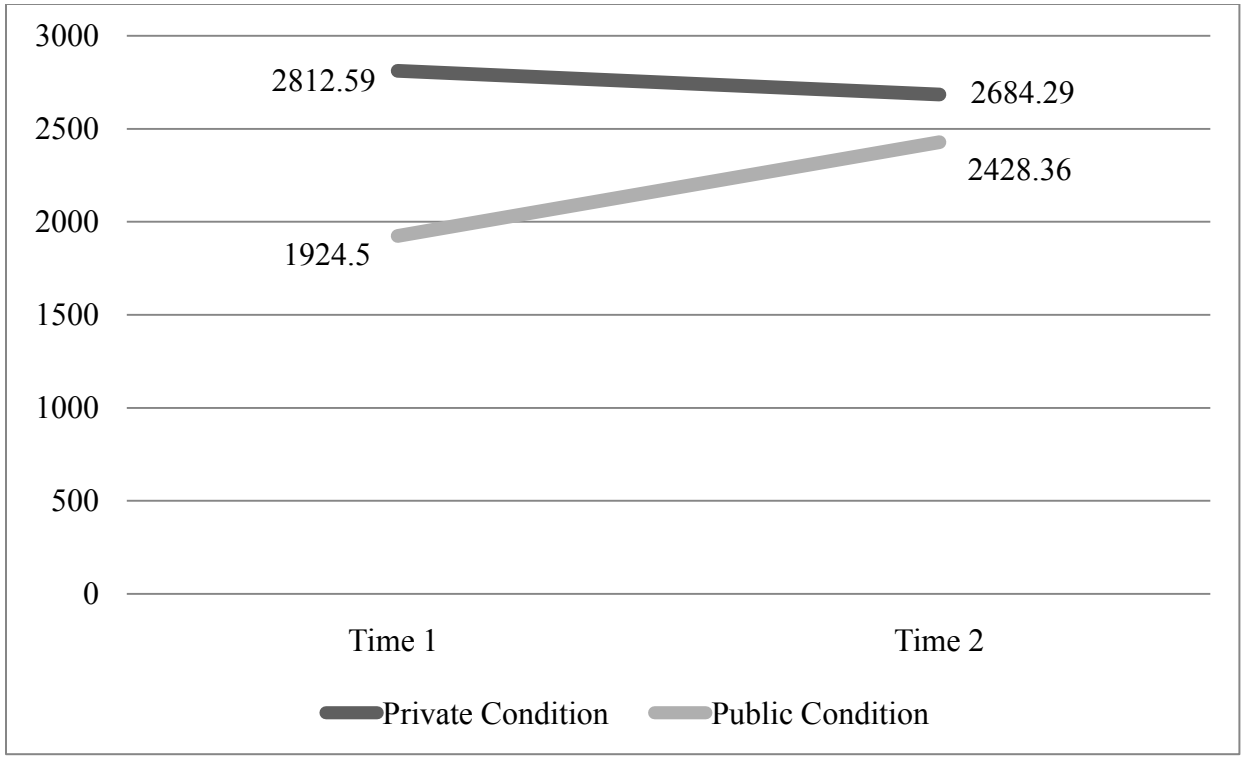


Figure 4.1 Audience Size and Change in Behavioral Intention

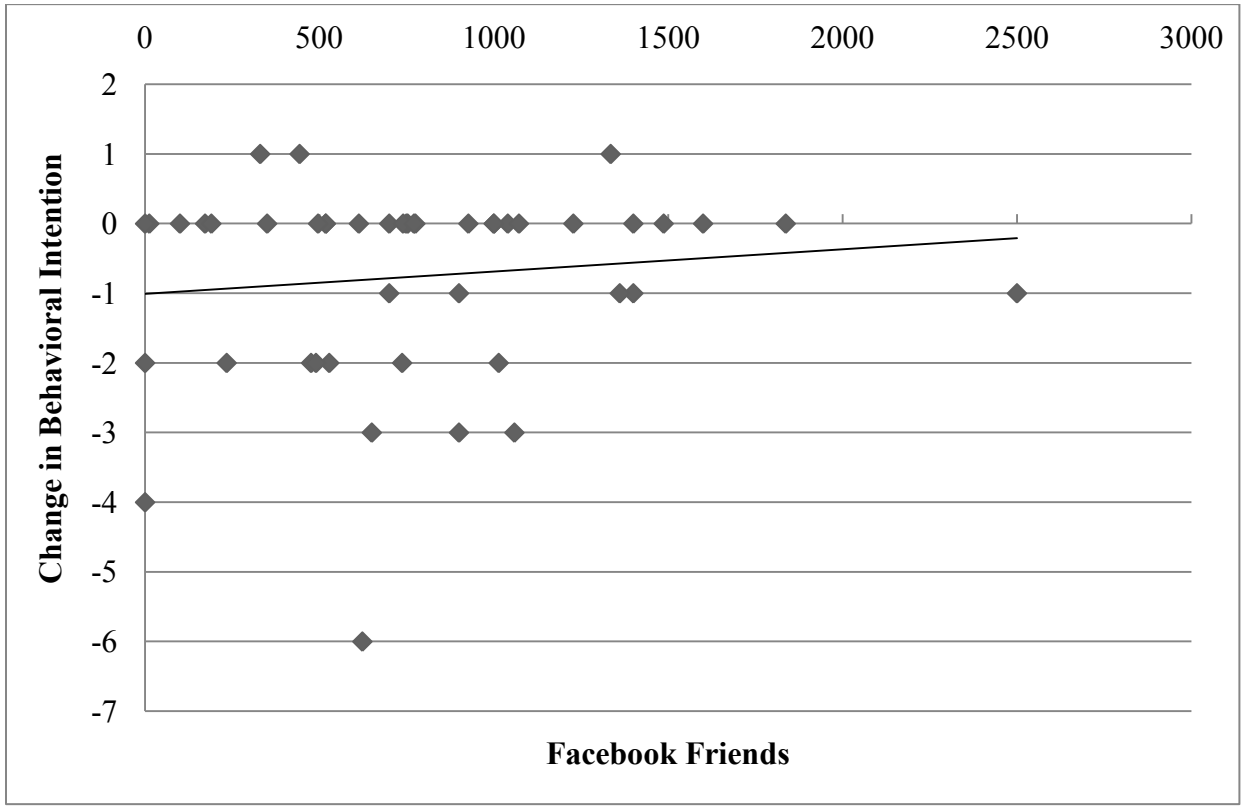


Figure 4.2 Perceived Audience Size and Change in Behavioral Intention

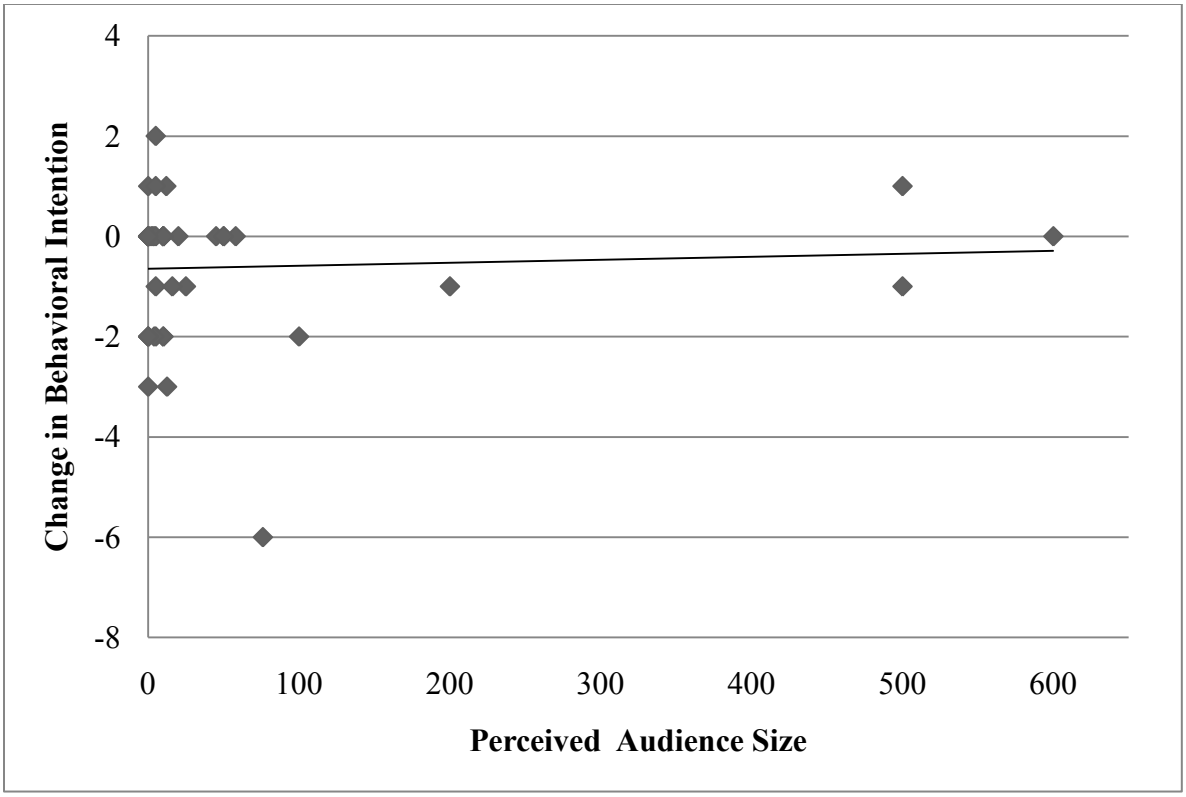


Figure 5.1 Audience Size and Change in Exercise Behavior

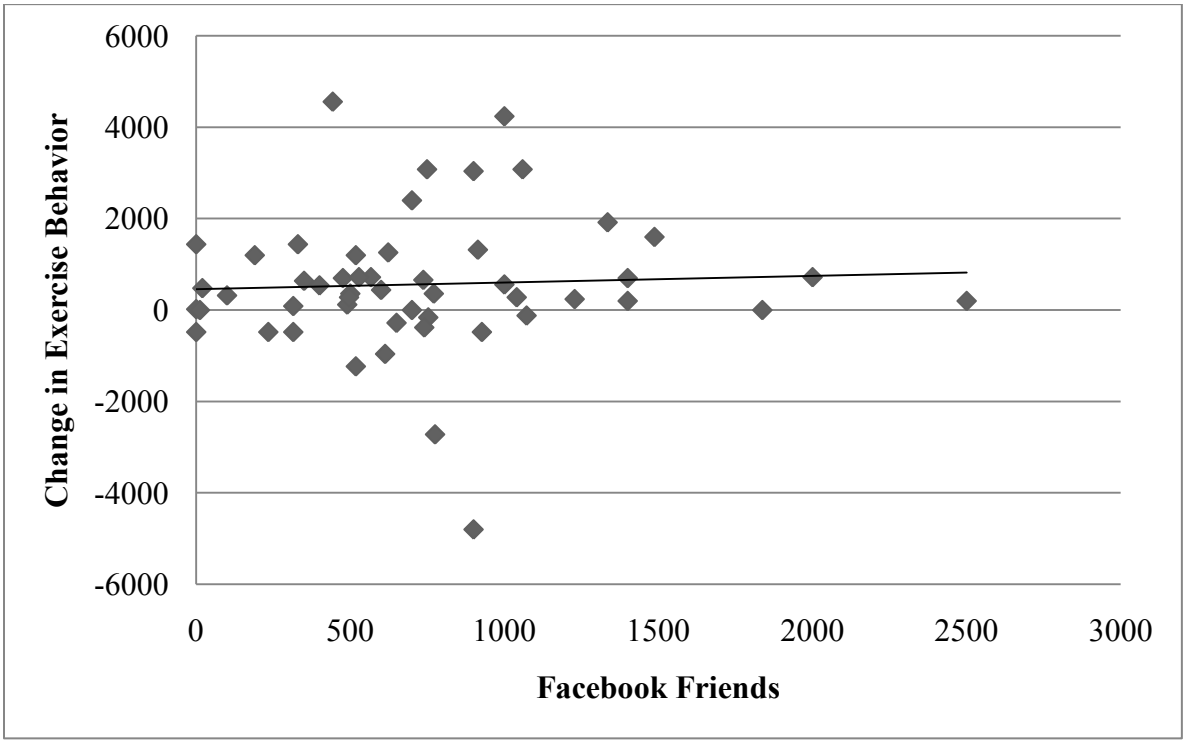


Figure 5.2 Perceived Audience Size and Change in Exercise Behavior

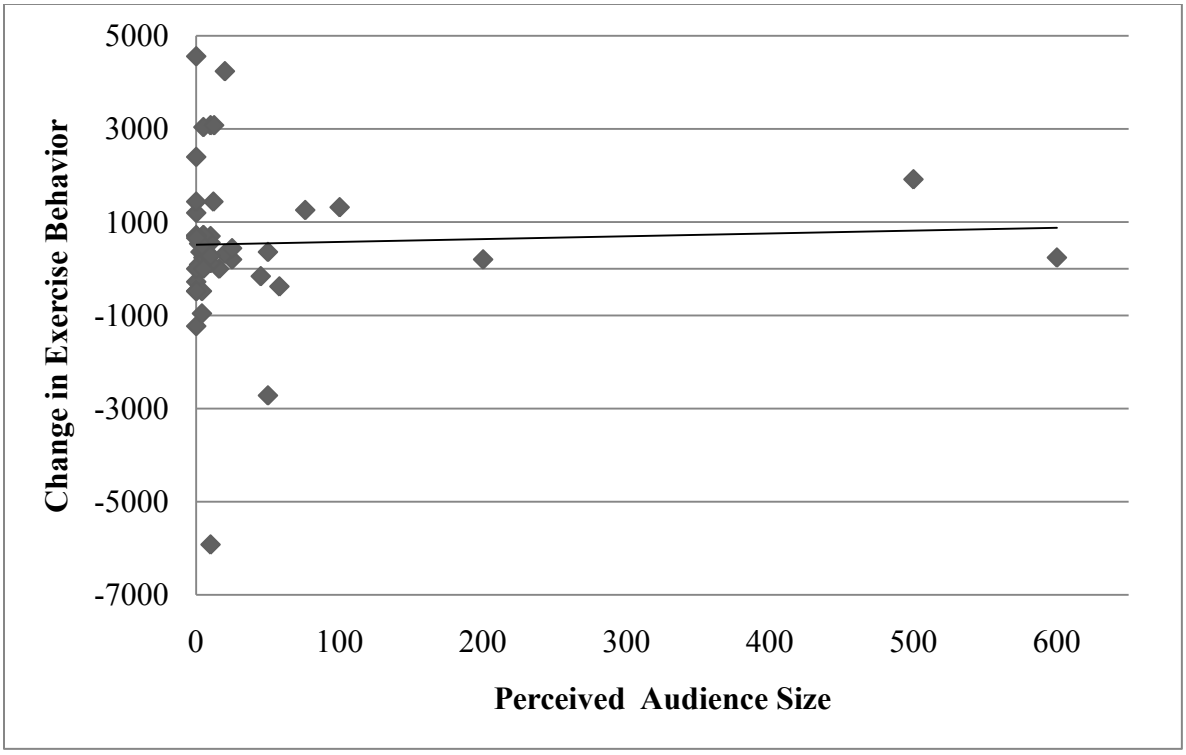
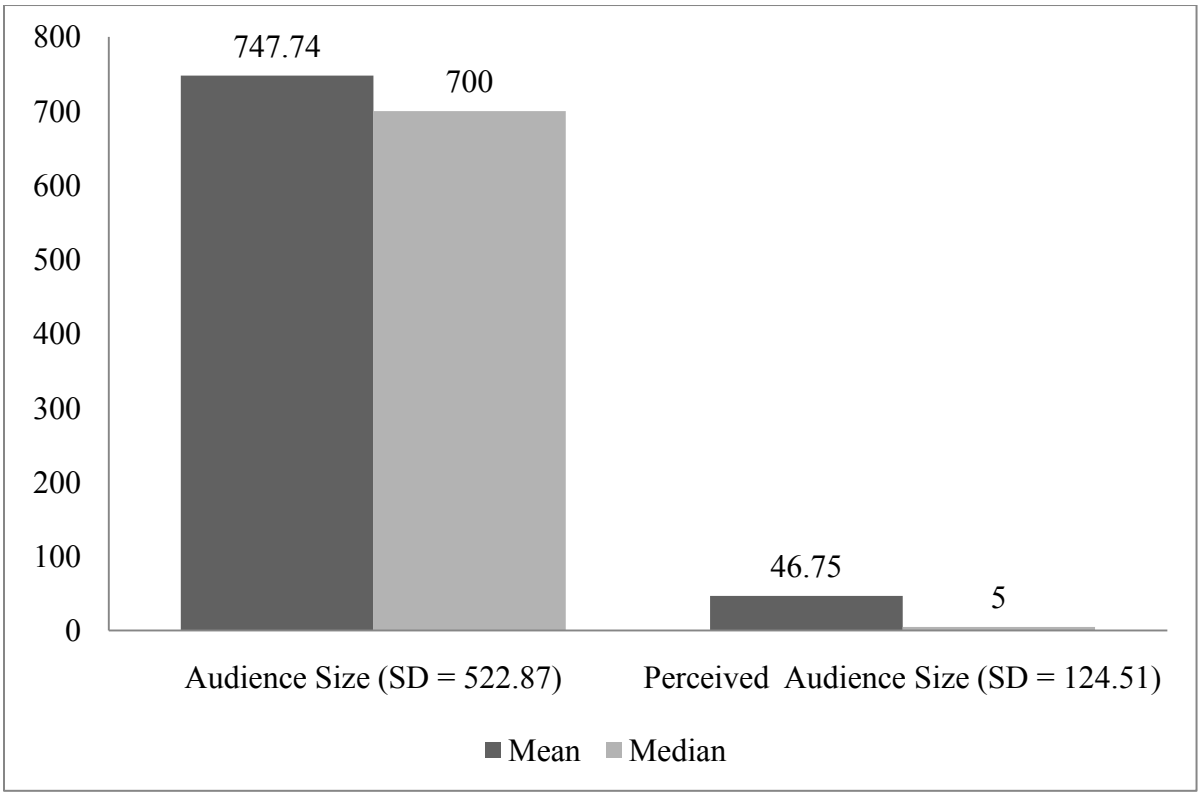


Figure 6.0 Perceived and Actual Audience Sizes



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