Potential Clinical Implications of Implicit and Explicit Attitudes Within Possible Exercise Selves Schemata: A Pilot Study

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Our purpose was to explore implicit as well as explicit exercise schemata of 51 inactive to highly active college students. For the implicit measure, a pilot study was used to establish the word set (exercise related, nonexercise related, and nonwords) for the lexical decision task. A latency differential was calculated based on reaction times to these word sets. Participants used self-regulatory functions to rate both hoped and feared exercise behaviors and reported workout hours. An estimate of aerobic fitness was derived. Results showed that implicit exercise attitudes were related to the “importance” placed on being an exerciser and on avoiding being a nonexerciser. Those who self-identified as an exerciser had higher levels of self-efficacy, workout, and fitness. In contrast, those who self-identified as a nonexerciser were less active and fit and seemed to dwell on negative thoughts related to self-efficacy. Clinicians might help clients explore these attitudes, especially importance.

KEY WORDS: exercise schema; possible selves; implicit attitudes.

Exercise is highly recommended by health promotion experts as beneficial to cardiovascular fitness as well as to general physical health, mood, and overall well-being (Petrella, 1999; Schwenk, 1999). Despite these endorsements, according to the U.S. Department of Health and Human Services (1996), 60% of adults exercise less than the recommended amount and 25% are entirely sedentary. Given the extensive benefits, one would think that most people would believe that they should exercise regularly. Understanding the links between people’s cognitions, motivations, and goals related to exercise continues to be important. One approach is through the use of schema theory and possible selves theory. A review of the literature follows.

Self-schemata are cognitive structures that describe personal interests and investments in various areas in terms of their relevance to the self. A specific schema is designated when the pertinent behavior is endorsed as both highly self-descriptive and very important to the individual (Markus, 1977). For example, people are thought to have an exercise schema when they view themselves as exercisers and consider exercise as very important to them. Self-schemata encompass current, past, and future selves, whereas possible selves theory is limited to the exploration of future selves, that is, what one hopes to be or conversely fears becoming. Because of this future focus, it is possible to explore everyone’s personal appraisal and intentions related to exercise. Possible selves are used to motivate as well as providing a basis for self-evaluation of the “now” self-schema (Cros & Markus, 1991). Elements of possible selves represent goals as well as cognitive and emotional systems (Hooker, 1999). See Markus and Nurius (1986) for a review of possible selves theory. Only one study was found that addresses possible selves specific to exercise. Whaley (1998) examined possible selves of middle-aged women as they relate to stages of exercise behavior. Although she found few differences in the types of possible exercise selves generated by...
these women across stages, those in the precontemplation stage listed body image as a possible self more frequently. Whaley also found that exercise specific self-efficacy was the best predictor of exercise habits. Kendzierski (1988) examined exercise self-schemas, attitudes, and exercise behavior using four categories. Participants were grouped as exerciser schematic (very important, very self-descriptive), schematic (moderate in importance and descriptive), nonschematic (very important but very nondescriptive), and unusable (32%). Comparing the three types, Kendzierski found that exerciser schematics exercised more in the past semester, currently, and that they were more committed to future exercising. She found that both indirect and direct measures of exercise attitudes characterized participants similarly and were good predictors of future exercise habits. In another study, Kendzierski (1990) compared the three exercise schematic types and found a consistent link between having an exercise self-schema, cognitions supportive of exercise, exercise habits, and the indirect measure. Yin and Boyd (2000) used the same three schematic groups and found that exercise schematics were higher in past exercise, fitness, and self-efficacy, and future expectations. Compared to ashenmatics and nonexercisers, Eastabrooks and Courneya (1997) found partial support for the idea that exercise schematics were more likely to follow through with their intentions to exercise. They also found that most nonexercisers view exercise as a positive habit and as important, despite their own lack of participation. These studies as a whole demonstrate consistently beneficial links between various cognitions and behaviors for exercise schematics while not as clearly defining these links for ashenmatics or nonexerciser schematics.

Sheeran and Orbell (2000) raised the concern that many participants, from 30-46%, in previous studies were unclassified using the schematics, ashenmatic, and nonschematic method (Eastabrooks & Courneya, 1997; Kendzierski, 1988; Yin & Boyd, 2000). For this reason, Sheeran and Orbell chose to define two groups: exercise schematics and unclassifiable types. Using schematics included those previously classified as ashenmatics, nonschematics, and unclassified types. The authors conducted separate moderated regression analyses for the two groups. Compared to unclassifiables, they found that schematics were more likely to follow through on their intentions to exercise. They also found that importance, one defining element of schema, had a moderating effect on the intention-behavior relationship but descriptive.

ness, the second element, did not. The authors recommended that continuous measures of importance be used to measure self-schemas.

Following Sheeran and Orbell (2000), we were particularly interested in our study to try to under- stand the full range of exercise schematics, for committed to less committed types and through the use of continuous measures of both importance and descriptive. We also believed that implicit exercise attitude, which are unavailable to conscious introspection, have not been carefully explored. Very little recent attention has been paid to this issue. As noted by Locke and Latham (2003), research is needed on the interaction of the subconscious and goals. Kendzierski (1988, 1990) used Markus' method (Markus, 1977) of affirmative and negative responses to assess reaction times, an indirect measure of implicit exercise attitudes. That method has subsequently been challenged. Fazio (1993) states that it has been clearly demonstrated that people respond affirmatively more quickly than they respond negatively to Kendzierski's works, participants responded to exercise (e.g., "athletic" and "energetic") words and nonexercise words (e.g., "lazy" and "sedentary") by indicating, as fast as possible, whether or not they considered the words to be self-descriptive. Response choices (i.e., "Me" or "Not me") were recorded as response latencies, an indirect measure of self-schemata. Asking participants whether these terms were self-descriptive is considered priming for these categories. For exercise schematics, one would expect responses to words related to the concept "exercise" to be primed. By contrast, for nonexercise schematics, one would expect responses to words contrary to the concept "exercise" to be primed. In line with this, Kendzierski reported that "exercisers" responded more quickly to primed exercise words and "nonexercisers" responded more quickly to nonexercise words. Exercisers' and nonexercisers' differential reaction times for exercise and nonexercise words reported by Kendzierski, therefore, constitute a report of implicit exercise attitudes.

Unfortunately, in Kendzierski's study, response type was perfectly confounded with schematic type as indicated by the direct measure. That is, exercisers were asked to respond affirmatively to exercise words and negatively to nonexercise words whereas nonexercisers were asked to respond affirmatively to nonexercise words and negatively to exercise words. Again, because it is well established that people respond affirmatively more quickly than they respond negatively (Fazio, 1993), this type of differential response latencies cannot be considered to be accurate indirect
measures of exercise-related aspects of self-schemata. The primary goal of our study was to eliminate both the priming and the attributional/negative design by redesigning an indirect method to measure implicit exercise attitudes. A review of indirect methods research follows.

For more than 20 years, neurophysiologists, cognitive psychologists, and social psychologists have contributed to an extensive literature regarding the cognitive unconscious (e.g., Kihlstrom, 1979; Reber, 1989; Schacter, Chiu, & Ochsner, 1993; Yestings, 2001). In contrast to intentional, attention-demanding conscious processes, unconscious processes are generally viewed as automatic (Bargh & Chartrand, 1999; Reber, 1989). Unconscious, negative attitudes about exercise, therefore, can be seen as forces that routinely act in opposition to conscious intentions to exercise. Various techniques have been employed to demonstrate the behavioral influences of unconscious cognition. The use of indirect tests has played an essential role in this work.

Indirect tests are used to assess cognitive structures without demanding that individuals make use of conscious introspection. Many indirect tests make use of comparisons of reaction times across different conditions (e.g., Hamann & Squire, 1997; Reed & Johnson, 1994). Of particular relevance to the current context is research in which indirect measures are used to identify implicit attitudes. For example, the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998) has been used to examine racial attitudes (Osgood, Haysen, & Oates, 2001), stigmata (Swanson, Rudman, & Greenwald, 2001), gender stereotypes (Rudman, Greenwald, & McGhee, 2001), and self-esteem and self-concept (Greenwald & Farnham, 2000). Such measures exhibit reliability and convergent validity (Cunningham, Preacher, & Banaji, 2001). Indirect measures are used to identify aspects of knowledge representations that are especially pertinent to the individual while remaining outside awareness. Both unconscious and conscious knowledge that is personally relevant constitute the self-schema.

Indirect measures, therefore, are a potentially useful means of assessing people’s self-schematic exercise attitudes without requiring complete and accurate awareness of such attitudes. In our lexical decision task procedure, participants responded to words descriptive of “exercisers” and words descriptive of “nonexercisers,” as established by pilot data. The reaction time differential (RTD) in response latencies between exerciser words and nonexerciser words is used as the indirect measure. It is assumed that the degree to which a word matches one’s self-schema will be a determinant of such reaction times. Thus, individuals with stronger exercise self-schemata should respond more quickly to exerciser words whereas individuals with stronger nonexercise self-schemata should respond more quickly to nonexerciser words. Thus, positive RTDs between decision latencies for nonexerciser words minus exerciser words should be reflective of exerciser self-schemata whereas negative RTDs should be reflective of nonexerciser self-schemata.

In addition to the indirect measure, we used a direct measure to assess possible selves related to the exercise schema. Participants were asked to describe ways in which they “would be” (e.g., fit, healthy, or to exercise daily) and ways one “feels being” (e.g., lazy, unmotivated, sickly) over the next 2 years. Note that feared selves relate to being a nonexerciser. We felt that the self-generated hoped and feared possible exercise selves combined with ratings of importance and “describes me now” would provide a more personally relevant exercise schema for exercisers and nonexercisers. Both hoped and feared selves were rated in terms of self-regulatory mechanisms.

We hypothesized that the indirect, RTD measure would be significantly related to self-regulatory processes, workouts, and estimated aerobic fitness. Jackson et al. (1990) developed the latter measure that is derived from a formula that includes body mass and recent exercise patterns. We believed that it might provide a more accurate measure of actual fitness than reported workouts alone. We also proposed that there would be differences in the types of both hoped-for and feared content domains of exercise selves based on whether participants’ RTDs indicated exerciser or nonexerciser components of self-schema.

**METHOD**

**Participants**

Fifty-one undergraduates (37 females and 14 males) enrolled at a Southeastern University participated in exchange for extra credit in their psychology courses. Their age demographics ranged from 18.5 to 33.1 years of age ($M = 21.1, SD = 3.44$). In terms of race, 11 (22%) were African American, 36 (71%) were White, two (4%) were Mexican American, and two declined to identify their race. When participants were grouped according to their having
Table 1. Demographics and Fitness Grouped According to Implicit Exercise

<table>
<thead>
<tr>
<th>Exerciser INX</th>
<th>Nonexerciser INX</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>60</td>
<td>15</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>64</td>
<td>5</td>
</tr>
<tr>
<td>African American</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>White</td>
<td>22</td>
<td>71</td>
</tr>
<tr>
<td>Mexican American</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Dribbled</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>High HMET*</td>
<td>21</td>
<td>68</td>
</tr>
<tr>
<td>Obese*</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>100</td>
</tr>
</tbody>
</table>

| High fitness ranged from HNET estimate of V̇O2max = 41-62.2 mR/min. Low fitness ranged from HNET estimate of V̇O2max = 16-40.6 mR/min. |
| Obese indicated by BMI ≥ 27. |

an either implicitly positive exercise (INX) or an implicitly nonexercise (INX) attitude, age, sex, and race distributions were balanced. See Table 1.

Procedure

Prior to volunteering, participants were told that the study was designed to examine the relationship between motivation and reaction time. The topic of exercise was not mentioned until after the indirect measurement of exercise attitudes (i.e., the lexical decision task) was completed. The procedure involved seven consecutive phases.

Self-Reflection Preparation

Two participants worked consecutively at two desks with computers. Participants first completed the Life Orientation Test-Revised (LOT-R) of Scheier, Carver, and Bridges (1994) by rating the degree to which they agreed with six items related to optimism and four filler items. We employed this test as a means of generally activating the participants’ self-attentions and to encourage self-reflection. None of the test items mentioned exercise. Responses to the LOT-R were not considered to be part of the data set for the study.

Lexical Decision Task

Eighty strings of letters were used as stimuli for the lexical decision task. Forty letter strings were words and 40 were nonwords. Twenty of the words were target words and 20 were filler words. Ten of the target words described individuals that typically exercise, and 10 described to as exerciser words. The other 10 target words described individuals that typically refrain from exercise, and are referred to as nonexerciser words.

Target words were selected in the following way. We began with the list of 14 single-word stimuli used by Kendzierski (1990). Next, we expanded this list by including synonyms from Roget’s Thesaurus (Moreh et al., 1978) for each of these words. This provided us with an expanded list of 71 words. All 71 words were used in a survey completed by 81 Introductory Psychology students at a Southeastern University. For each word, participants indicated whether or not they knew what the word meant, and then rated the word on a 5-point scale. The rating scale was used to determine how strongly participants associated each word with individuals that either typically exercise or typically refrain from exercise.

The scale was labeled such that a rating of 1 corresponded to the heading “Describes a nonexerciser very well.” A rating of 2 corresponded to the heading “Describes a nonexerciser fairly well.” A rating of 3 corresponded to the heading “Describes an exerciser and a nonexerciser equally well.” A rating of 4 corresponded to the heading “Describes an exerciser fairly well.” A rating of 5 corresponded to the heading “Describes an exerciser very well.”

Words with which two or more students were unfamiliar were not considered further as possible target words. From the remaining words, targets were selected such that exerciser words and nonexerciser words were closely matched with respect to (a) the ratings described above, (b) word length, and (c) word frequency norm. With respect to student ratings, the sets of exerciser and nonexerciser words were matched in that average ratings were about equal distances from the corresponding endpoints of the rating scale. The mean rating for exerciser words (e.g., “fit,” “gymnastic,” and “sporting”) was 4.42 (SEM = 0.06) and the mean rating for nonexerciser words (e.g., “inactive,” “sickly,” and “weary”) was 1.04 (SEM = 0.08). The mean length of the exerciser words was 7.8 letters (SEM = 0.68) and the mean length of nonexerciser words was 7.4 letters (SEM = 0.64). Based on the frequency norms of Francis and Kučera (1982), the mean frequency per million words for exerciser words was 6.5 (SEM = 2.19) and the mean frequency per million words for nonexerciser words was 7.4 (SEM = 2.37).
The 20 filler words were selected such that they did not describe either exercisers or nonexercisers in any obvious way. Changing the vowels of the word stimuli so as to form letter strings not part of the English lexicon generated 40 nonwords.

Instruction, stimulus presentation, and response recording was all controlled by a Zeos Pantera 90 PC connected to a 14-inch monitor and a standard keyboard. Participants advanced through instruction screens and initiated each lexical decision trial by pressing the space bar. Lexical decision responses were made using the "Z" and the "¥" keys. The "Z" key was labeled with a white sticker with a large red "N" (non-word) on it and the "¥" key was labeled with a white sticker with a large red "W" (word) on it.

The lexical decision task consisted of 100 trials, 20 practice trials (10 words and 10 nonwords), and 80 test trials. At the start of each trial, the message “Press the space bar to begin the next trial” appeared in the center of the screen. The message was removed when the space bar was pressed using one or both thumbs. Two seconds later, a fixation cross (+) was presented at the center of the screen for 2 s. Two seconds after the appearance of the fixation cross, a string of letters appeared on the screen, centered on the point where the cross previously appeared. The letter string subtended a horizontal visual angle of no more than 4°. Lexical decisions were made with the left (non-word) and right (word) index fingers. The letter string disappeared after the lexical decision and the trial ended 3 s later.

Possible (Hoped-For and Feared) Selves

Participants were asked to list three hoped-for exercise (ideally active) selves and describe why these were important to them. Next, they used a 7-point scale to rate this self-composite in terms of self-regulatory mechanisms: self-efficacy and outcome expectancy as proposed by Bandura (1977). “Important to be the hoped exerciser,” “this self describes me now,” “I hope it will be in the future,” and “I think about this self.” These six mechanisms have been established as relevant (Cross & Markus, 1991; Hooker, 1999; Hooker & Kass, 1994; Whaley, 1998). Participants then listed three feared, or nonexerciser selves and rated them using six similar mechanisms. As in the four studies just cited, the hoped and feared selves generated by participants were clustered into domains or categories.

Weekly Workout (WW)

Participants estimated the frequency and duration of transportation walking plus weekly moderate and vigorous exercise. The total number of hours of moderate and vigorous exercise was combined to provide an estimate of workout hours.

Houston Nonexercise Test (HNET)

The HNET (Jackson et al., 1990) provides a means for estimating aerobic capacity (VO₂max) and determining current maximum exercise fitness level. This is computed using a formula that includes participants’ body mass index (BMI), based on height and weight, sex, age, plus the endorsement of one of nine statements that best characterized their level of physical activity over the last month. In Jackson et al.’s study, the correlation testing for the HNET with a direct measure of VO₂max revealed a correlation coefficient of r = .78. Male and female college students HNET scores range from a VO₂max range of 38–46 ml/kg/min. (Prentice, 1997).

RESULTS

For each participant, mean lexical decision latencies for exerciser words and nonexerciser words were calculated based on reaction times. The reaction time differential (RTD) was defined as the difference of the mean latency for the nonexerciser words minus the mean latency for exerciser words. Thus, RTDs were used to measure implicit schematic attitudes towards exercise. The RTD was positive when a participant responded more quickly to exercise words suggesting a positive implicit exerciser attitude (IX) and was negative when a participant responded more quickly to nonexercise words suggesting a negative implicit attitude toward exercise (INX).

When the relationship between RTDs and the I2 direct, explicit measures (six self-regulatory hoped-for and six feared, or nonexerciser selves), plus workout hours and HNET fitness, were examined significant correlations were found as follows. See Table II. The RTD measure was positively correlated only with “important to be the hoped exerciser” and “important to avoid the feared nonexerciser” ratings.

For the explicit exerciser attitudes, “Am now the hoped exerciser” was positively related to “feeling
capable, "likely to attain maintain," workout hours and HNENFit fitness while being negatively related to "am now the feared nonexerciser type." Secondly, "important to become the hoped-exerciser was positively related to "desire to be in the future," "likely, "think about it," important to avoid being the non-exerciser," and "think about avoiding." Third, "Am now the feared nonexerciser was positively related to "were not thinking about avoiding" and negatively related to "capable of avoiding," "likely to avoid," workout hours and HNENFit scores.

Next, we used participants’ RTDs to create two groups so that we could compare exercise behaviors of participants with an implicitly positive exercise attitude (IX = 31) to those with an implicitly negative exercise attitude (INA = 20). As stated earlier, these groups were comparable in terms of age, sex, and race (Tables I and II), which was fortunate because the HNENFit measure varies according to age and sex. Compared to the INA group, more of the IX group were highly fit, based on their HNENFit score (66% vs. 30%) and fewer were obese (19% vs. 35%).

Set Table I. However, these differences were not significant (Table II).

Finally, we organized the hoped and feared selves into six meaningful domains and found a similar pattern for both groups. For the hoped selves, being fit was liked most frequently by both IX and INA groups (41%, 48%). They also listed meeting goals/habits (12%, 17%), healthy (14%, 11%), attractive (12%, 15%), happy (6%, 2%), and coping; quality of life (5%, 7%). In terms of feared domains, the IX and INA groups wanted to avoid being unfit (30%, 75%), unattractive (25%, 35%), failing with goals (19%, 17%), unhealthy (11%, 14%), poor coping QUALITY of life (8%, 4%), and unhappy (7%, 5%).

**DISCUSSION**

The purpose of this study was to explore participants’ attitudes, habits, and identification with exercise through the use of possible exercise self-elements of self-schema. Using a possible selves approach, participants described their exercise goals as selves they hope to be and then they rated their ability to attain those goal selves. In a similar manner, they provided and rated selves that they hope to avoid. We believe that this approach is most psychologically engaging and would therefore provide more personally relevant information about exercise. We strove to improve a previously reported methodology for assessing implicit attitudes by eliminating confounds that limited the interpretation of other published work.

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Table II: Age, Exercise Behaviors and HNENFit Grouped According to Implicit Attitude

<table>
<thead>
<tr>
<th>Exercise IX (N = 31)</th>
<th>Nonexercise IX (N = 20)</th>
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<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mean</td>
<td>20.85</td>
<td>32.9</td>
<td>31.5</td>
</tr>
<tr>
<td>With</td>
<td>2.54</td>
<td>2.02</td>
<td>2.17</td>
</tr>
<tr>
<td><strong>Workout</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>4.04</td>
<td>4.13</td>
<td>3.49</td>
</tr>
<tr>
<td>HNENFit</td>
<td>24.65</td>
<td>5.32</td>
<td>26.30</td>
</tr>
</tbody>
</table>

Table III: Correlation Coefficients Matrix for RTD, Self-Reported, Workout, and HNENFit Features

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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. RTD</td>
<td>0.21</td>
<td>0.41**</td>
<td>0.24</td>
<td>0.22</td>
<td>0.15</td>
<td>0.13</td>
<td>0.40</td>
<td>0.07</td>
<td>0.14</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
<td>-0.00</td>
<td>0.05</td>
</tr>
<tr>
<td>2. Am now hoped</td>
<td>0.16</td>
<td>0.22</td>
<td>0.48**</td>
<td>0.56**</td>
<td>0.07</td>
<td>0.58*</td>
<td>0.17</td>
<td>0.24</td>
<td>0.24</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>3. Felt worse</td>
<td>0.26**</td>
<td>0.12</td>
<td>0.59**</td>
<td>0.44**</td>
<td>0.05</td>
<td>0.58*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>4. Important</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>5. Capable</td>
<td>0.16</td>
<td>0.22</td>
<td>0.48**</td>
<td>0.56**</td>
<td>0.07</td>
<td>0.58*</td>
<td>0.17</td>
<td>0.24</td>
<td>0.24</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>6. Likely</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>7. Think about</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>8. Am now feared</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>9. Felt better</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>10. Important to avoid</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>11. Capable to avoid</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>12. Likely to avoid</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>13. Think to avoid</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>14. Workout hours</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>15. HNENFit scores</td>
<td>0.17</td>
<td>0.30</td>
<td>0.66**</td>
<td>0.31**</td>
<td>0.10</td>
<td>0.66*</td>
<td>0.17</td>
<td>0.22</td>
<td>0.22</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.00</td>
<td>0.06</td>
</tr>
</tbody>
</table>

* p < .05  ** p < .005
This is the first study that attempts to focus on implicit attitudes within the exercise schema. We found that having an implicitly favorable exercise attitude was positively related only to the importance given to maintaining the ideal exercise self within the next 2 years while simultaneously avoiding the undesirable nonexercise self. The importance given to this ideal self was related to the desire and likelihood of attaining this in the future and to the amount of time spent thinking about this exercise-related value. Possible selves are thought to be motivational and self-evaluative processes (Cross & Markus, 1991; Markus, 1977) and our findings suggest that the importance placed on being/becoming one's exercise ideal may be a key factor in self-motivation that it operates both with, and without, the person's self-cognitive awareness. Sheeran and Orbell (2000) reported that importance influenced the intention to exercise more for exercise schematics than for unschemasatics whereas self-descriptiveness, the second element of schema, did not. This again ties importance to motivation. Our results are interesting because it is known that implicit, subconscious attitudes are unrelated to explicit, conscious attitudes toward motivation (Locke & Latham, 2002). Two conditions could be occurring. It seems likely that subconscious nonexercise attitudes, which might be perceived as less socially desirable, would be unrelated to conscious attitudes about motivation. On the other hand, subconscious or implicit exercise attitudes, which are popular attitudes, should match conscious motivation. Exercise subconscious attitudes may act according to automaticity theory wherein a person's drive to exercise is automatic, not requiring much conscious effort. The motivation is automatic (Bargh & Chartrand, 1999).

Examining the self-descriptive elements of the possible selves, the more people described themselves as an accomplished exerciser, the more strongly they felt capable and likely to exercise, the more they worked out and were fit. Whaley (1998) found that self-efficacy (capable) is a predictor of exercise habits. These three, being an accomplished exerciser, being fit, and feeling efficacious, seemed to develop together. Conversely, we found that those strongly endorsing "Am now/like feared nonexerciser" spent time a lot of thinking about avoiding this self but felt less capable of, or likely to avoid being this way. They also were less fit. It would seem that the thinking here may be destructively impacting efficacy and is preventing them from exercising.

We examined the hoped and feared selves domains or goal categories of the two groups and they were quite similar. Half desired to be fit and smaller proportions were interested in meeting goals/habits, health, appearance, enjoyment, and coping/quality of life. These goals are consistent with the known health and psychological benefits of exercising reported earlier (Petrella, 1999; Schwenk, 1999) and hint that most people, despite their level of participation, are aware of this health information. Whaley (1998) also found few differences in the nine goal category domains of middle-aged women who were at different stages of exercise involvement.

There are several clinical applications from this work that might be used with irregular or non-exercisers. In previous studies, it has been demonstrated that the stronger the self-regulatory processes are related to a goal, the more likely it is that the goal will be accomplished (Cross & Markus, 1991; Hooker, 1992; Hooker & Kaus, 1994; Whaley, 1998). From our study, we would focus most on the level of importance people place on accomplishing their goal. We recommend that health care providers have their patients discuss how they might make exercising a priority so that they can make a strong, yet realistic commitment to exercise regularly. Competing priorities and making specific plans should be discussed. Because repeated failures to meet exercise commitments can undermine confidence and motivation, some patients might be encouraged to put off initiating an exercise regimen until conditions are more favorable. On the other hand, some patients may view themselves as entrenched nonexercisers. Clinicians may ask them to discuss this view and explore self-assessments that undermine confidence and self-image. Simply ask them to stop dwelling on past failures and discuss how they might become minimally involved by increasing their daily routine activity.

This study should be considered a pilot study because it introduces indirect methods to understand implicit attitudes and is limited by its relatively small sample size and lack of follow-up data. Further research could be used to clarify the relationship between implicit versus explicit attitudes and exercise habits using a larger sample and follow-up. We believe that possible selves method provides a structure that engages people in self-reflection and thus the ability to address their personal interests in exercise. In this sense, it may be superior to other schema methods. Previous researchers have found experimental conditions to be highly influential on automatic or implicit processes in other cognitive areas (Bargh & Chartrand, 1999; Chakken & Trope, 1998). These could be used to explore the effects success and
failure scenarios might have on implicit and explicit exercise attitudes. Exercise habits could be measured more objectively with a pedometer or stress-test. Future studies might assess whether other factors are influencing current exercise behavior and past exercise history. It would also be valuable to compare women versus men’s schema structures and to understand how exercise schema change during the first 6 months of exercise adoption.

REFERENCES


