

THE IMPACT OF INTERVENTION STRATEGIES ON THE INTENTIONAL
COMPONENTS OF THE REVISED THEORY OF PLANNED BEHAVIOR

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In memory of my dad, A. T. Halfmann, Jr.

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THE IMPACT OF INTERVENTION STRATEGIES ON THE INTENTIONAL COMPONENTS OF THE REVISED THEORY OF PLANNED BEHAVIOR

Since the early 1980s, the prevalence of obesity has escalated while levels of physical activity have declined in adults (Flegal, Carroll, Ogden, & Johnson, 2002; Kuczmarski, Flegal, Campbell, & Johnson, 1994). Results from the 1999 - 2000 NHANES indicate that 64% of adults are considered overweight ($BMI \geq 25$), with 30% of those considered obese ($BMI \geq 30$) (Flegal et al., 2002). Furthermore, the Centers for Disease Control and Prevention (U.S. Department of Health & Human Services [HHS], 1996) estimate that more than 60% of the American population is not physically active on a regular basis (i.e., at least 30 minutes of moderate physical activity most days of the week), with 25% participating in no structured physical activity whatsoever. Because obesity and low levels of physical activity are associated with chronic diseases, such as coronary artery disease, cancer, and stroke (Blair, Kohl, Gordon, & Paffenbarger, 1992), it would seem important to develop programs that promote physical activity, while preventing and treating obesity in adults.

The U.S. Surgeon General has suggested that moderate amounts of physical activity performed for at least thirty minutes per day on most days of the week will decrease the likelihood of chronic diseases (HHS, 1996). In response, many programs and strategies designed to promote physical activity have been implemented. However, it appears that the increase in the number of exercise facilities and promotion programs, as well as the vast amount of easily-accessible health and fitness information (e.g., internet,

television, and magazines) have proven minimally effective in improving health and fitness behaviors among adults.

Some of the most commonly reported barriers to physical activity include lack of time, insufficient resources, low energy, and lack of willpower (HHS, 1996). Regarding time as a barrier, however, studies have also shown that Americans spend an average of ten times as much time watching television as exercising (Fahey, Insel, & Roth, 2002; Jones & Eaton, 1995). This discrepancy suggests that factors other than those listed may be contributing to the failure of many adults to meet the recommended physical activity guidelines as determined by the U.S. Surgeon General.

Facilitators and barriers to physical activity could be superceded by an individual's predetermined intention to exercise (Maddux, 1993). Intention, as it relates to behavior, has been defined and discussed in the revised Theory of Planned Behavior (rTPB). The rTPB (Maddux, 1993; Maddux & DuCharme, 1997) is an extension of Ajzen's original Theory of Planned Behavior (TPB), a model designed to predict an individual's behavior even when control over one's performance is limited (Ajzen, 1985; Ajzen & Fishbein, 1980). Integrating other social cognitive models, rTPB proposes that a person's intention to perform a behavior is the central determinant of that behavior (Maddux, 1993).

According to the revised Theory of Planned Behavior (rTPB), intention is based on four factors: (a) self-efficacy for the new behavior, (b) attitude towards the new behavior, (c) attitude towards the current behavior, and (d) perceived social norm (Maddux, 1993). In rTPB, self-efficacy for the new behavior refers to an individual's belief that he or she can execute some act successfully (Maddux, 1993; Maddux &

DuCharme, 1997). In other words, the higher one's self-efficacy in relation to a given behavior, the more likely one will be to engage in a given behavior.

The second and third factors determining behavior change according to rTPB are attitude towards the new behavior and attitudes towards the current behavior. According to rTPB, attitude towards a behavior refers to the individual's positive or negative evaluation of the behavior. In rTPB, attitude towards the current behavior takes into account the perceived vulnerability to the negative affects of the current behavior. For instance, as perceived vulnerability increases, the likelihood of engaging in the current behavior decreases. According to Palmer et al. (2000), a person contemplating behavior change may feel a susceptibility to the consequences of the current behavior, thereby influencing one's attitude and intention to change one's behavior. Ultimately, the individual contemplating behavioral change will compare the costs and benefits of both behaviors (Palmer et al., 2000).

Finally, perceived social norm refers to the perceived social pressures from significant others to perform a behavior, and involves one's perception of what one thinks significant others want one to do (Ajzen & Fishbein, 1980). Limited studies have shown that when people presume that significant others believe that they should perform a behavior, then the individual will be more likely to engage in the behavior (Ajzen & Fishbein, 1980; Armitage & Conner, 2001).

Behavioral intention, i.e., the likelihood of engaging in a new behavior, has been shown to be an immediate determinant of exercise behavior (Ajzen & Fishbein, 1980; Palmer et al., 2000; Sheppard, Hartwick, & Warshaw, 1988). For instance, Palmer, Burvitz, Smith, and Borrie (2000) showed that rTPB accounts for the majority of the

variance in fitness training adherence behavior and that it is a better predictor of training adherence than other social cognitive theories. Based on this, it can be postulated that barriers to physical activity may be overcome and levels of exercise may be increased by addressing an individual's intention towards physical activity. Although physical activity behavior has been shown to be determined by self-efficacy towards physical activity, attitude towards current level of physical activity and recommended levels of physical activity, and perceived social norms, the effects of intervention strategies intended to alter these components of intention in order to bring about behavior change have not been determined. Logically, intervention strategies specifically designed to change beliefs about capabilities of performing a new behavior should affect self-efficacy. Likewise, intervention strategies specifically designed to influence the beliefs about consequences of performing a new behavior as compared to maintaining a current behavior should change attitude towards current and new behaviors (Palmer et al. 2000).

Based on the revised Theory of Planned Behavior (Maddux, 1993), the purpose of this study was to determine if intervention strategies designed to affect the constructs of rTPB (i.e., self-efficacy, attitude toward increasing levels of physical activity, attitude toward current level of physical activity, and perceived social norms), when implemented in an eight-week program, actually affected the intended components. We hypothesized that, following the eight-week intervention program, participants would report that they had: (a) greater self-efficacy; (b) more favorable attitudes toward physical activity, (c) less favorable attitudes toward their former levels of physical activity, and (d) a shift in perceived social norms.

METHODS

Participants

The experimental group included sixty-three female undergraduate students, between the ages of 18 and 32 years, enrolled in a Physical Fitness and Wellness (PFW) aerobics dance class. The control group included sixty-eight female undergraduate students, between the ages of 18 and 47 years, enrolled in a different PFW aerobics dance class. This study was approved by the University's Institutional Review Board. Written consent was obtained from the participants after a detailed description of the procedures was provided. Participants received extra credit for participating in the study.

Procedures

The experimental and control groups attended aerobics classes taught by the same two aerobic instructors from 12:00 to 12:50 P.M. and 4:00 to 4:50 P.M., respectively, on Mondays and Wednesdays. During the third class period into the semester, participants completed questionnaires assessing their: (a) self-efficacy, (b) attitudes toward increasing levels of physical activity, (c) attitudes toward current level of physical activity, (d) perceived social norms, and (e) intention to exercise. For the next eight weeks, the two groups received the same 30 to 40 minute aerobic workout each class day. However, to alter intention to meet or exceed the U.S. Surgeon General's guidelines for physical activity, participants in the experimental group also: (a) kept progress journals, (b) received one 10-minute persuasive communication each week during class, (c) received handouts highlighting the major points in each persuasive communication, and

(d) completed homework assignments involving goal setting, overcoming barriers to physical activity, and social norm. Each intervention strategy was designed to target one or two components of intention as defined by rTPB. Table 1 lists the weekly intervention strategies and the corresponding intentional component(s). During the class following the end of the eight-week intervention study, the participants completed the same battery of questionnaires completed at the beginning of the study.

Instruments

The instruments were designed to detect changes in the constructs of rTPB resulting from specific intervention strategies. The instruments were not designed to assess changes in the target behavior of meeting or exceeding the U. S. Surgeon General's recommended exercise guidelines of at least 30 minutes of moderate physical activity most days of the week (HHS, 1996).

Physical Activity Intention Questionnaire (PAIQ). To measure the magnitude of change in the overall intention to exercise and the change in the four predictor variables of intention as defined by rTPB, an instrument was developed based on measures previously used by Brenes, Strube, and Storandt (1998), Palmer et. al (2000), and Smith & Biddle (1999). All ratings were on 7-point scale ranging from 1 to 7. To minimize response-bias related to the order in which questions were asked, items associated with each particular construct were interspersed throughout the questionnaire (Palmer et al., 2000). To minimize the tendency to respond in a particular way, positively coded and negatively coded items were included (Eagley and Chaiken, 1993). For reliability purposes, approximately 25% of the participants were randomly selected to repeat the physical activity intention questionnaire ten days after initial testing.

Intention was assessed by the following items: (a) “I intend/plan to meet the current Surgeon General’s recommendations of performing moderate amounts of physical activity at least 30 minutes in duration most days of the week for the next eight weeks” (on a 7-point scale, ranging from 1 [likely] to 7 [unlikely]) and (b) “What is your intention to be physically active outside of this class?” (on a 5-point scale ranging from 1 [no intention] to 5 [total intention]).

Self-efficacy was measured from participants’ responses to three bipolar evaluatory statements: (a) “It would be (*easy – difficult*) for me to meet the current Surgeon General’s recommendations of performing moderate amounts of physical activity at least 30 minutes in duration most days of the week for the next eight weeks;” (b) “The amount of physical activity that I perform is (*under my control- not under my control*);” and (c) “I feel (*confident- not at all confident*) that I can meet the current U.S. Surgeon General’s recommendations of performing moderate amounts of physical activity at least 30 minutes in duration most days of the week for the next eight weeks.”

Attitude towards current physical activity behavior and attitudes toward new exercise behavior were measured using 7-point bipolar adjective scales ranging from 1 to 7, as suggested by Ajzen and Fishbein (1980). Participants rated (*beneficial – harmful, good-bad, desirable – undesirable, and enjoyable – not enjoyable*) their attitude towards their current level of physical activity. The statements that preceded the adjectives were as follows: “For me to continue my current level of physical activity would be.”

Social norm was measured by five items on 7-point scales ranging from 1 to 7: (a) “People who are important to me think that I (*should – should not*) meet the current Surgeon General’s recommendations of performing moderate amounts of physical

activity for at least 30 minutes in duration most days of the week for the next 8 weeks;”

(b) “People who are important to me would (*approve - disapprove*) of me meeting the current U.S. Surgeon General’s recommendations of performing moderate amounts of

physical activity at least 30 minutes in duration per week for the next 8 weeks;” (c)

“People who are important to me want me to meet the current Surgeon General’s

recommendations of performing moderate amounts of physical activity at least 30

minutes in duration per week for the next 8 weeks (*likely – unlikely*);” (d) “I feel under

social pressure from people who are important to me to meet the current Surgeon

General’s recommendations of performing moderate amounts of physical activity at least

30 minutes in duration per week for the next 8 weeks (*social pressure – lack of social*

pressure);” and (e) “How accurate is the following statement: I know exactly how people

who are important to me feel about me being physically active (*accurate – not*

accurate).”

Intervention check. To assess participants’ opinions toward the intervention strategies, the experimental group performed an intervention check on the next class period immediately following the 8-week intervention study. Using a 7-point Likert scale with endpoints of *agree - disagree*, participants responded to the following questions:

(1a) “My attitude toward following the U.S. Surgeon General’s recommendation of performing moderate amounts of physical activity at least 30 minutes in duration per

week has become more favorable;” (1b) “I believe that the amount of exercise that I

performed at the beginning of this study was inadequate;” (1c) “Learning about the high

risk of disease associated with low levels of physical activity has made me want to

become more physically active;” (2) “Learning about the stages of behavior change was

useful to me;” (3) “I found that setting exercise goals helped me to stick with my exercise program;” (4) “Discovering my barriers to exercise and thinking of ways to overcome them was useful to me;” (5) “I believe that I have more time to exercise than I used to think;” (6) “Asking people who are important to me how they feel about my level of physical activity and listening to what they had to say was useful to me;” (7) “I feel more confident in designing an exercise program for myself than I did before this class;” and (8) “Making exercise a habit has helped me to stick with my exercise program.”

Participants were also asked to choose one intervention strategy that they felt was the most beneficial to them as well as if they felt that they were successful in making physical activity a habit.

Data Screening and Analysis

Confirmatory Factor Analysis

A Priori Model Development and Specification. Confirmatory structural measurement models were developed based on findings from previous research (Maddux, 1993; Palmer et al., 2000) using the complete sample of 131 subjects and included all 13 items retained and included on the final version of the PAIQ scale.

Next, five measurement models were developed, then a competing models strategy applied in order to detect the best model fit to the PAIQ data. The following competing models were used: (a) a one-factor model (M_1), (b) a two-factor oblique model (M_2), (c) a three-factor oblique model (M_3), (d) a three-factor oblique hierarchical model that included a global measure of intention (M_4), and (e) a four-factor oblique hierarchical model that included a global measure of intention (M_5).

Model Estimation. Data on the four-factor, three-factor, two-factor, and one-factor structures of the PAIQ were assessed using confirmatory factor analysis, conducted with AMOS (Arbuckle & Wothke, 1999) and LISREL (Joreskog & Sorbom, 2000). Initially, the method of maximum likelihood was used to derive parameter estimates with all subsequent analyses performed on the covariance matrices. In order for models to be identified, scales on each latent variable were established at unity.

Assessment of Measurement Models. Several fit indices were used as indicators of the goodness-of-fit of the measurement models. Fit indices used were: (a) the adjusted goodness of fit index (AGFI), (b) the comparative fit index (CFI; Bentler & Bonnet, 1980), (c) the Tucker-Lewis index (NNFI; Bentler & Bonnet, 1980), and (d) the root mean error square of approximation (RMSEA; Steiger, 1990). The AGFI, TLI and CFI have values ranging from 0 to 1 with values above .90 indicating a good fit of the empirical data to the implied model. The RMSEA provides values that represent the goodness of fit of the model if it were estimated in the population. RMSEA values between .05 and .08 are viewed acceptable with lower values indicating a closer model fit. The NNFI typically has values between 0 and 1, though NNFI indices are not limited to that range. A comparison of relative fit among models was performed by using the χ^2 difference test of fit between increasingly complex models and also by comparing differences in TLI, CFI and RMSEA indices.

RESULTS

Univariate Descriptive Statistics.

Table 2 provides univariate descriptive statistics for the thirteen items that comprise the final version of the PAIQ. Univariate skewness and kurtosis values indicated that the item-level data violated the assumption of normality for ten out the thirteen items for the experimental and control groups when examined separately. Additionally, Mardia's (1970) test of multivariate normality provided by LISREL indicated a kurtosis of $\chi^2(2, N=131) = 44.5, p < .001$. To address this problem, parameter estimates for all models were calculated using Browne's and Cudeck's (1993) Best Asymptotically Distribution Free Method (ADF).

To examine the effect of the intervention incorporated in this experiment, the nonparametric Mann-Whitney U test was used due to the data not meeting the requisite assumptions of univariate normality. Specifically, between group differences from pretest to posttest on the item-level data were analyzed based on a test of medians using mean ranks rather than means.

Comparison of Competing Models.

As previously stated, a competing models strategy was used to examine the improvement in fit of different models to the data. First, M_1 was compared with M_2 and significant improvement from M_1 to M_2 to the data was seen by a chi-square difference of $\chi^2(1, N = 131) = 147.26, p < .0001$. When M_2 was compared with M_3 , an even greater improvement from M_2 to M_3 was seen with a chi-square difference of $\chi^2(1, N = 131) =$

37.90, $p < .0001$. Finally, when M_3 was compared with M_4 , an improvement in the model fit to the data was observed based on the RMSEA, although the chi-square difference test was not significant. Fit of the data to M_5 , the four-factor model, was deemed unacceptable due to inadmissible parameter estimates and boundary solution violations (high multicollinearity). Based on the results of the confirmatory analyses, M_4 , a three-factor hierarchical model, was chosen over M_3 as having the best fit to the data because M_4 includes a measure of global intention and also because the two competing models were not statistically different in terms of fit. Table 3 summarizes the overall goodness of fit indices for measurement models M_1 through M_5 . Figure 1 provides an illustration of the three-factor PAIQ hierarchical structural equation model including standardized loadings for each item on their respective hypothetical constructs.

Measurement Model Based Reliability Analysis.

In accordance with classical test theory, item reliability yields an unbiased estimate only if the test or item-level scores that load on the common factor are homogenous (Lord & Novick, 1968). To determine if this assumption was tenable in the PAIQ data, a measurement model was generated that assumes equal units of measurement among the loadings for each latent variable. This constrained model representing a tau-equivalent model (Lord & Novick, 1968) produced the following indices: $\chi^2 (66, n=131) = 91.78, p < .05$. The chi-square difference test between the constrained and unconstrained (congeneric) model was not significant providing support for the tau-equivalent model. These results indicate that factor loadings (units of measurement) were equivalent, implying that all items were homogeneous in measuring the underlying factors common to the PAIQ.

After verification that the three-factor hierarchical model was the best fitting model, each of the constructs was evaluated separately by (a) examining the indicator loadings for statistical significance and (b) assessing the reliability of each construct uniquely and also for the construct of global intention. The t-values associated with each loading indicate that for each item, the critical value required at the .05 level of significance, was achieved. Thus all variables were significantly related to their constructs providing support for their theorized relationships among indicators and constructs. For the final model, the composite reliability of the construct was observed to be $r = .90$.

Expected Cross-Validation of Models.

The expected cross-validation index (ECVI, Browne & Cudeck, 1993) using the 90 percent confidence interval was used to assess the approximation of the goodness-of-fit that the estimated model would achieve in another sample of the same size. Although the ECVI has no acceptable range, comparisons between models were made to inspect accuracy in cross-validation among models. Table 3 provides the ECVI statistics and their 90 percent confidence intervals.

Revised Theory of Planned Behavior Measures.

In the final analysis of the PAIQ, three items were eliminated from the results. Items 5, 15, and 16 were found to have negative loading factors, and thus were not included. A Wilcoxon-Mann-Whitney U test was used to determine differences in the rTPB measures between the pre and post tests for the two groups. To gain an understanding of how the participants' responses fell in the 7-point scale, columns 1-3

were collapsed and columns 5-7 were collapsed. Tables 5 – 17 provide descriptive data for the following measures:

Intention. Item 1 assessed intention to perform the target behavior of meeting or exceeding the current Surgeon General's recommendation of performing moderate amounts of physical activity for at least 30 minutes in duration most days of the week for the next eight weeks. Comparison of pre and post intervention values provided a large effect size ($d = -2.221$) and this item was statistically significant ($p = .026$), providing evidence that the experimental group (mean rank = 58.81) showed greater intention after the intervention than the control group (mean rank = 72.66). Although intention levels were high for both groups prior to the intervention, the experimental group reported a greater increase in intention. Participants (92.06%) in the experimental group reported that they were likely (slightly – extremely) to perform the target behavior prior to the intervention. Post intervention, 95.24% of the experimental group participants reported that they were likely (slightly – extremely) to perform the target behavior. Participants (94.12%) in the control group reported that they were likely (slightly – extremely) to perform the target behavior prior to the intervention. Post intervention, 95.59% of the control group participants reported that they were likely (slightly – extremely) to perform the target behavior.

Self-efficacy. Items 2, 6, and 9 referred to self-efficacy. Item 2, which showed a medium effect size ($d = -.370$), assessed the level of ease participants felt in meeting the target behavior. Participants (79.37%) in the experimental group reported that it would be easy (slightly – extremely) to perform the target behavior prior to the intervention. Post intervention, 84.13% of the experimental group participants reported that it would be

easy (slightly – extremely) to perform the target behavior. Participants (82.35%) in the control group reported that it would be easy (slightly – extremely) to perform the target behavior prior to the intervention. Post intervention, 86.76% of the control group participants reported that it would be easy (slightly – extremely) to perform the target behavior. For item 2, the experimental group reported a .35% higher increase in self-efficacy more than the control group. Item 6 showed a large effect size ($d=-1.122$).

Item 9, which showed a large effect size ($d=-1.635$), assessed the confidence participants felt in meeting the target behavior. Participants (100%) in the experimental group reported that they were confident (slightly – extremely) that they could perform the target behavior prior to the intervention. Post intervention, 96.83% of the experimental group participants reported that they were confident (slightly – extremely) that they could perform the target behavior. Although there was a decrease in the confidence of the experimental group, the high level of confidence prior to the intervention (100%) may have contributed. Participants (94.12%) in the control group reported that they were confident (slightly – extremely) that they could perform the target behavior prior to the intervention. Post intervention, 92.65% of the control group participants reported that they were confident (slightly – extremely) that they could perform the target behavior. Although both groups reported a decrease in confidence after the intervention, the experimental group had more confidence post intervention.

Attitude towards current behavior. Items relating to attitude towards current physical activity behavior were items 3, 7, 10, and 12. Each of the questions related to this intentional component began with the prefix: “For me to continue my current level of

physical activity would be.” The control group reported the greatest improvement for each of these questions.

Perceived social norms. Items relating to perceived social norm were items 4, 8, 11, 13, and 14. Item 4 showed a large effect size ($d = -3.175$) and showed statistical significance ($p = .002$), in favor of the experimental group. Item 8 showed a large effect size ($d = -1.538$) in favor of the experimental group. Item 11 showed a large effect size ($d = -1.908$) in favor of the experimental group. Item 13 showed a small effect size ($d = -.278$) and item 14 showed a large effect size ($d = -1.877$) in favor of the control group. For item 14, participants were asked to assess how accurate their perception of social norm was. After the social norm persuasive communication and activity, participants in the experimental group were more aware of how certain significant others in their lives felt about their participation in physical activity. Although the control group reported the greater change in accuracy, this could have been due to the false perception that participants in the control group may possess. In other words, the experimental group was asked to confirm their perceptions, while the control group simply assessed their own opinion about accuracy.

The statistical significance of item 4 suggests that participants in the experimental group felt more strongly about how significant others felt about whether they should or should not meet the target behavior. Based on this data, it would seem reasonable that there would a greater social pressure to meet the target behavior for participants in the experimental group. This is consistent with data from item 13. The experimental group reported a 7.94% increase in social pressure to meet the target behavior, while the control group only reported a 1.47% increase in social pressure.

Intervention Check.

Participants' responses to the Intervention Check results are reported in Table 18. Responses to the 7-point Likert scales indicated that participants in the experimental group felt that the intervention strategies focusing on self-efficacy and attitude towards the new behavior were the most useful to them. Participants (26.98%) reported that the goal setting activity, which focused on self-efficacy and attitude towards the target behavior, was the most beneficial to them. Of the participants in the experimental group, 88.89% agreed (slightly to extremely) that the goal setting activity helped them to maintain their physical activity goals. Overcoming barriers to physical activity (20.63%) and time management (20.63%) were reported as the next most beneficial intervention strategies. A large majority (85.71%) of the participants agreed (slightly to extremely) that learning about their barriers to physical activity and thinking of ways to overcome them was useful and most participants (84.13%) agreed (slightly to extremely) that they realized that they had more time to be physically active than they thought before the time management intervention.

Participants (11.11%) reported that the self-directed workout intervention strategy was the most useful to them and 87.30% of the participants agreed (slightly to extremely) that they were more confident in designing an exercise program for themselves than they did prior to the intervention. Participants (9.52%) reported that the intervention strategy focusing on disease risk and principles of physical fitness was most useful to them and 80.95% of the participants agreed (slightly to extremely) that learning about the high risk of disease associated with low levels of physical activity made them want to become more physically active. Participants (7.94%) reported that habit maintenance was the

most useful intervention strategy and 87.30% of the participants agreed (slightly to extremely) that making physical activity a habit has helped them to adhere to their physical activity program. A small percentage (1.59%) of participants reported that the stages of behavior change intervention strategy was the most useful to them and 74.60% of the participants agreed (slightly to extremely) that learning about the stages of behavior change was useful. The social norm activity was reported as the least helpful intervention strategy (0% of participants chose social norm as the most useful intervention strategy). Consistent to this data, the least amount of participants (53.97%) agreed (slightly to extremely) that the social norm activity was useful to them.

Regarding physical activity behavior change, 88.89% of the participants agreed (slightly to extremely) that they were successful in making physical activity a habit. Specifically, 21% of the participants reported that they were extremely successful, while an additional 44% reported that they were quite successful, and an additional 26% reported that they were slightly successful. Regarding attitude, 87.30% of the participants agreed (slightly to extremely) that their attitude towards meeting the Surgeon General's physical activity recommendation had become more favorable after the intervention. Additionally, 60.31% of the participants agreed (slightly to extremely) that the amount of physical activity that they performed prior to the intervention was inadequate.

DISCUSSION

It is well known in the relevant research that intention is assumed to be an immediate determinant of behavior (Ajzen & Fishbein, 1980; Sheppard, Hartwick, & Warshaw, 1988; Palmer, Burwitz, Smith, & Borrie, 2000). Based on this assumption, the purpose of this study was to improve intention to perform the target behavior of meeting or exceeding the current Surgeon General's recommendation of performing moderate amounts of physical activity for at least 30 minutes in duration most days of the week. Results from this study provide modest support for implementing intervention strategies designed to alter constructs of the RTPB in order to enhance the physical activity intention of female undergraduate students enrolled in physical fitness and wellness aerobics classes.

Based on results from Item 1 of the PAIQ, the intervention strategies increased participants intention to meet or exceed the U. S. Surgeon General's recommendation of performing moderate amounts of physical activity at least thirty minutes in duration most days of the week. More specifically, out of the four constructs that determine intention, Item 4 of the PAIQ showed that the social norm construct of intention was the only construct to change due to the rTPB-based intervention strategies. Apparently, the social norm-based intervention strategies helped participants gain a deeper understanding of how important their level of physical activity is to significant others. An intervention strategy, such as having the participants interview several significant others about how important it is that the participant adopt a given behavior, may increase social pressure to

perform the activity. As a result of such social pressure, the participant may be more likely to adopt the new behavior.

Several limitations to the research design warrant discussion. The design of the questionnaire limited the amount of information that was attainable in regard to attitude towards both current physical activity behavior and target behavior. It is important to note that the wording of the question after the intervention did not refer to the level of baseline activity, but rather to the current activity level, which may have increased due to class requirements. Although the control group reported the greatest improvement in attitude towards current behavior, no conclusions can be drawn with regard to the impact of intervention strategies on attitudes towards current and target behavior. However, results of the intervention check suggest that participants (87.30%) in the experimental group agreed (slightly – extremely) that their attitude towards meeting the target behavior had become more favorable. Future studies need to consider the wording of the questions regarding attitude towards the current behavior and attitude towards the target behavior. For example, to assess change in attitudes toward original behavior prior to the intervention, post-test surveys should include the following statement: “For me to continue the level of activity that I engaged in prior to this class would be”

The level of intention that participants who enroll in an aerobics physical activity class possess limited this study. Because the goal was to examine whether intervention strategies based on rTPB changed the constructs of the rTPB, it was necessary to sample individuals enrolled in structured physical activity classes. Consequently, intentions were uniformly high due to sampling methods. Overall, there was no difference in attitude or self-efficacy between the two groups. However, this may be due, in part, to many

reasons: (a) the experimental group possessed an already high degree of intention prior to the intervention; (b) the experimental group more accurately assessed the constructs of intention due to the intervention; and (c) the intervention strategies based on the rTPB may not impact all of the constructs of intention.

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Table 1. Intervention Strategies designed to affect intentional components of the revised Theory of Planned Behavior

Week	Intervention Strategy	Intentional Component
Week 1	Disease risk and principles of physical fitness	Attitude towards current behavior (Perceived vulnerability)
Week 2	Stages of behavior change (Transtheoretical Model)	Attitude towards new behavior
Week 3	Goal setting	Self-efficacy, Attitude towards new behavior
Week 4	Overcoming barriers to physical activity	Self-efficacy, Attitude towards new behavior
Week 5	Time management	Self-efficacy
Week 6	Social norm activity	Perceived social norm
Week 7	Self-directed workout sessions	Self-efficacy, Attitude towards new behavior
Week 8	Habit maintenance (Relapse Prevention Model)	Self-efficacy, Attitude towards new behavior

Table 2.								
Univariate Descriptive and Normality Statistics (sample _{exp} = 63, sample _{ctl} = 68)								
<u>Subscale</u>	Sample _{exp}		Sample _{ctl}		Skewness		Kurtosis	
					Sample _{exp}	Sample _{ctl}	Sample _{exp}	Sample _{ctl}
Item	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>Z-score</i>	<i>Z-score</i>	<i>Z-score</i>	<i>Z-score</i>
01	2.10	1.23	2.01	1.26	5.03	7.75	4.50	10.31
02	2.56	1.39	2.43	1.21	3.33	2.73	0.93	-1.92
03	2.67	1.63	3.28	1.64	1.76	0.68	-1.66	-1.43
04	2.38	1.36	2.10	1.29	2.33	2.00	-0.43	-2.10
06	1.92	1.07	1.93	0.83	5.33	3.75	5.50	3.50
07	3.02	1.86	3.32	1.74	1.66	1.37	1.67	-1.52
08	1.51	0.91	1.54	0.92	8.33	6.55	8.33	6.47
09	1.63	0.68	2.01	0.94	2.00	3.72	2.00	2.75
10	3.27	2.18	3.50	2.00	1.33	1.17	-2.16	-2.24
11	2.19	1.13	2.13	1.30	1.66	5.17	-1.46	4.29
12	3.06	1.81	3.13	1.68	1.90	2.55	-1.28	-1.36
13	4.08	1.53	4.07	1.79	2.33	0.37	-0.88	-1.60
14	2.83	1.53	3.04	1.51	2.33	2.41	-0.66	0.01
Multivariate							42.18	44.52
<i>Note.</i> Values were rescaled from the original bipolar scale range (-3 to +3) as follows: -3 = 1; -2 = 2; -1 = 3; 0 = 4; 1 = 5; 2 = 6; 3 = 7.								

Table 3. PAIQ Sample Goodness-of-Fit Statistics for Confirmatory Factor Analysis

Model	chi-square	df	chi-sq/df	p	AGFI	RMSEA	NNFI	CFI	AIC	ECVI	90% ECVI
1	276.05	63.00	4.38	0.00	0.62	0.16	0.61	0.69	332.05	2.55	2.18 - 2.97
2	128.79	62.00	2.07	0.00	0.80	0.09	0.88	0.90	186.79	1.43	1.21 - 1.71
3	70.59	60.00	1.17	0.16	0.89	0.04	0.98	0.98	132.59	1.00	0.94 - 1.21
4	80.89	62.00	1.30	0.05	0.88	0.04	0.97	0.97	138.89	1.06	0.92 - 1.27
*5	-	-	-	-	-	-	-	-	-	-	-

Model 1 = one-factor (general intention); Model 2 = two-factor oblique (current attitude & perceived social norm); Model 3 = three-factor oblique model (current attitude, self-efficacy, & perceived social norm); Model 4 = hierarchical three-factor oblique model (current attitude, self-efficacy, & perceived social norm nested under general intention); Model 5 = four-factor oblique model (current attitude, self-efficacy, perceived social norm, & perceived control of behavior). *inadmissible model estimates & violation of boundary solutions.

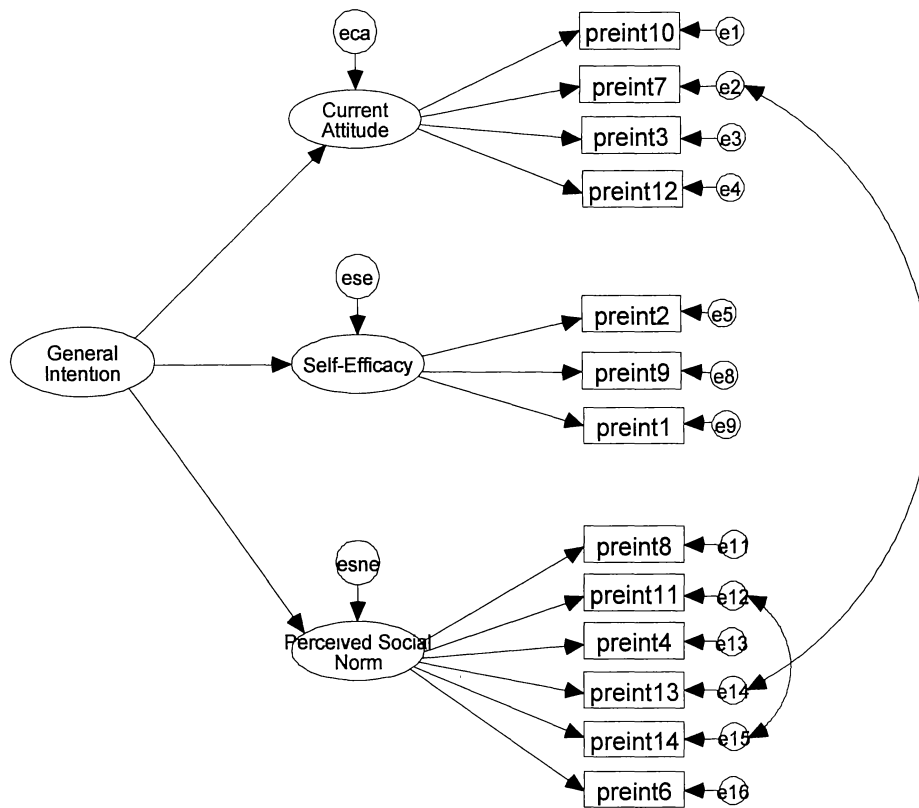


Figure 1. PAIQ Hierarchical Structural Measurement Model

Table 4
Group Differences for Intentional Components

Item	Man-Whitney U	Z-statistic
Intention:		
1	1689.00*	-2.221
Self-Efficacy:		
2	2066.00	-0.37
6	1924.00	-1.122
9	1813.50	-1.635
Current Attitude:		
3	1790.50	-1.668
7	2051.00	-0.431
10	2057.00	-0.404
12	2119.50	-0.107
Perceived Social Norm:		
4	1492.00**	-3.175
8	1853.50	-1.538
11	1753.00	-1.908
13	2083.00	-0.278
14	1742.50	-1.877

*p = .026

**p = .002

Table 5

PAIQ Descriptive Results for Intention

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
1	Slightly - Extremely Likely	Neither	Slightly - Extremely Likely	Slightly - Extremely Likely	Neither	Slightly - Extremely Not Likely	Slightly - Extremely Likely	Neither	Slightly - Extremely Not Likely	Slightly - Extremely Likely	Neither	Slightly - Extremely Not Likely
	92.06%	1.59%	6.35%	95.24%	1.59%	4.76%	94.12%	0%	5.88%	95.59%	0%	4.41%

Table 6

PAIQ Descriptive Results for Self-efficacy

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
2	Slightly - Extremely Easy	Neither	Slightly - Extremely Difficult	Slightly - Extremely Easy	Neither	Slightly - Extremely Difficult	Slightly - Extremely Easy	Neither	Slightly - Extremely Difficult	Slightly - Extremely Easy	Neither	Slightly - Extremely Difficult
	79.37%	6.35%	14.29%	84.13%	3.17%	12.70%	82.35%	7.35%	10.29%	86.76%	4.41%	8.82%

Table 7

PAIQ Descriptive Results for Self-efficacy

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
6	Slightly - Extremely Under my Control	Neither	Slightly - Extremely Not Under my Control	Slightly - Extremely Under my Control	Neither	Slightly - Extremely Not Under my Control	Slightly - Extremely Under my Control	Neither	Slightly - Extremely Not Under my Control	Slightly - Extremely Under my Control	Neither	Slightly - Extremely Not Under my Control
	90.48%	6.35%	3.17%	90.48%	3.17%	6.35%	95.59%	2.94%	1.47%	94.12%	1.47%	4.41%

Table 8

PAIQ Descriptive Results for Self-efficacy

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
9	Slightly - Extremely Confident 100%	Neither 0%	Slightly - Extremely Not Confident 0%	Slightly - Extremely Confident 96.83%	Neither 1.59%	Slightly - Extremely Not Confident 1.59%	Slightly - Extremely Confident 94.12%	Neither 2.94%	Slightly - Extremely Not Confident 2.94%	Slightly - Extremely Confident 92.65%	Neither 1.47%	Slightly - Extremely Not Confident 5.88%

Table 9

PAIQ Descriptive Results for Current Attitude

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
3	Slightly - Extremely Beneficial 66.67%	Neither 11.11%	Slightly - Extremely Harmful 22.22%	Slightly - Extremely Beneficial 85.71%	Neither 3.17%	Slightly - Extremely Harmful 11.11%	Slightly - Extremely Beneficial 54.41%	Neither 19.11%	Slightly - Extremely Harmful 26.47%	Slightly - Extremely Beneficial 80.88%	Neither 11.76%	Slightly - Extremely Harmful 7.35%

Table 10

PAIQ Descriptive Results for Current Attitude

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
7	Slightly - Extremely Good 63.49%	Neither 6.35%	Slightly - Extremely Bad 30.16%	Slightly - Extremely Good 85.71%	Neither 4.76%	Slightly - Extremely Bad 9.52%	Slightly - Extremely Good 60.29%	Neither 8.82%	Slightly - Extremely Bad 30.88%	Slightly - Extremely Good 77.94%	Neither 16.18%	Slightly - Extremely Bad 5.88%

Table 11

PAIQ Descriptive Results for Current Attitude

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
10	Slightly - Extremely Desirable	Neither	Slightly - Extremely Undesirable	Slightly - Extremely Desirable	Neither	Slightly - Extremely Undesirable	Slightly - Extremely Desirable	Neither	Slightly - Extremely Undesirable	Slightly - Extremely Desirable	Neither	Slightly - Extremely Undesirable
	57.14%	7.94%	34.92%	87.30%	1.59%	11.11%	55.88%	10.29%	33.82%	76.47%	8.82%	14.71%

Table 12

PAIQ Descriptive Results for Current Attitude

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
12	Slightly - Extremely Enjoyable	Neither	Slightly - Extremely Not Enjoyable	Slightly - Extremely Enjoyable	Neither	Slightly - Extremely Not Enjoyable	Slightly - Extremely Enjoyable	Neither	Slightly - Extremely Not Enjoyable	Slightly - Extremely Enjoyable	Neither	Slightly - Extremely Not Enjoyable
	61.90%	12.70%	25.40%	84.13%	7.94%	7.94%	64.71%	11.76%	23.53%	83.82%	10.29%	5.88%

Table 13

PAIQ Descriptive Results for Perceived Social Norm

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
4	Slightly - Extremely Should	Neither	Slightly - Extremely Should Not	Slightly - Extremely Should	Neither	Slightly - Extremely Should Not	Slightly - Extremely Should	Neither	Slightly - Extremely Should Not	Slightly - Extremely Should	Neither	Slightly - Extremely Should Not
	76.19%	19.05%	4.76%	93.65%	6.35%	0%	76.47%	22.06%	1.47%	85.29%	14.71%	0%

Table 14

PAIQ Descriptive Results for Perceived Social Norm

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
8	Slightly - Extremely Approve	Neither	Slightly - Extremely Disapprove	Slightly - Extremely Approve	Neither	Slightly - Extremely Disapprove	Slightly - Extremely Approve	Neither	Slightly - Extremely Disapprove	Slightly - Extremely Approve	Neither	Slightly - Extremely Disapprove
	93.65%	3.17%	3.17%	95.24%	4.76%	0%	92.65%	5.88%	1.47%	92.65%	5.88%	1.47%

Table 15

PAIQ Descriptive Results for Perceived Social Norm

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
11	Slightly - Extremely Likely	Neither	Slightly - Extremely Unlikely	Slightly - Extremely Likely	Neither	Slightly - Extremely Unlikely	Slightly - Extremely Likely	Neither	Slightly - Extremely Unlikely	Slightly - Extremely Likely	Neither	Slightly - Extremely Unlikely
	84.13%	14.29%	1.59%	95.24%	3.17%	1.59%	85.29%	10.29%	4.41%	89.71%	5.88%	4.41%

Table 16

PAIQ Descriptive Results for Perceived Social Norm

Item:	Experimental						Control					
	PRE			POST			PRE			POST		
13	Slightly - Extremely Social Pressure	Neither	Slightly - Extremely Lack of Social Pressure	Slightly - Extremely Social Pressure	Neither	Slightly - Extremely Lack of Social Pressure	Slightly - Extremely Social Pressure	Neither	Slightly - Extremely Lack of Social Pressure	Slightly - Extremely Social Pressure	Neither	Slightly - Extremely Lack of Social Pressure
	34.92%	36.51%	28.57%	42.86%	30.16%	26.98%	41.18%	25%	33.82%	42.65%	25%	32.35%

Table 17

PAIQ Descriptive Results for Perceived Social Norm

		Experimental						Control					
Item:		PRE		POST				PRE		POST			
14	Slightly - Extremely Accurate	Neither	Slightly - Extremely Not Accurate	Slightly - Extremely Accurate	Slightly - Extremely Neither	Slightly - Extremely Not Accurate		Slightly - Extremely Accurate	Slightly - Extremely Neither	Slightly - Extremely Not Accurate	Slightly - Extremely Accurate	Slightly - Extremely Neither	Slightly - Extremely Not Accurate
	69.84%	15.87%	14.29%	68.25%	15.87%	15.87%		64.71%	19.12%	16.18%	80.88%	10.29%	8.82%

Table 18. Intervention Check Responses

	Slightly - Extremely Agree	Neither	Slightly - Extremely disagree
<u>Intentional Component:</u>			
<i>Perceived Social Norm</i>			
Asking people who are important to me how they feel about my level of physical activity and listening to what they had to say was useful to me:	53.97%	20.63%	25.40%
<i>Attitude Towards Current Behavior</i>			
My attitude toward following the U.S. Surgeon General's recommendation of performing moderate amounts of physical activity at least 30 minutes in duration most days of the week has become more favorable:	87.30%	9.50%	3.17%
I believe that the amount of physical activity that I performed at the beginning of this study was inadequate:	60.31%	11%	28.57%
Learning about the high risk of disease associated with low levels of physical activity has made me want to become more physically active:	80.95%	14.29%	4.76%
<i>Attitude Towards New Behavior</i>			
Learning about the stages of behavior change was useful to me:	74.60%	19.05%	6.35%
<i>Self-Efficacy</i>			
I believe that I have more time for physical activity than I used to think:	84.13%	3.17%	12.70%
I was successful in making physical activity a habit:	88.89%	4.76%	4.76%
<i>Self-Efficacy/Attitude Towards New Behavior</i>			
I found that setting physical activity goals helped me to stick with my physical activity program:	88.89%	3.17%	7.94%
Discovering my barriers to physical activity and thinking of ways to overcome them was useful to me:	85.71%	6.35%	7.94%
I feel more confident in designing an exercise program for myself than I did before this class:	87.30%	6.35%	6.35%
Making physical activity a habit has helped me to stick with my program:	87.30%	4.76%	7.94%

Table 19. Raw Data

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	preint1	preint2	preint3	preint4	preint5	preint6	preint7	preint8	preint9
1	2	3	5	1	5	2	5	1	3
1	1	2	2	3	7	1	1	2	2
1	3	4	3	2	7	2	3	1	2
1	3	3	1	2	1	3	2	2	2
1	2	3	3	4	6	1	3	2	1
1	1	2	1	2	7	1	1	2	2
1	2	4	5	3	6	2	6	2	2
1	1	1	1	1	7	1	1	1	1
1	2	3	5	1	6	1	5	1	2
1	2	2	1	2	7	1	2	1	1
1	2	5	6	1	7	2	6	1	2
1	1	1	1	4	7	2	2	1	1
1	1	2	2	1	7	2	1	1	2
1	3	3	4	4	3	1	5	2	2
1	2	2	3	6	7	2	2	2	3
1	2	1	5	3	7	2	5	1	1
1	3	2	4	1	6	6	7	1	1
1	1	5	5	4	1	1	6	1	2
1	3	2	5	1	6	2	4	1	1
1	1	2	1	1	7	2	2	1	3
1	2	1	1	4	7	1	1	1	1
1	3	5	2	3	4	4	3	2	3
1	1	1	1	1	7	1	1	1	1
1	1	1	4	2	7	1	5	1	1
1	3	2	4	3	5	3	6	2	1
1	6	5	2	3	6	3	2	2	2
1	2	2	2	2	6	1	4	1	1
1	2	2	3	6	6	4	4	5	1
1	3	2	2	3	6	2	1	1	1
1	3	3	1	4	1	2	2	2	1
1	1	1	2	1	7	2	2	2	2
1	2	2	2	4	7	1	3	1	1
1	1	5	4	3	2	3	5	4	2
1	6	7	6	1	2	2	5	1	3
1	6	3	4	4	3	5	4	5	3
1	2	2	1	2	6	1	6	2	2
1	5	2	4	4	5	2	3	4	2
1	3	3	6	1	5	2	7	1	1
1	1	1	1	1	6	2	1	1	1
1	3	2	1	2	6	2	1	1	1
1	1	1	1	1	1	1	1	1	1
1	2	2	1	2	7	1	1	1	2
1	2	5	1	1	3	1	1	1	2
1	1	1	1	1	7	1	1	1	1
1	2	3	5	3	6	2	5	1	2

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	preint1	preint2	preint3	preint4	preint5	preint6	preint7	preint8	preint9
1	3	2	2	4	5	3	2	1	2
1	1	2	1	3	7	1	1	1	1
1	2	3	3	1	6	1	1	1	2
1	3	4	5	2	6	4	5	1	2
1	3	2	4	4	5	2	2	1	2
1	2	4	1	1	6	2	1	1	2
1	2	5	1	1	7	1	1	1	1
1	2	1	5	5	7	1	5	1	1
1	2	2	1	1	7	1	5	1	1
1	1	1	1	1	7	1	1	1	1
1	2	3	3	1	6	2	3	1	1
1	1	1	2	2	1	2	2	2	2
1	3	3	4	3	5	4	5	1	2
1	1	2	2	2	7	2	3	2	1
1	2	2	3	4	6	2	3	2	2
1	1	2	1	1	7	1	2	1	1
1	4	5	2	3	5	2	2	2	3
1	1	1	2	2	7	2	2	2	1
2	2	3	5	4	6	2	6	4	3
2	6	5	5	4	2	3	4	4	2
2	2	2	1	1	7	2	5	1	2
2	2	3	3	3	5	3	2	2	3
2	2	2	5	2	5	1	6	1	1
2	2	1	4	3	7	2	5	1	1
2	6	5	4	3	2	2	5	1	4
2	1	1	1	1	7	1	1	1	1
2	2	2	5	1	6	2	6	2	2
2	1	2	1	2	7	2	1	1	1
2	3	4	6	1	1	3	5	1	3
2	1	3	5	4	6	4	5	1	3
2	2	1	2	3	7	2	1	3	1
2	2	5	5	4	1	3	5	4	2
2	1	2	1	4	6	2	1	2	1
2	2	2	5	4	7	1	7	1	1
2	2	2	3	4	6	1	3	2	1
2	1	1	4	1	7	3	4	2	1
2	3	3	5	2	5	2	6	1	2
2	1	2	5	1	6	2	5	1	2
2	2	2	2	1	7	2	2	1	2
2	1	2	4	3	7	2	4	2	2
2	2	5	7	1	3	1	7	1	4
2	1	1	5	1	2	1	5	1	1
2	7	2	1	2	6	1	1	1	2
2	3	4	4	1	4	5	3	1	2
2	1	2	4	1	6	1	5	1	1

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	preint1	preint2	preint3	preint4	preint5	preint6	preint7	preint8	preint9
2	1	2	7	1	5	1	7	1	2
2	2	1	3	1	7	3	3	1	2
2	1	2	3	2	7	2	3	2	2
2	1	1	2	3	1	1	1	1	1
2	2	4	3	2	1	2	2	1	5
2	3	2	2	3	3	2	2	2	3
2	1	1	4	4	5	2	2	2	2
2	2	2	3	1	7	2	3	1	2
2	1	5	1	1	5	4	5	1	2
2	1	2	2	4	7	2	2	2	1
2	2	3	4	1	4	1	4	1	3
2	1	1	2	1	7	2	2	1	1
2	2	3	4	4	3	2	4	2	2
2	3	3	1	4	5	3	5	1	5
2	2	3	2	1	7	1	2	1	2
2	1	3	1	1	7	1	1	1	2
2	2	2	1	1	7	2	2	1	1
2	3	3	4	1	5	2	3	1	3
2	6	5	4	4	5	1	4	4	2
2	1	4	6	5	3	3	3	5	3
2	2	1	3	4	7	1	3	3	2
2	1	1	1	1	1	1	1	1	1
2	2	2	3	1	4	2	3	1	3
2	3	3	3	1	5	1	3	1	2
2	2	5	5	1	3	2	5	1	3
2	2	2	2	3	6	2	2	2	2
2	3	1	4	4	7	2	3	1	3
2	2	2	3	1	6	3	3	1	2
2	2	2	1	1	6	1	1	1	2
2	1	2	1	1	7	2	2	1	2
2	2	1	2	2	7	1	1	1	2
2	2	2	4	1	6	2	3	1	1
2	1	1	5	1	7	2	5	1	1
2	1	4	3	1	1	2	3	2	3
2	2	1	3	1	7	1	2	1	1
2	1	2	5	1	6	1	1	1	2
2	2	2	2	4	6	2	2	2	2
2	3	3	6	1	5	2	6	2	2
2	1	2	1	3	7	2	2	2	1
2	1	3	2	1	7	2	2	2	2
2	2	2	3	2	7	2	3	1	1

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	preint10	preint11	preint12	preint13	preint14	preint15	preint16	postint1
1	5	1	6	3	2	5	3	2
1	2	4	2	3	5	4	4	2
1	3	1	2	6	2	3	4	1
1	1	3	1	4	3	5	4	2
1	5	3	4	1	4	5	4	1
1	1	2	2	7	2	5	5	1
1	7	4	7	7	2	3	4	1
1	1	1	1	2	2	5	5	1
1	7	1	7	3	2	2	4	2
1	1	2	1	3	3	4	5	2
1	7	1	6	2	1	1	5	3
1	1	1	1	3	1	3	5	1
1	1	1	2	3	1	5	5	1
1	6	3	5	4	2	4	3	2
1	2	3	2	6	1	1	4	2
1	7	2	6	4	2	2	3	3
1	7	1	7	1	4	2	5	2
1	6	1	5	3	5	1	4	1
1	5	1	6	4	3	2	4	2
1	2	3	1	4	4	4	4	1
1	1	2	1	4	1	5	5	1
1	4	3	4	4	2	2	3	3
1	1	1	1	7	4	5	5	1
1	5	3	4	6	6	4	4	1
1	6	3	4	6	6	5	3	2
1	2	3	3	6	6	5	3	3
1	4	4	2	4	6	5	3	2
1	2	3	2	7	1	2	4	1
1	5	2	2	7	5	4	4	1
1	6	4	5	4	4	3	4	3
1	2	2	2	4	2	5	5	2
1	3	2	3	5	4	4	5	1
1	1	4	2	6	4	1	3	3
1	5	1	4	4	3	1	1	6
1	5	4	5	4	3	2	3	5
1	6	2	5	6	4	2	4	3
1	4	5	3	4	3	2	3	3
1	7	1	4	4	1	3	3	2
1	2	3	3	3	3	4	5	1
1	1	1	5	2	3	4	3	2
1	1	1	1	2	1	5	5	1
1	1	2	2	4	2	4	5	1
1	1	1	1	4	1	1	3	3
1	1	1	1	3	3	5	5	1
1	7	2	5	3	2	3	4	2

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	preint10	preint11	preint12	preint13	preint14	preint15	preint16	postint1
1	3	2	2	3	2	2	3	6
1	1	2	1	2	2	5	5	1
1	1	2	4	1	3	2	3	2
1	5	3	5	2	3	2	3	2
1	4	4	2	4	4	4	3	3
1	1	1	3	6	4	5	4	2
1	1	1	2	3	1	3	5	3
1	6	2	5	4	1	3	4	2
1	1	1	1	6	2	3	4	1
1	1	1	1	4	1	2	4	1
1	3	1	2	4	2	3	4	1
1	2	2	1	4	2	4	5	2
1	5	3	3	4	6	4	4	2
1	2	4	3	5	3	5	5	1
1	3	3	3	3	2	2	4	3
1	2	1	2	4	2	5	5	1
1	4	4	4	6	6	2	3	3
1	1	2	1	6	1	5	5	1
2	7	4	6	4	5	3	4	2
2	6	4	6	7	2	1	3	3
2	5	1	3	3	2	4	4	2
2	3	2	2	4	2	5	4	3
2	6	1	6	6	7	2	5	2
2	1	1	2	2	3	4	4	2
2	5	3	3	6	3	1	2	3
2	1	1	1	3	2	5	5	1
2	6	2	6	6	6	2	3	2
2	2	2	1	1	3	3	5	1
2	6	2	6	6	2	3	3	2
2	7	1	6	6	2	1	5	3
2	1	4	2	4	4	5	5	1
2	7	4	6	4	3	1	3	2
2	1	4	2	3	4	4	5	1
2	7	1	5	1	4	5	5	3
2	2	2	3	3	4	2	4	3
2	5	2	6	7	2	3	5	2
2	7	2	5	6	3	1	4	5
2	6	1	5	3	1	3	5	1
2	2	2	2	3	2	4	5	2
2	5	5	4	6	3	2	4	2
2	6	2	4	6	4	3	3	2
2	2	2	2	6	3	2	3	2
2	1	2	2	3	2	4	4	1
2	3	1	3	1	1	2	4	3
2	5	1	4	4	1	2	3	2

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	preint10	preint11	preint12	preint13	preint14	preint15	preint16	postint1
2	6	3	7	7	4	1	4	3
2	5	1	2	3	2	2	4	2
2	2	2	2	3	2	4	4	1
2	1	1	2	4	4	1	3	2
2	4	3	2	2	2	2	5	2
2	2	2	3	1	3	2	3	2
2	4	7	2	7	5	5	3	3
2	3	2	2	5	2	3	4	2
2	1	1	2	7	1	1	3	2
2	3	3	2	3	3	4	5	1
2	4	1	5	7	3	5	4	1
2	2	3	2	4	5	4	5	1
2	4	3	3	5	2	3	3	2
2	2	3	3	4	4	3	4	2
2	2	1	2	3	2	5	4	1
2	1	1	1	2	6	5	5	2
2	2	1	2	4	4	3	4	1
2	3	1	5	3	4	3	3	3
2	6	4	4	4	4	2	4	5
2	6	6	2	7	5	2	4	2
2	3	4	4	6	6	2	4	3
2	1	1	1	2	1	2	4	1
2	3	1	2	3	5	3	3	3
2	3	2	2	4	3	1	4	2
2	6	1	1	2	2	1	4	2
2	2	3	2	6	2	5	4	2
2	4	3	4	1	5	4	4	2
2	3	2	2	4	4	3	3	3
2	1	1	1	4	1	3	5	6
2	2	2	2	3	3	3	4	1
2	1	1	3	4	1	5	5	1
2	2	1	2	7	1	2	4	1
2	4	1	6	5	2	3	4	2
2	4	2	4	4	7	1	5	2
2	2	1	2	6	2	4	5	2
2	6	1	6	1	2	3	4	1
2	2	2	2	3	2	2	4	2
2	6	3	4	3	3	3	3	3
2	1	2	1	4	1	3	5	1
2	2	2	2	2	3	3	5	2
2	2	1	2	4	4	2	5	2

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	postint2	postint3	postint4	postint5	postint6	postint7	postint8	postint9
1	3	2	1	6	2	2	1	2
1	5	2	4	7	7	2	4	2
1	2	1	1	7	2	1	1	1
1	3	3	2	5	1	1	1	2
1	2	2	2	7	1	2	2	1
1	2	1	1	7	2	1	1	2
1	1	1	2	7	2	1	1	1
1	1	1	1	7	1	1	1	1
1	2	1	1	6	1	1	1	2
1	2	1	2	5	2	1	1	2
1	3	3	4	5	2	3	1	3
1	1	1	1	1	2	1	1	2
1	2	1	1	7	1	1	1	2
1	3	1	1	7	1	2	1	2
1	3	3	1	6	4	3	1	3
1	2	1	1	5	2	1	2	2
1	3	4	1	6	3	4	1	3
1	1	1	1	7	1	2	1	1
1	3	6	1	6	2	5	1	2
1	2	1	1	6	2	1	2	1
1	1	2	3	7	1	1	1	1
1	2	2	2	6	3	2	2	2
1	1	1	2	7	1	1	1	1
1	1	1	1	7	1	1	1	1
1	3	5	1	5	5	5	1	2
1	3	2	3	6	3	2	2	3
1	3	1	1	6	1	3	1	2
1	1	1	1	1	2	2	1	1
1	2	1	1	7	2	1	1	1
1	3	5	4	6	4	4	4	2
1	1	2	1	7	2	1	1	1
1	1	2	1	6	1	1	1	1
1	3	1	4	1	2	2	4	1
1	5	5	1	4	2	5	1	3
1	6	5	2	3	5	5	2	5
1	5	2	1	6	1	2	1	3
1	2	2	3	4	2	3	3	2
1	5	3	1	6	1	3	1	3
1	2	1	1	5	3	1	1	2
1	2	1	2	7	1	1	1	2
1	1	1	1	1	1	1	1	1
1	2	2	2	7	2	2	1	2
1	3	3	1	2	1	1	1	3
1	1	1	1	7	1	1	1	1
1	3	5	1	7	1	5	1	1

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	postint2	postint3	postint4	postint5	postint6	postint7	postint8	postint9
1	5	4	2	3	3	2	2	3
1	2	2	2	6	2	2	2	2
1	1	1	2	4	1	1	2	2
1	2	2	1	1	2	2	1	2
1	2	5	1	3	2	4	1	2
1	2	2	1	7	1	1	1	2
1	5	3	1	3	5	3	1	3
1	2	2	1	6	2	2	1	2
1	5	1	1	7	1	5	1	1
1	1	1	1	7	1	1	1	1
1	1	1	1	6	2	1	1	1
1	1	2	1	7	2	2	1	2
1	4	2	1	5	1	2	1	1
1	2	2	1	7	3	2	1	1
1	2	3	1	3	2	3	1	2
1	1	1	1	7	1	1	1	1
1	4	2	2	5	1	2	2	4
1	1	1	2	7	1	2	1	1
2	3	3	4	7	1	4	1	3
2	4	1	3	2	5	1	4	2
2	2	1	1	7	2	1	1	1
2	4	2	3	1	2	2	3	3
2	2	3	3	6	1	3	1	1
2	3	4	3	6	2	5	2	2
2	3	2	3	2	1	3	1	2
2	1	1	1	7	1	1	1	1
2	2	1	2	5	2	2	1	2
2	1	1	1	7	2	1	1	1
2	2	2	2	6	3	3	1	2
2	3	4	4	2	5	4	1	6
2	1	1	2	7	2	1	2	1
2	3	4	4	1	3	2	4	3
2	5	1	1	7	1	1	1	2
2	2	5	1	6	5	6	1	5
2	1	3	4	6	2	2	1	2
2	1	3	1	7	2	3	1	1
2	5	3	2	3	2	3	2	3
2	3	2	1	7	2	2	1	2
2	2	2	2	6	2	2	2	2
2	2	1	2	6	1	2	2	2
2	1	5	1	5	1	4	1	1
2	1	2	1	6	1	2	1	1
2	1	1	1	4	1	1	1	1
2	3	1	1	5	1	4	1	2
2	4	4	1	6	1	4	1	2

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	postint2	postint3	postint4	postint5	postint6	postint7	postint8	postint9
2	5	7	4	4	1	7	6	7
2	3	3	1	6	2	3	1	3
2	2	1	1	7	1	1	1	1
2	2	2	4	5	1	2	1	1
2	3	2	3	4	3	5	2	3
2	2	2	2	5	2	2	2	2
2	5	1	2	6	1	1	2	3
2	2	3	1	6	2	2	2	2
2	2	1	1	7	1	1	1	2
2	2	2	2	3	1	2	2	2
2	2	2	1	6	1	1	1	1
2	1	1	2	7	1	1	1	1
2	3	3	2	5	2	4	2	2
2	2	4	4	2	2	2	2	4
2	2	1	2	7	1	1	1	1
2	3	2	1	7	3	2	1	2
2	1	1	1	7	2	1	1	1
2	5	1	1	NA	2	1	2	5
2	3	3	4	1	2	4	4	3
2	1	4	1	2	4	4	3	2
2	2	1	4	7	1	2	2	2
2	1	1	1	7	1	1	1	1
2	3	3	1	6	2	3	2	2
2	2	4	1	3	2	3	2	2
2	2	2	1	6	2	2	1	2
2	2	1	1	7	1	1	1	1
2	1	2	1	6	2	2	1	1
2	2	4	2	5	2	3	2	2
2	3	5	2	4	1	4	4	1
2	2	2	1	7	1	1	1	2
2	1	2	1	7	1	2	1	1
2	1	1	2	7	2	1	2	1
2	3	2	1	6	1	4	2	1
2	5	5	1	1	1	4	1	3
2	2	1	1	7	1	1	1	2
2	2	1	3	6	1	1	1	2
2	2	2	3	5	2	2	2	2
2	3	2	3	5	1	2	2	2
2	2	1	4	1	2	1	1	1
2	3	3	2	6	2	3	2	2
2	2	2	1	7	1	2	1	2

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	postint10	postint11	postint12	postint13	postint14	postint14B	postint15
1	2	1	2	1	2	4	5
1	2	4	2	4	2	4	5
1	1	1	1	4	1	4	4
1	1	3	3	4	4	3	4
1	2	3	1	5	3	3	5
1	1	1	1	6	2	7	4
1	1	2	2	2	1	3	5
1	1	2	1	3	2	7	4
1	1	1	2	3	1	4	5
1	1	2	1	5	2	6	4
1	3	1	2	2	2	7	4
1	2	1	2	3	1	4	3
1	2	1	2	3	2	7	5
1	1	1	1	4	1	7	3
1	2	1	3	6	1	7	5
1	1	2	2	4	3	2	5
1	4	1	4	6	1	7	4
1	1	1	2	4	2	3	3
1	7	2	6	4	1	4	3
1	2	4	2	5	3	3	3
1	1	2	1	4	1	4	5
1	2	2	3	4	3	6	3
1	1	1	1	4	2	4	5
1	1	1	1	3	2	6	4
1	6	1	5	3	1	4	4
1	2	3	2	5	1	7	5
1	2	2	1	4	4	6	5
1	2	1	1	5	5	7	2
1	1	2	1	3	3	2	5
1	2	3	4	5	5	2	5
1	1	1	2	3	3	4	5
1	1	2	2	5	5	4	5
1	2	7	2	6	6	7	2
1	5	1	2	2	2	7	4
1	6	2	5	6	6	3	2
1	2	1	2	6	6	6	5
1	3	3	2	5	5	6	4
1	3	1	3	7	7	7	3
1	2	3	4	2	2	7	4
1	1	1	1	4	4	4	5
1	1	1	2	2	2	6	5
1	2	2	2	3	3	3	5
1	2	2	3	2	2	1	1
1	1	1	1	2	2	2	3
1	7	1	6	2	2	7	4

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	postint10	postint11	postint12	postint13	postint14	postint14B	postint15
1	2	2	2	4	4	6	2
1	2	2	1	4	4	3	4
1	1	2	2	3	3	4	4
1	2	1	2	3	3	4	4
1	5	1	4	4	4	4	4
1	1	2	1	3	3	4	5
1	3	1	2	2	2	7	3
1	2	1	2	2	2	7	5
1	7	1	5	2	2	3	4
1	1	1	1	4	4	7	3
1	2	1	2	1	1	7	4
1	2	1	2	4	4	7	5
1	2	1	2	4	4	7	5
1	2	1	1	3	3	7	5
1	3	1	2	3	3	7	3
1	1	1	2	4	4	7	5
1	3	3	4	6	6	3	4
1	1	1	1	6	6	7	5
2	4	3	4	2	3	NA	5
2	1	4	3	2	2	NA	3
2	2	3	2	4	2	NA	5
2	3	3	2	4	2	NA	4
2	5	1	4	5	3	NA	3
2	5	6	3	5	6	NA	4
2	2	4	2	7	1	NA	1
2	1	2	1	3	2	NA	5
2	2	1	2	7	3	NA	
2	1	1	1	4	1	NA	5
2	3	1	3	3	2	NA	5
2	6	2	5	7	5	NA	4
2	1	3	2	3	3	NA	5
2	3	4	2	4	6	NA	3
2	1	1	2	2	2	NA	5
2	7	1	5	5	7	NA	3
2	2	3	2	3	3	NA	4
2	5	2	4	6	2	NA	3
2	3	2	3	2	3	NA	4
2	2	1	2	4	3	NA	5
2	2	2	2	3	2	NA	4
2	2	2	2	5	3	NA	5
2	4	1	1	6	4	NA	3
2	2	1	2	6	1	NA	5
2	1	1	1	2	2	NA	3
2	3	1	3	1	1	NA	3
2	5	1	4	4	1	NA	5

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	postint10	postint11	postint12	postint13	postint14	postint14B	postint15
2	7	7	7	6	7	NA	3
2	5	1	2	3	2	NA	2
2	1	1	1	2	2	NA	5
2	2	3	2	6	3	NA	1
2	3	3	2	1	2	NA	3
2	2	2	2	3	3	NA	5
2	2	2	1	4	1	NA	5
2	2	2	2	3	2	NA	4
2	1	2	1	7	2	NA	3
2	2	2	2	4	2	NA	5
2	1	1	1	5	1	NA	4
2	1	2	1	3	2	NA	5
2	3	2	3	4	2	NA	4
2	3	3	4	3	2	NA	2
2	2	2	2	3	2	NA	4
2	2	1	1	6	4	NA	5
2	1	1	1	3	2	NA	4
2	4	2	5	2	3	NA	2
2	4	3	4	3	4	NA	4
2	5	5	2	6	1	NA	2
2	1	2	2	5	3	NA	4
2	1	1	1	4	2	NA	2
2	3	1	3	4	4	NA	2
2	2	2	2	3	3	NA	2
2	2	2	2	3	2	NA	4
2	1	1	1	4	5	NA	5
2	2	1	2	4	2	NA	4
2	3	2	3	4	2	NA	2
2	5	4	1	7	1	NA	4
2	1	2	2	1	2	NA	4
2	1	2	1	1	1	NA	5
2	1	2	2	7	2	NA	3
2	3	1	4	5	2	NA	5
2	4	1	3	3	4	NA	3
2	1	1	1	6	1	NA	4
2	1	1	1	4	3	NA	4
2	2	3	2	5	3	NA	2
2	2	3	2	4	4	NA	4
2	1	1	1	3	1	NA	5
2	3	2	3	2	2	NA	3
2	2	1	2	4	2	NA	5

Table 19. Raw Data Continued

Key:

tgroup = test group (1=experimental, 2=control)

preint = PAIQ responses by item number before intervention

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

tgroup	postint16	ck1A	ck1B	ck1C	ck2	ck3	ck4	ck5	ck6	ck7	ck8	ck9	ck10
1	4	2	3	2	2	2	3	3	3	1	2	5	2
1	5	3	6	3	2	2	2	6	4	3	3	NA	2
1	5	1	2	1	4	1	3	3	5	1	1	3	2
1	5	3	3	1	4	3	3	2	4	2	2	3	1
1	5	4	5	5	1	3	4	3	2	1	1	2	3
1	5	2	7	1	2	2	2	3	2	2	1	5	1
1	4	1	7	3	3	3	1	1	3	2	1	4	1
1	5	1	6	1	1	1	1	1	1	1	1	3	1
1	4	1	2	1	3	2	2	3	3	1	1	8	1
1	4	2	7	1	4	4	2	3	4	1	3	4	2
1	4	2	1	2	2	2	2	3	2	2	2	4	3
1	5	2	6	2	1	1	1	5	2	4	2	5	2
1	4	2	2	3	2	1	1	2	3	2	2	4	2
1	5	1	3	4	2	3	1	1	4	3	1	7	2
1	4	2	2	2	4	2	3	5	7	2	2	1	2
1	4	2	2	3	4	3	4	2	3	2	2	3	2
1	5	2	5	4	3	2	3	5	7	2	1	7	2
1	5	2	2	1	2	1	1	1	2	1	1	4	1
1	4	2	1	1	2	3	2	3	2	3	3	3	3
1	4	2	3	4	4	2	1	2	4	2	2	4	2
1	5	1	4	2	1	1	1	1	1	1	1	5	1
1	4	2	2	2	3	3	3	3	3	2	4	1	4
1	5	1	7	1	3	1	2	1	4	7	1	7	1
1	5	1	1	1	1	1	1	1	3	2	1	3	2
1	5	2	2	2	4	2	5	2	6	3	2	3	6
1	3	2	3	2	3	4	3	3	4	3	3	5	3
1	4	1	5	4	1	3	2	3	6	2	2	7	4
1	4	1	2	1	1	2	2	1	2	1	3	3	3
1	5	1	2	1	1	2	1	1	2	1	2	4	2
1	4	3	2	1	3	3	2	2	4	3	3	1	3
1	5	1	6	1	2	1	2	2	2	2	2	3	2
1	5	2	3	4	3	1	2	1	2	2	1	3	2
1	3	2	4	4	2	3	2	3	4	2	3	4	2
1	2	1	1	3	5	2	2	1	6	1	2	1	3
1	3	2	2	2	3	6	3	5	3	3	6	5	6
1	4	2	2	1	4	3	4	2	5	3	3	5	NA
1	3	2	4	3	4	5	3	3	6	1	3	5	3
1	4	4	7	4	4	6	5	2	7	5	6	5	3
1	5	2	3	2	1	1	1	2	4	3	1	8	3
1	4	1	3	2	1	1	1	1	1	1	1	7	1
1	5	1	3	1	1	2	2	1	2	2	1	5	1
1	5	5	6	1	2	1	1	1	1	4	2	3	2
1	3	2	2	2	2	2	2	3	2	1	2	4	3
1	4	1	3	2	1	3	1	1	1	1	1	5	2
1	4	2	2	2	2	2	3	4	4	3	2	3	2

Key:
 tgroup = test group (1=experimental, 2=control)
 preint = PAIQ responses by item number before intervention
 postint = PAIQ responses by item number after intervention
 ck = intervention check responses by item number

tg	group	postint16	ck1A	ck1B	ck1C	ck2	ck3	ck4	ck5	ck6	ck7	ck8	ck9	ck10
1	1	3	4	3	1	3	5	4	3	5	1	5	1	4
1	1	4	2	4	2	5	2	2	2	3	2	2	7	2
1	1	4	2	1	4	2	3	2	1	2	1	1	3	2
1	1	4	2	2	1	2	2	5	2	5	3	1	3	2
1	1	3	2	2	2	4	3	2	2	3	3	3	4	3
1	1	4	2	3	3	3	2	2	2	2	3	2	7	2
1	1	3	5	7	1	3	7	5	5	6	6	6	7	6
1	1	4	2	3	2	2	1	1	3	2	1	1	3	1
1	1	5	5	1	1	1	1	1	1	1	1	1	4	3
1	1	5	1	3	5	3	3	5	1	1	1	1	5	2
1	1	5	1	3	2	3	1	2	3	6	2	2	1	2
1	1	5	2	6	5	5	2	3	6	6	6	5	4	1
1	1	4	2	4	2	3	3	2	2	5	2	4	4	3
1	1	5	2	7	1	1	1	3	2	5	1	1	3	1
1	1	4	4	4	3	4	3	3	5	3	4	4	3	3
1	1	5	2	7	3	2	3	2	3	3	3	1	5	2
1	1	3	3	4	4	4	3	3	4	4	3	3	8	3
1	1	5	4	7	3	3	1	3	3	4	4	2	8	2
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	2	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

tgroup = test group (1=experimental, 2=control)

postint = PAIQ responses by item number after intervention

ck = intervention check responses by item number

[illegible]

APPENDIX A

LITERATURE REVIEW

Since the early 1980s, the prevalence of obesity has escalated while levels of physical activity have declined in adults (Flegal, Carroll, Ogden, & Johnson, 2002; Kuczmarski, Flegal, Campbell, & Johnson, 1994). Results from the 1999 - 2000 NHANES indicate that 64% of adults are considered overweight ($BMI \geq 25$), with 30% of those considered obese ($BMI \geq 30$) (Flegal et al., 2002). Furthermore, the Centers for Disease Control and Prevention (U.S. Department of Health & Human Services [HHS], 1996) estimate that more than 60% of the American population is not physically active on a regular basis (i.e., at least 30 minutes of moderate physical activity most days of the week), with 25% participating in no structured physical activity whatsoever. Because obesity and low levels of physical activity are associated with chronic diseases, such as coronary artery disease, cancer, and stroke (Blair, Kohl, Gordon, & Paffenbarger, 1992), it would seem important to develop programs that promote physical activity, while preventing and treating obesity in adults.

The U.S. Surgeon General has suggested that moderate amounts of physical activity performed for at least thirty minutes per day on most days of the week will decrease the likelihood of chronic diseases (HHS, 1996). Many programs and strategies designed to promote physical activity have been implemented. However, it appears that the increase in the number of exercise facilities and promotion programs, as well as the vast amount of easily-accessible health and fitness information (e.g., internet, television, and magazines) have proven minimally effective in improving health and fitness behaviors among adults. Some of the most commonly reported barriers to physical activity include lack of time, insufficient resources, low energy, and lack of willpower

(HHS, 1996). Regarding time as a barrier, however, studies have also shown that Americans spend an average of ten times as much time watching television as exercising (Fahey, Insel, & Roth, 2002; Jones & Eaton, 1995). This discrepancy suggests that other factors other than those listed may be contributing to the failure of many adults to meet the recommended physical activity guidelines as determined by the U.S. Surgeon General.

It seems that a greater understanding of strategies targeting altering intention to change a behavior are needed to promote behavior change (Mooney & Dougherty, 1989), such as meeting or exceeding the U.S. Surgeon General's physical activity recommended guidelines. Godin (1994b) suggested that an optimal intervention must ultimately be derived from an understanding of the aspects and beliefs underlying physical activity behavior in a specific situation. Although changing beliefs or knowledge cannot guarantee behavior change, it will usually have a positive impact (Smith & Biddle, 1999).

Barriers to physical activity may be overcome if an individual has an intention to change their current level of physical activity. Behavioral intention is the likelihood that the individual will engage in a given behavior (Ajzen & Fishbein, 1980). In general, individuals will intend to perform a behavior when they view it positively and when they presume that other people important to them believe that they should perform it (Ajzen & Fishbein, 1980; Armitage & Conner, 2001). It is well known in the relevant research that intention is assumed to be an immediate determinant of behavior (Ajzen & Fishbein, 1980; Sheppard, Hartwick, & Warshaw, 1988; Palmer, Burwitz, Smith, & Borrie, 2000). However, in order to influence levels of intention to change a behavior, researchers must reveal information that will produce changes in an individual's beliefs (Ajzen &

Fishbein, 1980). Altering an individual's beliefs is likely to have an effect on the person's intention *and* behavior (Palmer et al., 2000). The change in beliefs must be strong enough that it presides over any preconceived attitude that the individual has (Ajzen & Fishbein, 1980).

Much of the research concerning behavior change and physical activity employs the Theory of Reasoned Action (Ajzen & Fishbein, 1980). The primary objective of this theory is to understand and predict an individual's behavior, based on the assumption that intention determines behavior and that intention is formed from attitude and subjective norm (Smith & Biddle, 1999). This theory later evolved into the Theory of Planned Behavior, when Ajzen (1991) added an additional component of perceived behavioral control to explain behaviors that were not under complete voluntary control. Maddux proposed a revision to the Theory of Planned Behavior that further defined the determinants of intention to change a behavior (Maddux & DuCharme, 1997). The following review explains the progression of the Theory of Reasoned Action as well as the effects of the theory utilized in the exercise domain.

Theory of Reasoned Action

The fundamental goal of the Theory of Reasoned Action (TRA) is the successful prediction of an individual's behavior (Ajzen & Fishbein, 1980). The TRA is based on the postulation that intention determines behavior and that intention is formed from a combination of social (subjective) norms and attitude (Smith & Biddle, 1999). Attitude, according to Godin (1994a), is an assessment of beliefs concerning the perceived consequences of carrying out a specific action or behavior and a personal evaluation of the outcome. In most cases, the more optimistic the individual's attitude is concerning the

behavior, the stronger the intention to perform the behavior (Armitage & Conner, 2001). Social norm concerns the opinion of significant others and the degree to which an individual is motivated to comply with these people and their expectations (Smith & Biddle, 1999). Social norm involves an individual's *perception* of what he thinks others want him to do, rather than what they may *actually* think. According to the TRA, the more a person believes that significant others think that he should perform a certain behavior, the more likely he is to intend to do so (Ajzen & Fishbein, 1980). A meta-analysis performed by Armitage and Conner (2001) provided evidence that subjective norm had the smallest relationship with intention to change a behavior. However, they noted that this could be due, in part, to measurement error. Ajzen and Fishbein (1980) found limited evidence that attitude plays a larger role in competitive behaviors, while normative beliefs play a larger role in cooperative behaviors. Smith and Biddle (1999) found that social norm had a higher correlation with intention than attitude did in a study of the TRA designed to predict attendance to a health club exercise program. Ajzen and Fishbein (1980) explained that attitudinal determinants might be more important than normative considerations for some intentions, while the opposite is true for other behaviors. Additionally, the relative weight of the two components may vary from person to person.

In general, the TRA has proved very useful in refining the decision-making process that leads to exercise behavior (Godin, 1994a). Based on a meta-analysis of 87 studies that utilized the TRA, Sheppard, Hartwick, and Warshaw (1988) found the intention-behavior correlation to be 0.53. In a review of twelve studies that employed the TRA, Godin (1994b) found that 30% of the variability in behavior was explained by

intention. The intention-behavior correlation in Godin's review was .55. Ajzen and Timko (1986) suggested that the measurement variables be very specific to the particular behavior in question, if the model is to be utilized correctly and for the correlation to be accurate. The measure of intention must correspond to the behavioral criterion in terms of a single action (attitude towards group exercise), target (a specific group exercise class), context (a particular time of the day), and time (during a ten week period) (Ajzen & Fishbein, 1980).

The Theory of Reasoned Action was developed to explain voluntary behaviors and not outcomes resulting from those behaviors (Sheppard et al., 1988). For example, the model could be used to establish an individual's decision to begin an aerobic workout class, not to establish if the individual would achieve weight loss or improved body composition from the exercise class. Outcomes would be virtually impossible to predict because of the different genetic and biological factors people possess (Ajzen & Fishbein, 1980).

Theory of Planned Behavior

A major limitation of the Theory of Reasoned Action is the assumption that the behaviors being studied are under volitional (voluntary) control (Godin, 1994a). Because most behaviors fall within a range of complete control to absolute lack of control (Godin, 1994a), the Theory of Reasoned Action is not always entirely effective in predicting the variance of behavior based on intention. A person is thought to have complete control when there are no constraints to achievement of the behavior change. However, if the behavior change requires resources, abilities, or opportunities that an individual does not possess, then the individual has a lack of control (Godin, 1994b).

The Theory of Planned Behavior (TPB) was developed by Icek Ajzen to account for behavior that was not completely under voluntary control (Smith & Biddle, 1999). The TPB is a revision of the Theory of Reasoned Action with a third variable, perceived behavioral control, added to the model to further explain the constructs leading from intention to behavior change.

Perceived behavioral control (PBC) refers to an individual's judgment of his or her power to perform a behavior (Sheeran, Trafimow, Finlay, & Norman, 2002). In other words, it concerns the degree of ease or difficulty involved with the behavior change. Perceived behavioral control may directly influence behavior change, or it may have an indirect influence through intention (Armitage & Conner, 2001). Sheeran et al (2002) found that the Theory of Planned Behavior, with the added perceived behavioral control construct, increased the variance in intention compared to the Theory of Reasoned Action. Armitage and Conner (2001) performed a meta-analysis of the Theory of Planned Behavior and they found that perceived behavioral control added an average of 6% to the intention prediction variance. When perceived behavioral control is added to the TRA, social norm usually becomes less of a predictor of intention than attitude or PBC (Smith & Biddle, 1999).

Revised Theory of Planned Behavior

In a recent manuscript containing four studies designed to test the perceived behavioral control construct of the TPB, Trafimow, Sheeran, Conner and Finlay (2002) found that PBC might be a better predictor of exercise intention if it was further broken down into perceived control and perceived difficulty. According to their definitions, perceived control concerns the degree to which an individual believes behavior

performance is under his or her control. Perceived difficulty refers to whether the individual considers the task difficult or easy. Travimov et al. (2002) suggested that under one's control versus not under one's control and effortless versus difficult are dissimilar concepts in some instances. For example, weight training with barbells can be considered under one's volitional control in most cases. However, if an individual has no access to a weight training facility, does not have the means to purchase barbells, and does not know anyone that has access to barbells, then that behavior would be difficult for that person.

Travimow et al. (2002) found that perceived control was sometimes a greater indicator of intention and in other cases perceived difficulty was a more accurate indicator. It appeared that the Theory of Planned Behavior might need a modified construct. Maddux offered a revision to the TPB that included other social cognitive models, such as components of the Protection Motivation Theory, Transtheoretical Model, and the Health Belief Model (Maddux & DuCharme, 1997; Palmer et. al, 2000). The revised Theory of Planned Behavior was intended to assimilate models of health behavior to incorporate the best of each model (Maddux & DuCharme, 1997).

The revised Theory of Planned Behavior was designed to replace the perceived behavioral control construct with a similar concept of self-efficacy. Self-efficacy refers to an individual's belief that he or she can execute some act successfully (Maddux & DuCharme, 1997). This definition takes both perceived control and perceived difficulty into account. The greater the amount of self-efficacy that individuals believe they possess, the less difficult tasks will seem to them (Palmer et al., 2000). In a recent review of 38 studies concerning the determinants of physical activity, Trost, Owen, Bauman,

Sallis, and Brown (2002, p. 1998) found that self-efficacy has “emerged as the most consistent correlate of physical activity behavior”. Self-efficacy is thought to influence behavior both directly and through intentions (Palmer et al., 2000).

In addition to the perceived behavioral control change, Maddux argued that attitudes should be measured separately towards an individual’s current behavior and the new behavior. (Maddux & DuCharme, 1997). Individuals may weigh the possible benefits and dangers of both behaviors. A person contemplating behavior change may feel a susceptibility to the consequences of the current behavior that may influence her attitude and intention to change her behavior (Palmer et al., 2000). To summarize, intentions predict behavior and are formed from the following constructs: self-efficacy, attitude toward a new behavior, attitude toward the current behavior, and perceived social norms.

According to the revised TPB, there are decision-making cues in the initiation phase of a behavior that lead to the four constructs (self-efficacy, attitude toward current behavior, attitude toward new behavior, and perceived social norm) and over time, these cues may lead to habit formation (Palmer et al., 2000). Cues to decisions are cues that lead to intention to change a behavior, but do not necessarily lead to behavior change. If the behavior is repeated over time, it is thought to become more of an automatic response or a habit. It is then considered a cue to action. From this point, behavior change is more likely (Maddux & DuCharme, 1997). By incorporating the concept of situational cues and habit formation, Maddux changed the theory into more of a stage theory, consistent with the Transtheoretical Model.

The Transtheoretical Model (Prochaska & Marcus, 1994) was designed to describe the stages that an individual experiences during the process of behavior change. According to the Transtheoretical Model (Prochaska & Marcus, 1994), an individual who has not yet considered a behavior change is in the precontemplation stage. Once an individual has decided that he intends to change a behavior in the next six months, he has progressed into the contemplation stage. During the preparation stage, an individual intends to take action in the very near future and he usually has a plan of action. The action stage has been reached once the behavior change has been initiated. Action is the least stable stage, where relapse is most likely to happen. Once the behavior change has been in the action phase for six months, maintenance has been attained. The progression from precontemplation to maintenance is not always linear, as individuals may progress and regress many times during the process of behavior change.

Courneya (1995) found that the Theory of Planned Behavior and the Transtheoretical Model shared many important elements. For example, intention was directly related to the stage of behavior change. Individuals in the precontemplation phase had more negative attitudes and lower self-efficacy than individuals in the later stages of the model. The revised Theory of Planned Behavior proposes that as individuals progress through the stages of behavior change, a behavior becomes more habitual (Palmer et al, 2000). As an intentional behavior becomes more of an automatic behavior, the social cognitive constructs important for beginning a behavior change may be different from those important to long term adherence of a behavior change (Maddux & DuCharme, 1997; Godin, 1994b). It should be noted, however, that habit formation could take a substantial amount of time.

The revised Theory of Planned Behavior appeared to be a better predictor of exercise adherence than Ajzen's model in an intervention designed to increase training adherence in elite netball players (Palmer et al, 2000). This study used persuasive communication and time management to persuade the players to adhere to a rigorous training regimen. Ninety-four percent of the participants reported that their attitude towards the intervention was more positive. In addition, 94% of the participants credited changes in their adherence levels to some portion of the intervention (Palmer et al, 2000).

Conclusion

It is assumed that intention is a strong determinant of behavior change (Ajzen & Fishbein, 1980; Maddux & DuCharme, 1997; Sheppard et al., 1988). Researchers have proposed that intention is determined by a combination of self-efficacy (or its close match, perceived behavioral control), attitude, and social norm (Armitage & Conner, 2001; Sheeran et al., 2002; Maddux & DuCharme, 1997; Smith & Biddle, 1999). It appears that intervention strategies to promote intention to become physically active need to concentrate on each of these components. However, the literature is discordant on which component has the greatest impact on intention and behavior change (Armitage & Conner, 2001; Smith & Biddle, 1999; Ajzen & Fishbein, 1980). It is also unclear how much intention a person must possess in order to successfully experience a behavior change. Perhaps if fitness researchers determine which constructs participants are lowest in, interventions focusing on those constructs could be prescribed. In this way, exercise professionals may be able to raise the level of intention in certain participants, and may possibly contribute to the success of the behavior change. After a behavior change has been successfully maintained for at least six months, and the intentional determinants

have been improved, a habit is likely to form (Palmer et al, 2000). At this point, new strategies may need to be employed to promote long-term adherence of the behavior change (Maddux & DuCharme, 1997).

APPENDIX B

Institutional Review Board

1. Subjects will be recruited from Physical Fitness and Wellness (PFW) 1101A Beginning Aerobics offered during Spring of 2003 at Southwest Texas State University. The sample will be selected from approximately 160 students. Although the courses are open to males and females, 18 years or older, and of all ethnicities, the majority of the students that are enrolled in these classes are 18 to 22 year old Caucasian females. This population is of particular interest in this study because there is a need to further understand the determinants of attitudes toward physical activity and behavioral change in young adult females.
2. Each student will be advised about the components of the study. In order to participate in this study, the students must sign an informed consent form and complete a medical health appraisal.
3. The potential risks of the study are minimal. The only ramifications to be encountered are delayed onset muscle soreness and/or fatigue. It is important to note that the intensity and duration of exercise will be no greater than that of any other physical fitness and wellness class.
4. In order to minimize potential risk, each participant is able to withdraw from this study at anytime without any consequences to her course grade. In addition to having self-control over termination, other safety measures included: a) the aerobics instructor

(i.e., the primary investigator) is certified in CPR, and b) the aerobics room is in close proximity to the athletic training offices.

5. Participation in the study will provide the students with knowledge about the testing procedures and about how to carry out a scientific experiment. The results of this experiment will provide each student with a working knowledge about her intention to participate in a group exercise class and about the components of behavior change. In addition, the results may help health and fitness instructors design and implement strategies that may optimize intention to change exercise behavior among participants in a group exercise setting.
6. There will be minimal risks to healthy students under the testing conditions specified. It is important to note that all students are given a medical healthy history evaluation the first day of class and are referred to their physician if they are found to be at high risk of a cardiac event or musculoskeletal injury prior to participation in the activities. Potential risks associated with the study for apparently healthy, young adults are delayed onset muscle soreness, muscles spasms, breathlessness, and fatigue.
7. Approval for this study to be conducted in Jowers will come from Dr. Bob Pankey, Chair of the Health, Physical Education, and Recreation Department.
8. This project is being conducted for my thesis. My Committee Chair is Dr. Lisa Lloyd, assistant professor in the Health, Physical Education, and Recreation

Department at Southwest Texas State University. She can be reached at (512) 245-8358. Dr. Eric Schmidt and Dr. Larry Price in the Educational Psychology Department at Southwest Texas State University are also on my committee.

9. This investigation has the approval of Dr. Lisa Lloyd, chair.
10. This project has not had prior review by another IRB.
11. The individuals being tested and the thesis committee will have access to the unpublished results of the study.

APPENDIX C

Statement of Informed Consent

You are invited to participate in a study investigating the effects of various intervention strategies on the components of intention that are necessary to change one's physical activity behavior. In other words, we are trying to identify strategies that will have the greatest influence on your intention to participate in a group exercise class. I am a graduate student and a graduate teaching assistant at Southwest Texas State University in San Marcos, in the Health, Physical Education, and Recreation Department. I am performing this study to fulfill my master's thesis requirement. I hope to learn how strategies based on the Revised Theory of Planned Behavior impact the intention to change physical activity behavior. You were selected as a possible participant in this study because your class was chosen to be included in this study, to test ways to make the class more enjoyable as well as more effective in meeting your health, fitness, and wellness goals. You will be one of approximately 160 students chosen to participate in this study.

If you decide to participate, you will be given: (a) a questionnaire assessing the different components of intention to change your physical activity behavior and (b) a physical activity questionnaire (before the first physical activity session and after the eight-week program). The questionnaire data will be used to explore the impact of various intervention strategies on your intention to change your physical activity behavior.

There are minimal risks to healthy individuals participating in exercise testing and during group exercise training. It is important to be aware that the potential risks associated with exercise include muscle soreness, temporary breathlessness, and minimal bouts of fatigue. The effort required during this study is very similar to the physical efforts required of an individual during any other physical fitness and wellness class at SWT. The investigators are experienced and have conducted numerous group exercise classes and exercise tests. In addition, emergency equipment is located nearby in the athletic training offices and is available at all times.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission.

If you have any questions, please feel free to ask me now. If you any additional questions later, feel free to contact me, (512) 245-8304, or the chair of my thesis, Dr. Lisa Lloyd, (512) 245-8358, and we will be happy to answer them.

You will be offered a copy of this form to keep.

Your decision whether or not to participate in this study will not prejudice your future relations with Southwest Texas State University or with me. If you decide to participate, you are free to discontinue participation at any time without prejudice (i.e., your grade will not be affected if you decide to withdraw from this study).

Your signature indicates that you have read the information provided above and have decided to participate.

I have read this form, and I understand the test procedures, risks, discomforts, and benefits of the study that I am about to participate in. Knowing these risks and discomforts, and having had an opportunity to ask questions that have been answered to my satisfaction, I consent to participate in this study.

Signature of Participant

Date

Signature of Witness

Date

Signature of Investigator

Date

APPENDIX D

Physical Activity Intention Questionnaire:

NAME _____

DATE _____

Please read each statement *slowly and carefully* and place a check mark in the box that best describes how you feel:

	1 I intend/plan to meet the current Surgeon General's recommendations of performing moderate amounts of physical activity at least 30 minutes in duration most days of the week for the next 8 weeks							
Likely	☐	☐	☐	☐	☐	☐	☐	Unlikely
	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
	2 It would be.							
Easy	☐	☐	☐	☐	☐	☐	☐	Difficult
	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
	for me to meet the current Surgeon General's recommendations of performing moderate amounts of physical activity at least 30 minutes in duration most days of the week							
	3 For me to continue my current level of physical activity would be							
Beneficial	☐	☐	☐	☐	☐	☐	☐	Harmful
	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
	4 People who are important to me think that I							
Should	☐	☐	☐	☐	☐	☐	☐	Should not
	meet the current U S. Surgeon General's recommendation of performing moderate amounts of physical activity for at least 30 minutes in duration most days of the week							
	5 I intend/plan to only be physical active during the two aerobic classes per week							
Likely	☐	☐	☐	☐	☐	☐	☐	Unlikely
	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
	6 The amount of physical activity that I perform is							
Under my Control	☐	☐	☐	☐	☐	☐	☐	Not under my Control
	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
	7 For me to continue my current level of physical activity would be							
Good	☐	☐	☐	☐	☐	☐	☐	Bad
	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
	8 People who are important to me would							
Approve	☐	☐	☐	☐	☐	☐	☐	Disapprove
	Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely	
	of me meeting the U S Surgeon General's recommendation of performing moderate amounts of physical activity for at least 30 minutes in duration most days of the week							

9 / 10

Confident

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely
-----------	-------	----------	---------	----------	-------	-----------

Not at all Confident

that I can meet the current Surgeon General's recommendations of performing moderate amounts of physical activity at least 30 minutes in duration most days of the week

10 For me to continue my current level of physical activity would be

Desirable

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely
-----------	-------	----------	---------	----------	-------	-----------

Undesirable

11 People who are important to me want me to meet the current U.S. Surgeon General's recommendation of performing moderate amounts of physical activity for at least 30 minutes in duration most days of the week

Likely

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely
-----------	-------	----------	---------	----------	-------	-----------

Unlikely

12 For me to continue my current level of physical activity would be

Enjoyable

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely
-----------	-------	----------	---------	----------	-------	-----------

Not Enjoyable

13 I feel under social pressure from people who are important to me to meet the current U.S. Surgeon General's recommendation of performing moderate amounts of physical activity for at least 30 minutes in duration most days of the week

Social Pressure

Extreme	Quite	Slight	Neither	Slight	Quite	Extreme
---------	-------	--------	---------	--------	-------	---------

Lack of Social Pressure

14 How accurate is the following statement?
I know exactly how people who are important to me feel about me being physically active

Accurate

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely
-----------	-------	----------	---------	----------	-------	-----------

Not Accurate

Please read each statement slowly and carefully and circle the answer that best describes how you feel:

15 On average (in the last six months), how many minutes of moderate physical activity **per week** have you participated in?

- 0-30 minutes
- 31-60 minutes
- 61-90 minutes
- 91-120 minutes
- 121 minutes or more

16 What is your intention to be physically active **outside of this class**?

- No intention
- Low intention
- Some intention
- Very much intention
- Total intention

This is the end of the intention questionnaire. Thank you for your honesty and participation. Please raise your hand and your instructor will pick up your questionnaire.

APPENDIX E

NAME. _____

Intervention Check:

Please read each question carefully and place a check mark in the box that best describes your answer

1A My attitude toward following the U.S. Surgeon General's recommendation of performing moderate amounts of physical activity at least 30 minutes in duration per day most days of the week has become more favorable.

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

1B I believe that the amount of physical activity that I performed at the beginning of this study was inadequate

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

1C Learning about the high risk of disease associated with low levels of physical activity has made me want to become more physically active

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

2 Learning about the stages of behavior change was useful to me

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

3 I found that setting physical activity goals helped me to stick with my physical activity program.

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

4 Discovering my barriers to physical activity and thinking of ways to overcome them was useful to me

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

5 I believe that I have more time for physical activity than I used to think

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

6 Asking people who are important to me how they feel about my level of physical activity and listening to what they had to say was useful for me

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

7 I feel more confident in designing an exercise program for myself than I did before this class

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

8 Making physical activity a habit has helped me to stick with my physical activity program

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

9. Which one of the intervention strategies do you feel was the most beneficial to you?

(Please circle only ONE strategy)

1 Disease Risk and Principles of Physical Fitness

2 Stages of Behavior Change

3 Goal Setting

4 Overcoming Barriers to Physical Activity

5 Time Management

6 Social Norm Activity

7 Self-directed Workouts

8 Habit Maintenance

10 I was successful in making physical activity a habit

Agree

Extremely	Quite	Slightly	Neither	Slightly	Quite	Extremely

 Disagree

VITA

Tabitha Lee Halfmann Goren was born in San Angelo, Texas, on November 13, 1974, the daughter of A. T. Halfmann, Jr. and Kathy Halfmann. After completing her work at Ballinger High School, Ballinger, Texas, in 1993, she entered Southwest Texas State University in San Marcos, Texas. She received the degree of Bachelor of Exercise and Sports Science in August, 1998. She then went to The Lauterstein-Conway Massage School from 1999-2000. During this time, she was employed as a manager for a Robmund Corporation. In August, 2001, she entered the Graduate School of Southwest Texas State University in San Marcos, Texas.

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This thesis was typed by Tabitha Lee Halfmann Goren.