

6-2011

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**The Role of Personality on Persuasion to Exercise:
Does Conscientiousness, and Extraversion Moderate the Constructs of the Theory
of Planned Behavior?**

By

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**Submitted in partial fulfillment
of the requirements for
Honors in the Department of Psychology**

Union College

June, 2011

ABSTRACT

SAMUELS, AMANDA The role of personality on persuasion to exercise: Does Conscientiousness, and Extraversion Moderate the Constructs of the Theory of Planned Behavior? Department of Psychology, June 2011.

ADVISOR: Kenneth DeBono

The Theory of Planned Behavior (TPB) is a leading theoretical model used to explain the intention-behavior relationship as it relates to exercise. Even though TPB consistently explains some of the variance between intention and behavior, the rest of the variance has yet to be explained. This study investigates whether individual differences in terms of the Big Five personality dimensions, specifically, Conscientiousness and Extraversion, can account for any of the additional variance. The present research extends on past research by examining how personality relates to intention in terms of its relation to the constructs of TPB.

122 students at Union college participated in the experiment in which they were asked to complete personality inventories and read a persuasive message to exercise targeted at one of the constructs of the TPB: attitude towards the act, perceived behavioral control (PBC), or subjective norm (SN). It was hypothesized that for individuals high in conscientiousness the message targeted at PBC would produce greater intention to exercise whereas for individuals high in the extraversion dimension, messages targeted at both attitude towards the act and SN would predict greater intentions. Results support the first hypothesis, that individuals high in conscientiousness had a greater intention to exercise after the PBC message. In the second hypothesis, only SN was related to greater intentions. Implications concerning public health implementations to increase exercise are discussed.

The Role of Personality on Persuasion to Exercise

The statistics are alarming. 33% of adults over the age of 20 are characterized as obese, having a body mass index of 30.0 and above and an additional 34% of Americans are overweight (and not obese), with a body mass index between 25.0-29.9 (<http://www.cdc.gov/nchs/fastats/overwt.htm>, 2007-2008). Obesity leads to increased risk to coronary heart disease, hypertension, stroke, type 2 diabetes, certain types of cancer, and premature death. (www.cdc.gov/physicalactivity). Making matters worse, our unhealthy overweight population is a growing problem that costs our nation almost 150 billion dollars annually (<http://www.cdc.gov/media/pressrel/2009/r090727.htm>, 2009).

It is evident that our nation is on the verge of, or perhaps has reached, a national health crisis. Now that this problem is realized, a considerable body of research has been devoted to understand how to combat obesity, and a subset of this research is focused on increasing exercise behavior (Blanchard, Fisher, Sparling, Nehl, Rhodes, Courneya, & Baker, 2008; Connor, Rodger, & Murray, 2007; Hausenblas, Carron, & Mack, 1997; Jones, Sinclair, Rhodes, & Courneya, 2004; Kwan, Bray, & Martin Ginis, 2009; Norman & Smith, 1995; Rhodes & Courneya, 2003; Walsh, Soares da Fonseca, & Banta, 2005).

Theory of Planned Behavior

One promising approach in social psychological research is to employ the Theory of Planned Behavior (TPB) developed by Ajzen (1991), which specifies the intention-behavior relationship. Ajzen's (1991) theory posits that intention to perform a given behavior is the most powerful predictor of performing the behavior. Intention can predict behavior as it describes motivational factors that influence behavior: how much people want to struggle and the amount of effort they are willing to put forth.

Intention works in such a way that as strength of intention to engage in a specific behavior increases, the likelihood that the behavior will be enacted is enhanced (Ajzen, 1991).

But intention to perform a behavior is not the sole predictor of the actual performance, the model of TPB posits that ability, known as behavioral control, predicts not only the behavior itself but also intention (Ajzen, 1991). Specifically, *perceived*, more so than actual behavioral control, directly impacts behaviors according to TPB (Ajzen, 1991). Perceived behavioral control differs from internal locus of control, a stable generalized expectancy of ability, as it characterizes a perception that the individual has of how much control he or she has in executing the specific behavior (Ajzen, 1991; Jones et al., 2004). Perceived behavioral control reflects the perceived ease or difficulty of performing a behavior and accounts for not only past experience but also possible obstacles that have yet to be experienced (Ajzen, 1991). As a result, those who have higher perceived behavioral control are more likely to perform the behavior, as they are confident in their ability to master the behavior (Ajzen, 1991).

In addition to perceived behavioral control, Ajzen's (1991) TPB speculates that subjective norm as well as attitude towards the behavior influences intention. Subjective norm describes the perceived social pressure to either perform or refrain from a behavior. Subjective norm consists of two components, normative beliefs: the individual's beliefs that the people who are important to him or her support the individual in performing the behavior, and motivation to comply: which is the individual's motivation to follow the advice of these significant people (Ajzen, 1991). SN reflects the apparent social pressure to either execute or avoid the behavior (Jones et al., 2004).

The third construct of TPB is attitude toward the behavior, defined as both positive and negative salient information relevant to the behavior (Ajzen, 1991; Jones et al., 2004). Attitudes are formed from beliefs developed from the perceived outcomes of the behavior (Ajzen, 1991). Therefore positive attitudes result from desirable outcomes of a behavioral performance whereas, negative attitudes result when the unfavorable consequences of the behavior exceed the rewards (Ajzen, 1991). Two subcomponents form the attitude construct; affective judgments: the emotional beliefs concerning the behavior, and outcome evaluations: evaluations of the hypothesized consequences, meaning whether or not the consequences are grave enough to inhibit the performance of the behavior (Ajzen, 1991).

TPB has been widely tested in terms of its ability to predict exercise behavior. It is both a reliable and valid model for predicting intention to perform exercise behavior. In terms of exercise behavior, intention has been demonstrated to strongly correlate with behavior, and it is believed that if the intention is formed to exercise, the behavior will result (Hausenblas, Carron, & Mack, 1997). Reviews of TPB have found that 42-45% of the variance in intention to exercise is accounted by the constructs of TPB. TPB also accounts for 26-37% of the variance in actual exercise behavior (McEachan, Sutton, & Myers, 2010).

Theory of Planned Behavior and Exercise

Kwan, Bray, & Martin Ginis (2009) tested a population of first year college students. Students filled out baseline measures of physical activity and TPB variables. Eight weeks later, a follow up measure of physical activity was completed. Attitude towards the act was measured using a 7-point bipolar adjective scale, suggested by Ajzen (2002). Attitudes were assessed using outcome evaluations, the possible advantages and disadvantages of the behavior (McEachan, Sutton, & Myers,

2010). Outcome evaluations for attitude used adjectives such as harmful-beneficial, and useful-unuseful to describe behavior. The affective judgments of attitude, which relates to expected affections encountered during performance of the behavior, were assessed using the adjectives, pleasant-unpleasant, and fun-boring (Kraft, Rise, Sutton, & Røysamb, 2005).

Subjective norms were measured using the statement, "During the next 8 weeks, my close family members think I should be physically active (Kwan, Bray, & Martin Ginis, 2009, p. 47)." Participants were asked to respond using a 7-point Likert scale, 1 (strongly disagree) to 7 (strongly agree). The researchers used 4 target referential groups; close family members (example above), best friend, old high school friend, and the new people I met at university.

Perceived behavioral control (PBC) was measured using the statement, "During the next 8 weeks..." then followed by either, "How much control do you feel you have to be physically active, (Kwan, Bray, & Martin Ginis, 2009, p. 47)." or "If I wanted to I could easily be physically active (Kwan, Bray, & Martin Ginis, 2009, p. 47)."

Responses were measured on a 7-point likert scale 1 (extreme lack of control/extremely unconfident) to 7 (extreme control/extremely confident). All the questions used in this study represent efficacious measurements of each of these behavioral constructs.

Finally, intentions were measured by asking whether the participants intended or would try to be physically active in the upcoming 8 weeks. The results of Kwan, Bray, & Martin Ginis (2009), support the use of TPB in predicting exercise behavior in that moderate to strong correlations existed between the factors of TPB and intentions. They found attitude accounted for 29% of the variance in intentions, subjective norm accounted for 10% of the variance in intention, and PBC accounted for 24% of the

variance in intention. Specifically, results support TPB in that 37% of the variance in students' intentions was predicted by attitudes, subjective norms, and PBC.

Interestingly, results showed that participants generally had positive attitudes towards physical activity, thought important others wanted them to be physically active, had high PBC concerning their ability to exercise and had strong intention to be physically active.

Similar to the previous research, Blanchard et al. (2008) used TPB to predict intention to exercise in both African American and Caucasian college students. Similarly to Jones et al. (2004) PBC, attitude, and subjective norm were measured by behavioral questions concerning each of these constructs and answers were given on a 7-point Likert scale. These constructs were also able to predict intentions to perform exercise behavior in both Caucasian and African American students.

Although TPB posits that the combination of the three constructs better predict intentions, research also shows that under certain conditions, different constructs have better predictive validity than the other constructs. Blanchard et al. (2008) results showed that the TPB had different predictive validity for Caucasian students than African American students. For Caucasian students, perceived behavioral control accounted for 35% of the variance in intention and for African American students PBC accounted for 31% of the variance in intention. Despite the difference, PBC is still considered the strongest construct of TPB in its predictive ability of intention to exercise (Walsh, Soares da Fonesca, & Banta, 2005) Connor, Rodgers, & Murray (2007) argued PBC accounted for 47% of the variance in determining intention to exercise. Hausenblas, Carron, & Mack (1997) found PBC to account for 18% of the variance in intention, as well as 20% of the variance in behavior. Norman & Smith (1995) found PBC to account for 25% of the variance in behavior.

In terms of the predictive nature of both affective attitude, and outcome evaluations, previous research has also found that the attitudinal construct correlated relatively strong with intention (Kwan, Bray, & Martin Ginis, 2009; Blanchard et al., 2008; McEachon, Sutton, & Myers, 2010; Hausenblas, Carron, & Mack, 1997). Kwan, Bray, & Martin Ginis (2009) demonstrated that among first year college students, attitude towards exercise behavior accounted for 29% of the variance in intention. Blanchard et al. (2008) found affective attitude to account for 23% of the variance in intention in African American students, whereas in Caucasian students, affective attitude accounted for 37% of the variance in intention and outcome evaluations accounted for 20% of the variance in intention. McEachon, Sutton, & Myers (2010) found affective attitude to account for 23% of the variance in intention, and 10% of the variance in behavior. In their meta-analysis of TPB, Hausenblas, Carron, & Mack (1997) found attitudes to account 27% of the variance in intention and 15% of the variance in behavior.

The third construct, subjective norm, has had mixed results in its predictive strength of intention. Kwan, Bray, & Martin Ginis found a correlation of $r=.32$ between SN and intention. McEachon, Sutton, & Myers (2010) found normative beliefs towards exercise, correlated with intention $r=.24$ and somewhat less with behavior, $r=.15$. Yet on the other hand, Blanchard et al. (2008) and Connor, Rodgers, & Murray (2007) found very minute correlations for the ability of subjective norms to predict intentions.

The Big Five Personality Dimensions

Previous research suggests that although TPB predicts 42-45% of the variance in intention to exercise, and 27-36% of the variance in exercise behavior (McEachon, Sutton, & Myers, 2010), that each construct: perceived behavioral control, attitude

toward the act, (affective attitudes and outcome evaluations) and subjective norm, (normative beliefs and motivation to comply) has its own predictive ability and accounts for varying amounts of variance in exercise, some constructs greater than others. The differences in predictive validity of each construct leads to the possibility that there might be other dimensions that moderate TPB. In particular, individual differences could account for the divergences in the ability of TPB components to predict intention and therefore behavior. These differences are reason to suspect differences in particular personality dimensions might have a moderating effect on the constructs of the TPB and the theory as a whole.

There is prior evidence that individual differences on personality dimensions exhibit differences with respect to health and that certain personality factors may contribute more heavily to certain health behaviors (Lemos-Giraldez & Fidalgo-Aliste, 1997). Although there is a multitude of dimensions that can encompass the broad construct of personality, the five-factor model (FFM) of personality has become known as a reliable predictor of health behavior (Raynor & Levine, 2009). Though personality can be described in a seemingly unlimited amount of adjectives, the Big 5 model classifies all dimensions into five broad domains described as conscientiousness, extraversion, agreeableness, openness to experience, and neuroticism.

Individuals who are conscientious strive for competence, achievement, order, and are highly disciplined (Raynor & Levine, 2009). Conscientious individuals have the tendency to be methodical, reliable, and goal oriented (Booth-Kewley & Vickers, 1994). They describe themselves as someone who keeps their belongings neat and clean and not as someone who wastes time before settling down to work (McCrae & Costa, 2004).

Extraversion is a personality facet in which people describe themselves as talkative, full of energy, and unreserved (John & Srivastava, 1999). They enjoy the company of others, being active, assertive, and seek stimulation (Raynor & Levine, 2009). These individuals are outgoing, sociable and have the tendency to experience positive emotion (Booth-Kewley & Vickers, 1994).

Agreeableness refers to being cooperative, tolerant, courteous, compassionate, and good-natured (Raynor & Levine, 2009). Individuals who are agreeable describe themselves as helpful and unselfish with others and as someone who does not start quarrels with others. They try to be courteous to others, and they would rather cooperate with others than compete (McCrae & Costa, 2004).

Individuals who score high on the openness measure are intelligent, imaginative, curious, flexible, and broad-minded (Raynor & Levine, 2009). These individuals agree that they are original and like to come up with new ideas and disagree with statements suggesting they have few artistic interests (John & Srivastava, 1999).

Neuroticism, the fifth factor, is often described as a negative trait. Neurotic individuals easily experience unpleasant and negative emotions such as anxiousness, pessimism, fear, insecurity, and sadness (Raynor & Levine, 2009). They describe themselves as depressed, tense, shy, and inhibited (John & Srivastava, 1999). Therefore, those low in neuroticism describe themselves as relaxed, able to handle stress well, and remain calm in tense situations (John & Srivastava, 1999).

The Importance of Conscientious and Extraversion

Previous research in this domain has found consistent support that models that include TPB and personality explain 70% of the variance in intention to exercise (Hoyt, 2009). In addition there has been support for conscientiousness and extraversion as important personality dimensions unto which correlate with exercise

behaviors (Hoyt, 2009). Individuals high in conscientiousness and extraversion also have greater motivation towards exercise (Hung, Lee, & Chang, 2009).

Conscientiousness has been more strongly correlated with health-related behaviors than other personality dimensions, particularly health protection (Connor, Rodgers, & Murray, 2007). People who are high in conscientiousness have better health practices, including more exercise (de Bruijn, Brug, & Van Lenthe, 2009). There has even been some evidence for a direct correlation between conscientiousness and performing exercise behavior (Conner & Abraham, 2001).

Connor, Rodgers, & Murray (2007) hypothesized that due to the association between increased motivation and conscientiousness, conscientiousness may be even more important in moderating intention to perform exercise when the normal routine is challenged, as it is during the reading week before exams at universities. Consistent with this hypothesis, Connor, Rodgers, & Murray's (2007) results showed that conscientiousness did moderate the intention-behavior relationship for the reading week, whereas it did not serve as an indicator of intention during the normal term. When activity is stable, conscientiousness does not need to serve a role in intention because order has already been established, but during instability, conscientiousness becomes a moderator, as it is the goal of those high in conscientiousness to control one's behavior and to be self-disciplined.

Another characteristic of those who are high in conscientiousness is the ability to delay immediate gratification (Lemos-Giraldez & Fidalgo-Aliste, 1997). There is not immediate gratification that results from exercise, so having the ability to delay immediate gratification, would give an individual greater control in performing exercise behavior, supporting the possibility that conscientiousness moderates TPB.

In addition to the association between conscientiousness and increased motivation, past research suggests that some of the facets that make up conscientiousness itself may be associated with exercise. Hoyt (2009) found that questions which measure conscientiousness in terms of achievement striving and self-discipline correlate with PBC. Other research has found that measures of industriousness-ambition as a part of conscientiousness also predict intention to exercise (Rhodes, Courneya, & Jones, 2005).

Overall, past research has found strong evidence for the relationship between conscientiousness and exercise. The present research extends upon previous findings by looking at the reasons why conscientiousness leads to increased intentions to exercise. Although the relationship between conscientiousness and intention is known, what remains to be discovered is the particular relationship between the constructs of TPB and personality, in terms of their combined ability to predict intention. Even though conscientiousness has been previously linked to better health practices, perhaps the elements of conscientiousness, motivation, delay of gratification, achievement striving, self-discipline, and industriousness-ambition, support individuals to increase intention to exercise. Being reminded of these elements may directly serve the purpose of enhancing intention to exercise. Therefore, the present research suggests that the link between conscientiousness and exercise may be a result of a conscientious individual's affinity for control, relating to the PBC construct. Therefore, for individuals who characterize themselves as conscientiousness, specifically, highly-disciplined, methodical, and goal oriented, being reminded of these characteristics and their relation to exercise will increase intention to exercise and according to TPB their subsequent behavior.

Extraversion has also been researched in regards to exercise as a moderator of TPB (Courneya, Bobick, & Schinke, 1999; Raynor & Levine, 2009). Past research has already concluded the inverse relationship: higher-level exercisers, as well as athletes also have higher levels of extraversion (Huang, Lee, & Chang, 2007).

Extraverts are characterized by being active, enjoying the company of others, and experiencing positive emotion. These behaviors are likely to project an enhancement of exercise behavior as extraversion is associated with positive affect towards exercise, and exercise behavior gives extraverts their need for relatedness (Huang, Lee, & Chang, 2007).

Rhodes, Courneya, & Jones (2002) found that the total effect of extraversion, PBC and intention explained 54.7% of the variance in exercise behavior. Though, after computing the variance, it was hypothesized that the one element of extraversion actually allowed for the relationship. Rhodes, Courneya, & Jones (2002) believed that the questions regarding activity and the individual's likelihood to seek out situations where they can be active, known as the activity facet of extraversion, accounted for the variance in the TPB and extraversion model's ability to explain intention to exercise. Rhodes, Courneya, & Jones (2002) and Rhodes & Courneya (2003) hypothesized that if all questions measuring extraversion were eliminated except those questions measuring the activity facet, there would be no difference in variance. Counting for only extraversion's activity facet, combined with the perceived behavioral control and intention accounted for 54.4% of the variance in exercise behavior (Rhodes, Courneya, & Jones, 2002). The similar percentages of variance suggest that in the first model, the measures regarding activity accounted for the entirety of the effect (Rhodes, Courneya, & Jones, 2002).

Further research on extraversion and the activity facet supports that not only does the activity facet predict greater intention to exercise, but it also has an effect on affective attitudes and outcome evaluations (Hoyt, 2009). Hoyt (2009) also suggested that other facets of extraversion, particularly warmth, excitement seeking and positive emotion may have a moderating effect on TPB.

Previous research on the ability of extraversion to moderate TPB and predict intention to exercise, focused on an extravert's affinity for activity. In terms of the positive association between extraversion and activity, extraversion may serve to moderate TPB as extraversion relates to an individual's positive attitude towards exercise. On the other hand, although Huang, Lee, & Chang (2007) posited that exercise serves an extravert's need for relatedness, there has been very little research examining how others may affect extraversion's ability to increase intention to exercise. In addition to having an affinity for being active, extraverts also agree to statements, which describe enjoying having a lot of people around them, enjoying talking to people, and that they like to be where the action is. Therefore, extraversion scores may help moderate TPB not only due to its association with attitude, but perhaps in relation to SN as well.

Although past research has begun to surmount evidence that along with TPB personality is important in determining intention to exercise, the present research looks to extend on past research by examining the reasons behind these findings. Furthermore the present research uses an experimental manipulation to look at the relationship between the constructs of TPB and personality as they relate to exercise. Whereas past research has found that models, which include personality, explain 70% of the variance in intention to exercise (Hoyt, 2009), it is still unknown how personality can be used to persuade an individual to increase intentions to exercise.

The current research focuses on the characteristics of conscientiousness, highly-disciplined, methodical, and goal oriented, and extraversion, active, full of energy, and enjoyment of being around others, as moderators of the individual constructs of TPB. To the extent that conscientiousness has been found to relate to PBC, it should be the case that individuals would be more responsive to an argument that targets perceived behavioral control. Therefore, it was hypothesized that scores on the conscientiousness dimensions would predict intention to exercise after having read a message targeting PBC. To the extent that extraversion has been found to relate to both attitude towards the act and subjective norm, it should also be the case that individuals should be more responsive to either an argument that targets attitude, or SN. As a result it was also hypothesized that scores on extraversion would predict intention for two different groups of individuals, those who had read a message targeted at attitude towards exercise and also those who had read a message targeting the construct of SN.

In the present study all participants completed the Neuroticism Extraversion Openness Five-Factor Inventory (NEO-FFI) personality assessment (McCrae & Costa, 2004) and were randomly selected to read one of the three messages, targeting PBC, attitude towards exercise, and SN. Following the persuasive attempt they completed an additional personality assessment, Big Five Inventory (BFI) (John & Srivastava, 1999), as well as a behavioral assessment of the likelihood that they will engage in exercise. The assessment included additional questions to examine how the different constructs, PBC, attitude towards the act, and SN related to intention. Persuasion of the message and past behavior was also measured.

Methods

Participants

123 undergraduate students at a small private liberal arts college took part in this study. One participant was dropped from the final analyses due to failure to answer enough questions. The resulting total was 122 participants, (90 females and 32 males). Participants were either compensated monetarily with four dollars, or received class credit for their participation.

Procedure

After participants arrived at the laboratory, they signed a consent form, thereby agreeing to participate in the study. Participants were told that the subject of study concerned people's opinions and behaviors concerning exercise. Participants were then handed a packet of questionnaires in the following order, the NEO-FFI, a persuasive message, the BFI, and the behavioral questions assessing, intention, attitude, perceived behavioral control, past behavior, and persuasiveness of the message. Directions telling participants how to answer the questions were provided on the packet to ensure internal validity.

NEO-FFI. The first inventory used was the Neuroticism, Extraversion, Openness Five-Factor Inventory developed by McCrae & Costa (1992). The NEO-FFI contains 60 statements that measure the five personality dimensions, neuroticism, (e.g., I often feel tense and jittery), extraversion, (e.g., I like to have a lot of people around me), openness to experience, (I am intrigued by the patterns I find in art and nature), agreeableness (e.g., I would rather cooperate with people than compete with them), and conscientiousness (I keep my belongings neat and clean). Individuals give themselves a score on each statement, ranging from one to seven, one characterizing low tendency to experience that dimension and seven indicating high accord with the sentiments of the dimension. Each dimension has 12 items pertaining to their characteristics, and a total sum of the scores received on all 12

items, some statements being reverse scored, are calculated for a score in each dimension (See Appendix A).

BFI. The Big Five Inventory, developed by John & Srivastava, (1999), was also used to assess personality. The BFI uses short phrases known to be prototypical markers. The BFI consists of 44 questions which also measure the five personality dimensions, neuroticism, 8 items, (e.g., is depressed blue), extraversion, 8 items, (e.g., is talkative), openness to experience, 10 items, (e.g., is original, comes up with new ideas), agreeableness, 9 items, (e.g., is helpful and unselfish with others), and conscientiousness, 9 items, (e.g., is a reliable worker) (See Appendix B).

Each persuasive message targeted a different factor of the Theory of Planned Behavior, perceived behavioral control, subjective norm, and attitude towards the act. The message targeting perceived behavioral control, contained statements such as, “35 minutes is only half of one class period, if you can sit through an entire class you definitely can withstand half the amount of time at the gym” or “you can even exercise for an hour Monday through Thursday and take time to relax for the entire weekend.” (See Appendix D). The message targeting subjective norm contained the following types of statements, “everyone at *your college* is making the change to exercise for the recommended amount. Students are running together, taking fitness classes together and signing up for intramurals with their friends.” and “if you ask the members of your family they will agree too, exercising the recommended amount is extremely important!” (See Appendix E). The third message was directed at attitude towards the act and consisted of statements such as “exercise is a great way to get rid of the build up of stress in your body, giving you endorphins leaving you feeling happy and energized” and “you will find that exercising leaves you with a clear mind and is actually very enjoyable.” (See Appendix C).

After reading the messages participants completed questions concerning the constructs of TPB; intentions, attitudes, perceived behavioral control, and attitude towards exercise. An additional question assessed past behavior (See Appendix F).

Intention. A measure of exercise intention assessed likeliness to perform exercise the recommended amount, 35 minutes per day or the equivalent of 4 hours per week. Following Jones et al. (2004) recommendations measures were written to tap into participants' intentions following the message (2 items: e.g., I intend to exercise for at least 35 minutes a day or the equivalent of 4 hours per week and I will not try to exercise for the equivalent of 4 hours per week or 35 minutes a day). Items were measured on a 7-point Likert scale, from extremely likely to extremely unlikely.

Attitude. Affective attitudes towards exercising for the recommended amount, 35 minutes per day or the equivalent of 4 hours per week, were measured using semantic differentials. As suggested by Jones et al. (2004) two questions (For me to exercise 35 minutes a day or the equivalent of 4 hours a week would be...) were answered on a 7-point Likert scale from extremely pleasant/enjoyable to extremely unpleasant/enjoyable.

Subjective norm. Normative beliefs about exercising for the recommended amount, 35 minutes per day or the equivalent of 4 hours per week, were measured in two questions (Jones et al., 2004), (e.g., Most people who are important to me think I should exercise for 35 minutes per day or the equivalent of 4 hours per week, and The people in my life whose opinions matter would not approve of me if I didn't exercise for the equivalent of 4 hours per week or 35 minutes per day). Answers were given on a 7-point Likert scale from strongly agree to strongly disagree.

Perceived behavioral control. PBC concerning the ability to exercise for the recommended amount, 35 minutes per day or the equivalent of 4 hours per week,

was measured using semantic differentials. Following the recommendation of Jones et al., (2004) measures were written to test the extent of control participants felt concerning the recommended behaviors, 35 minutes per day or the equivalent of 4 hours per week, (e.g., For me to exercise for 35 minutes a day or for hours per week would be, and how much control do you believe you have over exercising for 4 hours per week or 35 minutes per day.

Past behavior. Past behavior was measured in one questions asking whether participants currently exercise the recommended amount, 35 minutes per day or the equivalent of 4 hours per week and measured on a 7-point Likert scale, from strongly agree to strongly disagree.

After participants finished the packet of questionnaires, they were debriefed. Participants had the opportunity to ask any further questions and then were compensated for their time.

Results

The analysis is divided into four parts. The first part describes the measures that were part of the experimental method. The second part examines the hypotheses of the study. The third part describes the constructs of the theory of planned behavior and the part 4 reports the relationships associated with past behavior.

Part 1: Measures

Personality. In order to get an accurate measure of personality, participants took two different personality inventories, the NEO-FFI, and the BFI. The two tests measured the same five personality dimensions, neuroticism, extraversion, openness, agreeableness, and conscientiousness. Surprisingly, even though each dimensions was correlated with the same dimension on the other inventory, the correlations were not particularly strong considering they were in theory measuring

the same trait. The strongest correlation was between the two conscientious dimensions, $r=.79$. Other research examining personality and the TPB as it relates to exercise consistently measures personality using the NEO-FFI, therefore for the rest of the results, personality will only be discussed in terms of scores on the NEO-FFI. In order to determine internal consistency, a Chronbach's alpha was computed for the individual dimensions of the NEO-FFI scales. A Chronbach's alpha of .82 was computed for conscientiousness, suggesting the scale had good internal consistency. For extraversion, a Chronbach's alpha of .76 was computed, another good indication of internal consistency. A Chronbach's alpha for neuroticism of .83 was computed, as well as for agreeableness of .70, which are also good indicators of internal consistency. Lastly, the Chronbach's alpha was computed for Openness of .60, not as strong of an indicator of internal consistency as one could have hoped.

Behavioral Measures. The behavioral questions were both positive and negative in nature to avoid skewed results in terms of agreeing or disagreeing with all the questions. Again, the correlations between questions measuring the same construct (i.e., intention, attitude), were not as strong as one could have hoped. Answers were more consistent with the positively worded questions, so only those questions will be used to analyze the data.

Persuasive Messages. Three persuasive messages to exercise were devised each targeting one of the three constructs of TPB, attitude towards the act, PBC, and SN. In order to find whether overall the messages were found to be persuasive, a mean ($M = 4.07$) was calculated using the question which asking whether the individual found the message to be persuasive. A one-way ANOVA test was performed in order to ensure that each message did not have varying degrees of persuasiveness.

Persuasive message did not significantly differ as a function of condition, $F(2, 117) = .76, p > .05$.

Part 2: Predictions

Perceived Behavioral Control Condition. As predicted, individuals high in conscientiousness in the PBC condition, those who read a persuasive message targeting the PBC construct, were more inclined to intend to exercise. A regression analysis was performed for the participants in the PBC condition to test the hypothesis using the 5 personality dimensions as the independent variable and intention to exercise was the dependant variable. Scores on the conscientiousness dimension significantly predicted intention to exercise, $t(41) = 1.96, \beta = .30, p = .058$. As predicted, the other four personality dimensions, neuroticism, extraversion, agreeableness, openness, did not significantly predict intentions for individuals in the PBC condition.

Subjective Norm Condition. As expected, individuals high in the extraversion dimension in the SN condition were more likely to intend to exercise. A regression analysis was performed of participants within the SN condition to test the hypothesis using the 5 personality dimensions as the independent variable and intention to exercise was the dependant variable. Scores on the extraversion dimension significantly predicted intention to exercise, $t(40) = 2.03, \beta = .32, p = .05$. As predicted, the other four personality dimensions, neuroticism, conscientiousness, agreeableness, openness, did not significantly predict intentions to exercise for individuals in the SN condition.

Attitude Towards Exercise Condition. The second part of the hypothesis, that individuals high in extraversion would be more likely to intend to exercise after reading a message targeting attitude towards the act was not supported. A regression

analysis with participants in the Attitude towards the act condition was performed to test the hypothesis using the 5 personality dimensions as the independent variable and intention to exercise was the dependant variable. Scores on the extraversion dimension did not significantly predict intention to exercise in the attitude condition, $t(38) = .95$, $\beta = .21$, $p = .35$. In addition, as predicted, the other four personality dimensions, neuroticism, conscientiousness, agreeableness, openness, also did not significantly predict intentions for individuals in the perceived behavioral control condition.

Part 3: Constructs of TPB

In addition to testing whether conscientiousness and extraversion moderate TPB, the experiment also examined whether responses concerning participants' attitude, PBC, and SN, were related to intention among the three experimental conditions. For example, did individuals in the attitude condition, have a higher rating on attitude towards exercise than individuals in the PBC and SN conditions and how did their attitude relate to intention.

Attitude: Among the three experimental conditions, mean scores for attitude towards exercise did not differ significantly, Attitude ($M = 4.21$), PBC ($M = 4.33$), and SN ($M=4.39$). However, attitude was only significantly related to intention in the attitude condition and SN condition. A separate regression analysis was performed for each of the three experimental conditions in which the constructs, attitude towards exercise, PBC, and SN were the independent variables and intention was the DV. For individuals in the attitude condition, attitude towards exercise significantly predicted intention, $t(37) = 5.62$, $\beta = .49$, $p < .001$. For individuals in the SN condition, attitude towards exercise also significantly predicted intention,

$t(40) = 2.47, \beta = .40, p = .02$. For individuals in the PBC condition, attitude towards exercise was not a significant predictor of intention.

Perceived Behavioral Control: Among the three conditions, mean scores for PBC did not differ significantly, attitude ($M=4.46$), PBC ($M=4.69$), and SN ($M=4.63$). In addition, in all three conditions, PBC was significantly related to intention. For individuals in the attitude condition, PBC significantly predicted intention, $t(37) = 3.65, \beta = .39, p = .001$. For individuals in the PBC condition, PBC significantly predicted intention, $t(41) = 2.70, \beta = .34, p = .01$. Lastly, for individuals in the SN condition, PBC also significantly predicted intention, $t(40) = 2.27, \beta = .35, p = .03$.

Subjective Norm. Among the three conditions, mean scores for SN did not differ significantly, Attitude ($M = 4.077$), PBC ($M = 4.048$), and SN ($M = 4.416$). In addition, responses on the SN construct did not significantly predict intention in any of the experimental conditions, including the SN condition itself.

Part 4: Past Behavior

As expected, past exercise behavior and intention to exercise were strongly correlated, $R = .84, p < .001$ such that individuals who have exercised in the past are more likely to intend to exercise in the future.

Conscientiousness. In terms of personality, the current research was unable to replicate past research (Connor & Abraham, 2001), that individuals who are high in conscientiousness are more likely to exercise. A regression analysis was performed using participants in all conditions, in which the 5 personality dimensions were the independent variables and past behavior was the dependant variable.

Conscientiousness did not significantly predict past behavior, $t(121) = 1.08, \beta = .10, p = .28$.

Openness. In addition, results using the NEO-FFI showed that individuals who are high on the openness dimension are likely to not exercise. Openness significantly predicted past behavior to refrain from exercise, $t(121) = -2.66$, $\beta = -.24$, $p = .009$.

Discussion

The results of the experiment support the first hypothesis that after reading a message targeting perceived behavioral control, an individual's scores on conscientiousness better predicted intention to exercise than their scores on the other four personality dimensions, extraversion, neuroticism, agreeableness, and openness. The results also support part of the second hypothesis in that individuals' scores in extraversion were more likely to predict intentions compared with scores on the other four personality dimensions after reading a message targeting subjective norm. Yet, scores on the extraversion dimension was unable to predict intention when individuals read a message targeting their attitude towards exercise.

Previous research on the TPB and exercise has consistently found that the constructs of TPB account for 42-45% of the variance in intention (McEachan, Sutton, & Myers, 2010), but the explanation for the remaining 50% is left unknown. In the current research, for individuals who have read a message targeting the construct of PBC, TPB accounted for 30% of their variance in intention to exercise, and conscientiousness accounted for an additional 6% of the variance, $p = .06$. The entire model, TPB constructs plus conscientious accounted for 36% of the intention to exercise. For individuals who have read a message targeting the SN construct, TPB accounted for 48% of the variance in intention to exercise, yet, extraversion did not significantly account for any of the additional variance in intention.

The current research extends previous research on intention to exercise, as it not only examined whether personality predicts intention but how personality moderates

the constructs of TPB. The message that targeted PBC described how the individual could exercise for only half of one class period, and if they could sit through an entire class they could definitely withstand half the amount of time at the gym. For a conscientious individual, messages like this one, fulfill their inclination have things in control and planned ahead, which may underlie their intention to exercise.

In addition, the inability to replicate past findings (Connor & Abraham, 2001) which suggested conscientious individuals are more likely to exercise (measured through past behavior) gives further support of the current findings. The results of the present study suggest conscientious individuals are not more likely to exercise but rather when faced with a message highlighting the aspects of control of exercising, a conscientious individual is more likely to intend to exercise. Therefore, PBC is an important determinant for intention to exercise for conscientious individuals.

Past research on extraversion as it relates to intention to exercise suggests that the variance that accounts for exercise intention and extraversion is explained only through extraversion's activity facet, which is the individual's likelihood to seek out situations where they can be active. The current research did not test the activity facet, yet results showed extraversion to be a significant predictor of intention under the SN condition. These results give rise to another explanation of why individuals high in extraversion have greater intention to exercise. The message targeting the SN used phrases such as, everyone at *your college* is making the change to exercise for the recommended amount. Students are running together, taking fitness classes together and signing up for intramurals with their friends. Another statement told individuals that if they ask the members of your family they will agree too, exercising the recommended amount is extremely important! These statements target an

individual who is high in extraversion's need for relatedness (Huang, Lee, & Chang, 2007). The current research therefore suggests an additional motivation that underlies an individual who is high in extraversion's intention to exercise is their need for relatedness.

In addition to the two main hypothesis, alternate tests were performed to see the ability of the different constructs; attitude towards exercise, PBC, and SN to predict intention to exercise under the different conditions. For individuals who read the message targeting attitude towards exercise, their attitudes towards exercise as well as their perceived behavioral control towards exercising the recommended amount, 35 minutes a day or the equivalent of 4 hours a week, both significantly predicted their intention to exercise. For individuals who read the message targeting PBC, only their PBC towards exercise was able to significantly predict their intention to exercise. And for individuals who read the message targeting SN, both their attitude towards exercise as well as their PBC towards exercise was able to significantly predict their intention to exercise.

These results support past research that has found PBC to account for a great proportion of the variance in intention to exercise in terms of TPB (Connors, Rodgers, & Murray, 2007; Norman & Smith, 1995; and Hausenblas, Carron, & Mack 1997). Connor, Rodgers, & Murray, (2007) argued PBC accounted for 47% of the variance in determining intention to exercise. Hausenblas, Carron, & Mack (1997) found PBC to account for 18% of the variance in intention as well as 20% of the variance in behavior. Norman & Smith (1995) found perceived behavior control to account for 25% of the variance in behavior. Regardless of condition, PBC significantly predicted intention to exercise, and surprisingly, it was a stronger prediction of intention in the attitude condition compared with the PBC condition.

In addition, previous research has consistently found SN to be the least significant predictor of intention in the TPB model. Likewise, the results of the present research did not find SN to significantly predict intention in any of the three conditions.

The present research presents many implications on working towards increasing exercise behavior. While our nation is amid the current health crisis, it is of the utmost importance for public health officials, lawmakers, educators, even laypersons to work towards the common goal of increasing our nation's health. Increasing intention to exercise and exercise behavior are key factors in making our goals towards a healthier nation a reality.

If exercise intention varies according to personality and the type of message can help predict and therefore increase exercise, public health officials must work to target messages accordingly. Even though we cannot know the personality dimensions of every person living in the United States, by devising various messages, each targeting a different construct of TPB, especially, PBC and SN, which would be displayed in magazines, and billboards, heard on the radio and watched on the television, it is likely that at least one type of message will persuade an individual to exercise.

In addition, individuals whose job it is to work one on one with another to enhance their health; doctors, nutritionists, and personal trainers, can use the individual's personality in order to enhance intention to exercise. If they appeal to the ways that will best persuade their personality, it is likely intention will increase. For example for individuals high in extraversion, having an important person to the individual exercise with them, give them positive encouragement and reminders of

the importance of exercise for both the individual and the person giving encouragement, will likely augment exercise intention and exercise behavior.

There are some limitations to the present research, which call for further research in order to examine their impact. First of all, it was quite surprising to find that two well-known and well-used personality scales did not greatly correlate with one another. Whereas the NEO-FFI has been the scale most often used for research on exercise and TPB, the BFI is still a reliable and valid measure of personality. Why were the correlations between the two scales not extremely strong? The current research leaves this question undetermined but it would be important to test this occurrence. It could be that the way the questions are phrased in the NEO-FFI or the additional amount of questions in the NEO-FFI allows for a better measure of exercise intention. Without proper experimentation, this question remains unanswered.

A second limitation results from the inability of the positively and negatively worded questions testing attitudes, PBC and SN to correlate highly as well. Perhaps with a greater amount of semantic differentials (only 2 were used in the current research to test each concept) the correlations would strengthen.

It also stands to reason that a more representative population may make the results less significant. The current participants all attended a small liberal arts college where the majority of participants already exercised the recommended amount. In addition, the college allows for free use of the gym with tuition. It is unlikely that in a more representative population, the majority of participants would already exercise the recommended amount as well as have access to a gym facility in which they could behave according to their intention. It is likely that some individuals see that inability to access a gym as a reason for why they do not exercise.

These limitations in addition to some of the findings provide suggestions for further research. It would be important to see whether the results stand significant in a population with less access to exercise facilities as well as less favorable attitudes towards exercise before beginning the experiment.

In addition, the current research only made predictions concerning two of the personality dimensions, conscientiousness and extraversion, the two of which have been found to relate the greatest with intention to exercise (Connor, Rodgers, & Murray, 2007; de Bruijn, Brug, & Van Lenthe, 2009; Hoyt, 2009; Rhodes, Courneya, & Jones, 2005; Huang, Lee, & Chang, 2007; Rhodes, Courneya, & Jones, 2002; and Rhodes & Courneya, 2003). Yet, the current research found that the openness dimension predicted intention to not exercise compared to conscientiousness, extraversion, and agreeableness. In addition, although scores on neuroticism could not significantly predict past behavior, it was negatively related to past exercise behavior. We must work to find manners to persuade individuals high in the openness and neuroticism dimensions to exercise? It very well may be that these are the individuals that require the greatest help.

The present research extends the literature on the validity of TPB in predicting exercise intention as well as helping to explain the remaining variance between intention to exercise and TPB. The present research found the conscientiousness dimension to account for 6% of the additional variance in TPB, when the individual read a message targeting PBC. The present research extends upon previous findings by looking at the reasons why conscientiousness leads to increased intentions to exercise. Although the relationship between conscientiousness and intention is known, what remains to be discovered is if the constructs of TPB combined with an individual's personality accounts for the strengthened intention.

The present research also found the ability of extraversion scores to predict intention after an individual read a message targeting SN. The model including TPB and extraversion for individuals who read the SN message accounted for 48% of the variance in intention. Therefore the present research also gives evidence that SN relates to extraversion, which then allows for increased intention. The results suggest that providing messages that target the constructs of TPB may help to increase exercise intention for individuals, dependant upon their personality differences. This should be one potential tool used in helping lift the country at of the current obesity crisis.

References

- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Blanchard, C., Fisher, J., Sparling, P., Nehl, E., Rhodes, R. E., Courneya, K. S., & Baker, F. (2008). Understanding Physical Activity Behavior in African American and Caucasian College Students: An Application of the Theory of Planned Behavior. *Journal of American College Health*, 56, 341-346.
- Booth-Kewley, S. & Vickers, Jr., R. R. (1994). Associations between Major Domains of Personality and Health Behaviors. *Journal of Personality*, 62, 261-298.
- de Bruijn, G-J., Brug, J., & Van Lenthe, F. J., (2009). Neuroticism, conscientiousness and fruit consumption: Exploring mediator and moderator effects in the theory of planned behavior. *Psychology and Health*, 24, 1051-1069.
- Center for Disease Control. (2008). *Obesity and Overweight*. Hyattsville, MD.
<http://www.cdc.gov/nchs/fastats/overwt.htm>.
- Center for Disease Control. (2010). *Physical Activity*. Atlanta, GA.
<http://www.cdc.gov/physicalactivity/>.
- Center for Disease Control. (2009). *Study Estimates Medical Cost of Obesity May Be As High as \$147 Billion Annually*. Atlanta, GA.
<http://www.cdc.gov/media/pressrel/2009/r090727.htm>.
- Connor, M. & Abraham, C. (2001). Conscientiousness and the Theory of Planned Behavior: Toward a more Complex Model of the Antecedents of Intention and Behavior. *Personality and Social Psychology Bulletin*, 27, 1547-1561.
- Connor, M., Rodger W., & Murray, T. (2007). Conscientiousness and the Intention-Behavior Relationship: Predicting Exercise Behavior. *Journal of Sport & Exercise Psychology*, 29, 518-533.

- Courneya, K. S., Bobick, T. M., & Schinke, R. J., (1999). Does the Theory of Planned Behavior Mediate the Relation Between Personality and Exercise Behavior. *Basic and Applied Social Psychology, 21*, 317-324.
- Fishbein, M., & Ajzen, I. (2010) Predicting and Changing Behavior. New York: Psychology Press.
- Hausenblas, H. A., Carron, A. V., & Mack, D. E. (1997). Application of the Theories of Reasoned Action and Planned Behavior to Exercise Behavior: A Meta-Analysis. *Journal of Sport & Exercise Psychology, 19*, 36-51.
- Hoyt, A. (2009). Integrating five-factor model facet-level traits with the theory of planned behavior and exercise. *Psychology of Sport and Exercise, 10*, 565-572.
- Huang, C-H., Lee, L-Y., & Chang, M-L. (2007). The Influence of Personality and Motivation on Exercise Participation and Quality of Life. *Social Behavior and Personality, 35*, 1189-1210.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement. And theoretical perspectives. In L.A. Pervin & O. P. John (Eds.). Handbook of personality: Theory and Research (2nd ed.) New York: Guilford Press.
- Jones, L. W., Sinclair, R. W., Rhodes, R. E., & Courneya, K. S. (2004). Promoting exercise behaviour: An integration of persuasion theories and the theory of planned behavior. *British Journal of Health Psychology, 9*, 505-521.
- Kraft, P., Rise, J., Sutton, S., & Røysamb, E. (2005). Perceived difficult in the theory of planned behaviour: Perceived behavioural control or affective attitude? *British Journal of Social Psychology, 44*, 479-496

- Kwan, M. Y. W., Bray, S. R., & Martin Ginis, K. A. (2009). Predicting Physical Activity of First-Year University Students: An Application of the Theory of Planned Behavior. *Journal of American College Health, 58*, 45-52.
- Lemos-Giraldez, S. & Fidalgo-Aliste, A. M. (1997). Personality dispositions and health-related habits and attitudes: a cross-sectional study. *European Journal of Personality, 11*, 197-209.
- McCrae, R.R., & Costa, P.T. (2004). *Personality in Adulthood*. New York: The Guilford Press.
- McEachan, R. R. C., Sutton, S., & Myers, L. (2010). Mediation of Personality Influences on Physical Activity within the Theory of Planned Behavior. *Journal of Health Psychology, 15*, 1170-1180.
- Norman, P., & Smith, L. (1995). The theory of planned behaviour and exercise: an investigation into the role of prior behavior, behavioural intentions, and attitude variability. *European Journal of Social Psychology, 25*, 403-415.
- Raynor, D. A. & Levine, H. (2009). Associations Between the Five-Factor Model of Personality and Health Behaviors Among College Students. *Journal of American College Health, 58*, 73-81.
- Rhodes, R. E., & Courneya, K. S. (2003). Relationships between personality, an extended theory of planned behaviour model and exercise behavior. *British Journal of Health Psychology, 8*, 19-36.
- Rhodes, R. E., Courneya, K. S., & Jones, L.W. (2002). Personality, The Theory of Planned Behavior, and Exercise: A Unique Role for Extraversion's Activity Facet. *Journal of Applied Social Psychology, 32*, 1721-1736.
- Walsh, J. J., Soares da Fonseca, R., & Banta, A. (2005). Watching and participating in exercise videos: A test of the theory of planned behavior,

conscientiousness, and the role of implementation intentions. *Psychology and Health, 20*, 729-741.

Appendix A: NEO-FFI

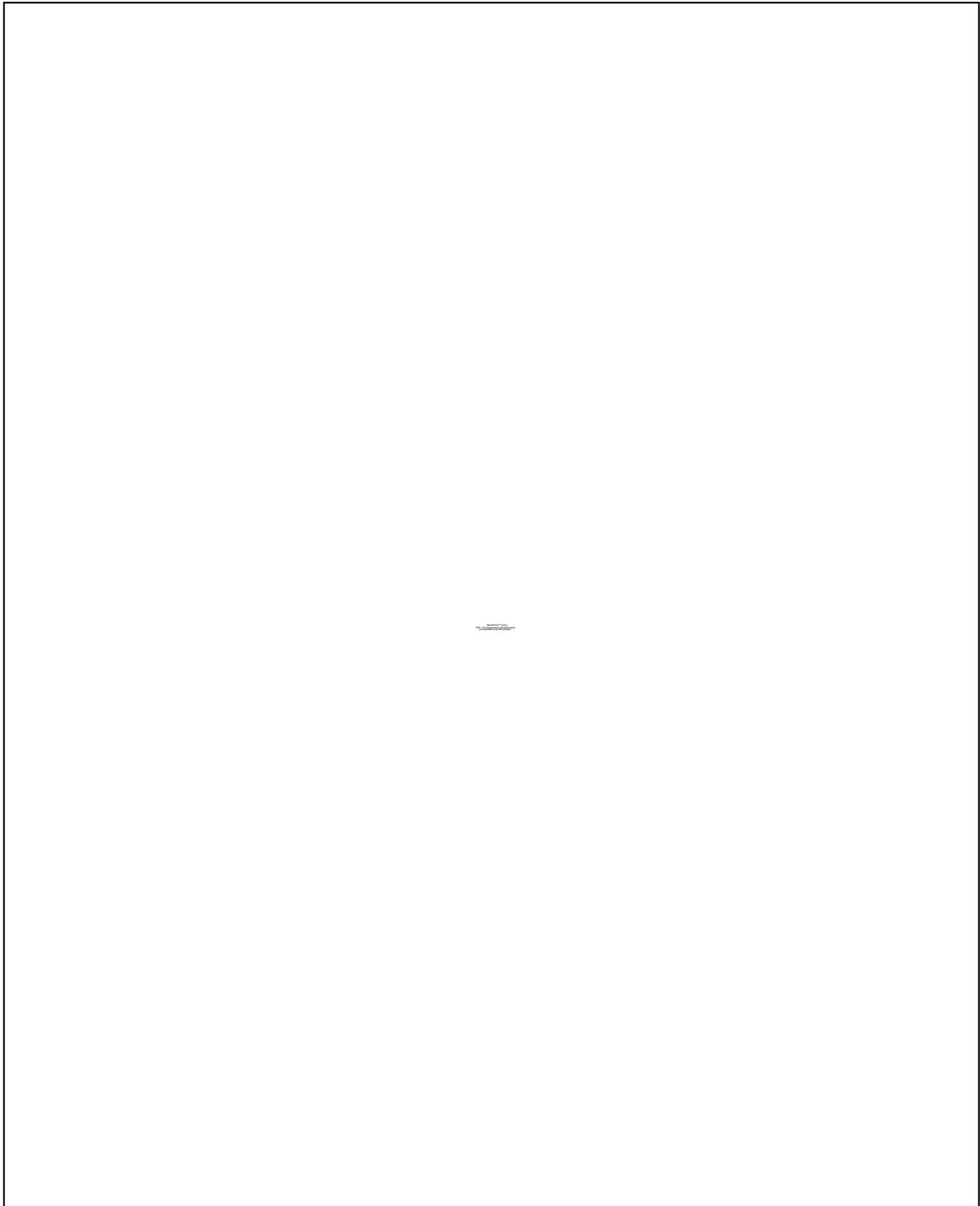
Instructions: To what extent do the following statements generally describe your current attitudes and behavior? Read each statement carefully and respond honestly. Rate the extent to which you agree or disagree with each statement, using the scale shown below.

1	2	3	4	5	6	7
Disagree Strongly	Disagree Slightly	Disagree	Neutral/ Mixed	Agree Slightly	Agree	Agree Strongly

- _____ I am not a worrier.
- _____ I like to have a lot of people around me.
- _____ I don't like to waste my time daydreaming.
- _____ I try to be courteous to everyone I meet.
- _____ I keep my belongings neat and clean.
- _____ I often feel inferior to others.
- _____ I laugh easily.
- _____ Once I find the right way to do something, I stick to it.
- _____ I often get into arguments with my family and co-workers.
- _____ I'm pretty good about pacing myself so as to get things done on time.
- _____ When I am under a great deal of stress, sometimes I feel like I'm going to pieces.
- _____ I don't consider myself especially "light-hearted."
- _____ I am intrigued by the patterns I find in art and nature.
- _____ Some people think I'm selfish and egotistical.
- _____ I am not a very methodical person.
- _____ I rarely feel lonely or blue.
- _____ I really enjoy talking to people.
- _____ I believe letting students hear controversial speakers can only confuse and mislead them.
- _____ I would rather cooperate with people than compete with them.
- _____ I try to perform all the tasks assigned to me conscientiously.
- _____ I often feel tense and jittery.
- _____ I like to be where the action is.
- _____ Poetry has little or no effect on me.
- _____ I tend to be cynical and skeptical of others' intentions.
- _____ I have a clear set of goals and work toward them in an orderly fashion.
- _____ Sometimes I feel completely worthless.
- _____ I usually prefer to do things alone.
- _____ I often try new and foreign foods.
- _____ I believe that most people will take advantage of you if you let them.
- _____ I waste a lot of time before settling down to work.
- _____ I rarely feel fearful or anxious.
- _____ I often feel as if I'm bursting with energy.
- _____ I seldom notice the different moods or feelings that different environments produce.
- _____ Most people I know like me.

- _____ I work hard to accomplish my goals.
- _____ I often get angry at the way people treat me.
- _____ I am a cheerful, high-spirited person.
- _____ I believe we should look to our religious authorities for decisions on moral issues.
- _____ Some people think of me as cold and calculating.
- _____ When I make a commitment, I can always be counted on to follow through.
- _____ Too often, when things go wrong, I get discouraged and feel like giving up.
- _____ I am not a cheerful optimist.
- _____ Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.
- _____ I'm hard-headed and tough-minded in my attitudes.
- _____ Sometimes I'm not quite as dependable or reliable as I should be.
- _____ I am seldom sad or depressed.
- _____ My life is fast-paced.
- _____ I have little interest in speculating on the nature of the universe or the human condition.
- _____ I generally try to be thoughtful and considerate.
- _____ I am a productive person who always gets the job done.
- _____ I often feel helpless and want someone else to solve my problems.
- _____ I am a very active person.
- _____ I have a lot of intellectual curiosity.
- _____ If I don't like people, I let them know it.
- _____ I never seem to be able to get organized.
- _____ At times I have been so ashamed I just wanted to hide.
- _____ I would rather go my own way than be a leader of others.
- _____ I often enjoy playing with theories or abstract ideas.
- _____ If necessary, I am willing to manipulate people to get what I want.
- _____ I strive for excellence in everything I do.

Appendix B: Big Five Inventory



Appendix C: Attitude Towards the Act Message

In 2009, not one of the fifty states in the United States met the standard for *Healthy People*. Obesity is a greater problem now more than ever. Obesity leads to increased risk to coronary heart disease, hypertension, stroke, type 2 diabetes, certain types of cancer and premature death. One way in which to lower your risk of obesity and these diseases is through moderate exercise. It is recommended that young adults should do 4 hours of physical activity each week, which equals 35 minutes each day. Exercise is a great way to get rid of the build up of stress in your body, giving you endorphins leaving you feeling happy and energized. Exercise is a pleasant experience; it is a time to take a break from school, work, and the other stressors in your life. You will find that exercising leaves you with a clear mind and is actually very enjoyable. Exercise is also extremely beneficial as it will allow you to become healthier and lower your risk for serious health problems. Exercise will even increase your longevity. Add happiness to your life, make the choice to start exercising today!

Appendix D: Perceived Behavioral Control Message

In 2009, not one of the fifty states in the United States met the standard for *Healthy People*. Obesity is a greater problem now more than ever. Obesity leads to increased risk to coronary heart disease, hypertension, stroke, type 2 diabetes, certain types of cancer and premature death. One way in which to lower your risk of obesity and these diseases is through moderate exercise. It is recommended that young adults should do 4 hours of physical activity each week. That is only 35 minutes each day. Just think of all the different times during the day you can exercise. Instead of sitting on the couch while watching your favorite 30 min TV show, you can hit the gym and watch TV there! 35 minutes is also only half of one class period, if you can sit through an entire class you definitely can withstand half the amount of time at the gym. You can even exercise for an hour Monday through Thursday and take time to relax for the entire weekend. If you think about, exercising for 35 minutes a day or whatever combination of time you desire is completely in your control. You can do it! Make the choice to start exercising today!

Appendix E: Subjective Norm Message

In 2009, not one of the fifty states in the United States met the standard for *Healthy People*. Obesity is a greater problem now more than ever. Obesity leads to increased risk to coronary heart disease, hypertension, stroke, type 2 diabetes, certain types of cancer and premature death. One way in which to lower your risk of obesity and these diseases is through moderate exercise. It is recommended that young adults should do 4 hours of physical activity each week, which equals 35 minutes each day. Everyone at Union College is making the change to exercise for the recommended amount. Students are running together, taking fitness classes together and signing up for intramurals with their friends. At Union being healthy is important to the student body so all students are making the choice to exercise the recommended amount. The Union College community believes that everyone should exercise for the recommended amount. If you ask the members of your family they will agree too, exercising the recommended amount is extremely important! Follow your friends and the student body, and listen to your family, make the choice to start exercising today!

8. How much control do you believe you have over exercising for 4 hours a week or 35 minutes a day?

Complete control Some control Unsure

Somewhat no control Absolutely no control

9. Currently I exercise for at least 35 minutes a day or the equivalent of 4 hours a week

Strongly agree Somewhat agree Unsure

Somewhat disagree Strongly disagree

10. I found the message to be persuasive?

Strongly agree Somewhat agree Unsure

Somewhat disagree Strongly disagree

