The Influence of Induced Self-Awareness on Sex-Typed Behavior

Spring 1983

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Abstract

The purpose of the experiment was to contrast a person's adherence to private and public standards of conduct under varying situational settings. Prior to the experimental session female undergraduate students filled out a questionnaire that asked about their own attitudes towards exercising. Two types of subjects were brought into the laboratory: those who privately favored exercise but believed that others would not approve of their exercise (henceforth referred to as "positive discrepancy" subjects), and those who privately did not favor exercise, but anticipated approval for it (henceforth referred to as "negative discrepancy" subjects).

The laboratory setting involved pedaling a stationary bicycle under the pretext of researching the effects of exercise on mood. Each subject was exposed to two types of self-awareness manipulations. Subjects performed by themselves in front of a mirror (private self-awareness manipulation), and promised to publicly exercise by choosing to pedal a self-determined number of laps on a subsequent session (public self-awareness manipulation). Therefore, for each subject two dependent measures were recorded. Private exercise was measured by the time spent pedaling alone in front of the mirror. The measure of public exercise was "behavioroid" in nature, as subjects did not actually pedal around the "course". Subjects were led to believe, however, that they would need to adhere to their commitment.
THE INFLUENCE OF INDUCED SELF-AWARENESS ON SEX-TYPED BEHAVIOR

BY

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THESIS

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It was suggested that positive discrepancy subjects would exercise considerably more in front of a mirror than when exposed to a public self-awareness manipulation. It was also predicted that negative discrepancy subjects would engage in more exercise under a public self-awareness manipulation than when exercising in front of a mirror. It was further anticipated that positive discrepancy subjects would exercise more in front of a mirror and less under the public manipulation than would subjects with a negative discrepancy.

The results confirmed the hypotheses as stated. A multivariate analysis of variance indicated that the means for the two dependent variables across discrepancy groups were significantly different. The positive discrepancy group pedaled for a greater number of minutes than did the negative discrepancy group. Furthermore, subjects with a positive discrepancy volunteered for a fewer number of laps than did subjects with a negative discrepancy. To facilitate comparisons across dependent variables within each discrepancy group, raw scores were converted to z-scores. Test results indicate that positive discrepancy subjects scored significantly higher on the private exercise measure than they did on the public exercise measure. Conversely, subjects with a negative discrepancy scored significantly higher on the public measure than on the private measure. These results clearly show that when there is a discrepancy between public and private attitudes towards a given behavior, the standards used to regulate the behavior depend upon which aspect of the self is the focus of attention. The data also indicate that different
methods of inducing self-awareness are not interchangeable. The discussion focuses on the interactional nature of self-awareness theory as a means of integrating personality theory with situational analyses.
To my loving family,
whose spirit knows no boundary;
To Randy,
with whom friendship was easy and work a pleasure;
And,
to the passing of a most wonderful era,
with which my dreams shall always be filled.
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Introduction

The concept of the self has long been one of interest to philosophers and psychologists. However, scientific investigations of the self construct have been impeded by the difficulty of operationalizing the construct so that it could be objectively studied. A recent theory of self-awareness (Duval & Wicklund, 1972), however, has provided a theoretical framework from which the phenomenological determinants of the self construct may be investigated. Duval and Wicklund have proposed a theory that views attention as being directed either towards the environment or towards the self. They propose that a person may rapidly oscillate their attention between themselves and the environment but not focus on both at the same time. The focusing of attention on the self is called self-awareness.

Self-awareness theory is a motivational theory (Wicklund, 1975). Wicklund originally proposed that a negative affect would occur whenever a person focused on a within-self dimension. Self-aware persons were assumed to find a discrepancy between their standard for behavior and their actual behavior. In a test-taking situation, for example, a person's standard would be to do well on that test; however, the person's actual test-taking behavior might not reach that goal. Thus, focusing on this discrepancy is an aversive situation. The reactions to this negative discrepancy are to avoid self-focusing stimuli or to reduce the discrepancy
by bringing the behavior in line with the goal or aspiration. The negative affect is postulated as the motivating force and whatever eliminates this affect most quickly is preferred. Avoidance of the self-focusing stimuli is usually quicker and often preferred (Duval & Wicklund, 1972). But avoidance only temporarily eliminates the negative affect. If eliminating self-focused attention is impossible (inescapable self-awareness), the person will instead try to reduce the discrepancy (Scheier, Fenigstein, & Buss, 1974).

Theoretically, self-awareness can be induced by any stimulus in the environment which increases the salient characteristic of the self. In practice, self-awareness can be brought about in a variety of ways—e.g., listening to one's own voice from a tape recorder (Duval & Wicklund, 1972), the presence of a mirror so that the person becomes the object of his own attention (Carver, 1974), and the presence of an audience (Scheier, Fenigstein, & Buss, 1974). Furthermore, increases in self-awareness have been shown to affect the consistency between behavior and attitudes, attribution of causality, and intensification of affect as well as other psychological phenomenon (Wicklund, 1975).

Until recently, all self-awareness manipulations were considered interchangeable since they all served to increase the level of self-focused attention. The issue of functional similarity in self-awareness manipulations is of great importance. If it is assumed that self-awareness is undifferentiable in terms of which manipulation is used then all manipulations would be expected to have similar results. If, however, it could be
demonstrated that the various manipulations of self-awareness produce different results, then the original theory must be reexamined.

Dealing with this issue, Buss (1980) hypothesizes the existence of a public self and a private self. The public self may be thought of as, "I'm concerned about what people think about me." The private self, on the other hand, is concerned with the tendency to be conscious of one's thoughts and feelings. The Buss construct provides a plausible argument that mirrors enhance the salience of the private self, whereas an audience may cause one to focus on the public self.

Contrary to the Buss hypothesis, however, Scheier, Fenigstein, and Buss (1974) found that both the mirror and the audience manipulations inhibited the act of aggression. On the surface it would appear that this study supports Wicklund's theory that the manipulations can be used interchangeably. Before drawing that conclusion, however, one must first carefully examine the experimental paradigm employed. In the Scheier et al. study male subjects were instructed to administer punishment, in the form of shock, to a female learner (confederate) when she answered incorrectly. However, if our culture condemns men who act aggressively toward women, and assuming that the male subjects in the study had internalized the standards condemning aggression towards women, it would then follow that aggression should be inhibited regardless of the self-awareness manipulation used.

In contrast to the results of the Scheier et al. study, Froming, Walker, and Lopyan (1982) have supported the notion that while mirrors and
audiences are both self-awareness manipulations, mirrors enhance the salience of the private self, whereas audiences increase the salience of the public self. It was reasoned that when public and private standards toward a given behavior are discrepant, the resulting behavior can be directionally predicted from the self-awareness manipulation used. To empirically test this hypothesis, the researchers conducted two studies in which subjects served as "teachers" in an aggression paradigm. Experiment 1 made use of subjects who personally opposed the use of punishment in learning, but believed that other people favored it. Compared to the control group, the presence of a mirror led to decreased levels of shock, and the presence of an evaluative audience led to increased levels of shock. Each subject in Experiment 2 personally favored the use of punishment but believed that others were against its use. Compared to the control group, the presence of a mirror led to increased levels of shock whereas the presence of an evaluative audience led to decreased levels of shock.

A direct comparison can be made between the Froming et al. (1982) results and the results obtained by Scheier, Fenigstein and Buss (1974) since identical paradigms were used. The former authors propose that because the private and public standards were congruent in the Scheier et al. (1974) study, the change in behavior (decrease in aggression) resulting from both self-awareness manipulations are the same. In the Froming, Walker, and Lopyan (1982) study, however, subjects held discrepant beliefs and the manipulations therefore had differential effects. Taken together, these studies suggest that while both mirror and audience manipulations
increase self-awareness, the effects of these manipulations can only be predicted when public and private standards are known. Specifically, when the individual's attention is focused on the private aspects of self, the occurring behavior will be consistent with the person's own standards. Focusing on the public self augments behavior consistent with the perceived standards of others.

Having empirically tested the effects of induced self-awareness on the act of aggression, researchers are now in a position to formulate divergent predictions based upon the type of self-awareness manipulation used, the individual's public and private attitudes in a given area, and the dependent variable to be measured. Because self-awareness theory addresses the issue of the relationship between one's internal standards of conduct and actual behavior, it is believed that increasing self-awareness has the effect of increasing a person's focus on the salient behavioral standard in any situation (Duval & Wicklund, 1972). This in turn would bring into sharper focus any discrepancy that might exist between a person's standards and his/her actual behavior. Conceptually then, self-awareness theory, and the Froming, Walker, and Lopyan (1982) study in particular, have clear implications for the area of investigation—sex-typed behavior and attitudes. One objective of this paper is to conceptually replicate the Froming et al. (1982) study, measuring different dependent variables in a different design. To meaningfully consider the effects of self-awareness on sex-typed behavior, however, a survey of essential personality distinctions made between males and females is necessary.
Conceptualization of Sex Roles and Attitudes

Many researchers have proposed the existence of masculine and feminine personality traits. Bakan (1966), for example, speculates that men and women can be characterized by two fundamental modalities: the sense of agency and the sense of communion. Agency is described as reflecting a "sense of self" and is manifested in self-assertion, self-protection, and self-expansion. Communion, on the other hand, implies selflessness, or a concern with others. Furthermore, Bakan associates agency with "male principles" and communion with "female principles." Using similar modalities, a great deal of research based upon male and female principles exist, such as outer vs. inner space (Erikson, 1964), instrumentality vs. expressiveness (Parsons & Bales, 1955), field dependence vs. independence (Witkin, 1974), and allocentric vs. autocentric (Gutman, 1975). All clearly assert, as did Bakan, the existence of fundamental trait-like distinctions between the sexes.

In an attempt to validate such forementioned variables, investigators have recently conducted empirical research in which male and female subjects are asked to select descriptive, sex-role related adjectives (e.g., Jenkin & Vroegh, 1969; Bem, 1974; Spence, Helmreich, & Stapp, 1974). The implication from these studies suggest the existence of a bipolar, dichotomous scale, with women skewed at the feminine pole and men towards the masculine pole.

Despite the overwhelming number of studies ascribing to basic personality differences, contradictory evidence exists and suggests that
apparent sex differences may be situation specific. Sistrunck and McDavid (1971), for example, found that sex differences in conformity are significantly related to the nature of the task employed. Milton (1958, 1959), has also presented similar evidence in the area of mathematical reasoning. Zanna and Pack (1975) further conclude that it is the specific demands within a social situation and normative expectations which induce sex-role behavior. Specifically, their findings indicate that when a male partner was considered desirable, female subjects portrayed themselves as more or less conventional in terms of sex-role, depending upon whether the partner's stereotypic view of women was traditional or not. The authors' situational analysis avers that apparent sex differences in behavior are a consequence of interpersonal, self-fulfilling prophecies.

Influence of Self-Awareness on Sex-Typed Behavior

The theoretical influence of induced self-awareness on the act of sex-role behavior provides a viable and alternative framework of investigation. To review, occurring behavior is seen as being governed by focusing one's attention on the salient aspect of the self, either the public or private component, and its corresponding standard for behavior. Using a situational analysis of apparent sex differences in behavior, Zanna and Pack (1975) have in fact shown that self-presentation (public self) is influenced by the manipulation of an evaluative audience. Due to the nature of the experimental design, however, the individuals' private standards were not monitored. Because self-awareness theory predicts that private standards may often differ from one's public standard, it is
proposed that under appropriate circumstances (e.g., presence of a mirror), the private self would be the focus of attention and therefore govern the corresponding behavior. Thus, one can make a behavioral prediction only after ascertaining each person's actual public/private standard for behavior, and by specifying the type of self-awareness manipulation to be employed.

As previously stated, the aim of the present study is to conceptually replicate the Froming, Walker, and Lopyan (1982) investigation. The basic proposal is that sex-role stereotypes can be divided into public and private components. This implies that the resulting behavior is shaped by the aspect of the self most salient in a given situation. If in a given situation the stereotypic public/private standard is congruent (what holds true for me also holds true for others), then regardless of the self-awareness manipulation used the occurring behavior will be the same. When the stereotyped public and private standards are incongruous, however, self-awareness theory is able to directionally predict deviations in the dependent variable.

Exercise behavior was selected as the particular sex-typed behavior with which to test the implications of self-awareness theory. Despite the recent increase in the popularity of women's athletics and female participation in fitness activities, it was anticipated that many women would still believe that popular opinion does not approve of their exercising. Among these women, a private standard favoring exercise would result in a discrepancy between their private and public standards, and they would
therefore be differentially affected by private and public self-awareness manipulations. Specifically, these women should exercise considerably more in front of a mirror than when exposed to a public self-awareness manipulation. It was also assumed that some women, though probably fewer, would exhibit the opposite discrepancy between private and public standards. That is, they do not favor exercise privately, but believe that others would approve of their exercising. These women were expected to engage in more exercise under a public self-awareness manipulation than when exercising in front of a mirror. It was also anticipated that subjects who privately favored exercise but believed that others would not approve of their exercise (henceforth referred to as "positive discrepancy" subjects) would exercise more in front of a mirror and less under the public manipulation than would subjects who privately did not favor exercise, but anticipated approval for it (henceforth referred to as "negative discrepancy" subjects).
Method

Subjects

During a regularly scheduled general psychology class female undergraduate students were administered the Self-Consciousness Scale (Carver, 1975) and an "Attitudes Towards Exercise" questionnaire. The "Attitudes Towards Exercise" questionnaire addresses eight private and eight public attitudes towards exercise and physical fitness, for a total of sixteen questions. Whereas Froming, Walker, and Lopyan (1982) modified Carver's (1975) "Attitudes Towards Punishment" questionnaire by creating pairs of private and public questions which differed only in whether they began with the words "I" or "most people," all items on the "Attitudes Towards Exercise" questionnaire begin with the word "I." Public items, however, are questions that refer to positive or negative feelings persons would have in a public exercise situation. These feelings presumably result from their reactions to the presence of an audience. This method of creating public questions is necessary when studying sex-typed behavior, since the inclusion of the phrase "most people" may have led female subjects to consider how males, who might feel very differently about exercising in public, would answer the question. Examples of private items are, "I personally don't care to exercise very much," and "I enjoy physically exerting myself." Examples of public items are, "I feel embarrassed exercising in public," and "I enjoy exercising with others." Subjects were asked to respond to each
item on a five point Likert Scale, (1 = strongly agree, 5 = strongly disagree, with the scoring reversed on items which voice positive attitudes toward exercise). Please refer to Appendix A for a complete listing of questionnaire items.

Discrepancy scores were computed by subtracting the sum of the scores for the eight public questions from the sum of the scores for the eight private questions. As previously mentioned, positive discrepancies indicate that the individual personally favors exercise but believes that others would not favorably judge their public display of exercise. Conversely, a negative discrepancy refers to subjects who privately do not favor exercise, but anticipate approval for it.

The experimenter contacted persons from both types of discrepancy by telephone, and asked them to participate in the experiment. The experimenter was "blind," as information regarding individual discrepancy scores was withheld.

Apparatus

The primary apparatus for this experiment was a Schwinn XR-7 stationary bicycle. This model is equipped with an odometer and a spring loaded friction device which allowed the pedal resistance to be adjusted.

Procedure

The experiment took place in a mobile trailer located on campus. A sliding plastic partition equally divided the trailer into two smaller rooms. One side of the room contained a table on which experimental forms were
placed, two chairs, and a ten speed bicycle, which was used as a prop. On the other side of the partition a stationary bicycle was positioned in front of a .92m x 1.22m (3 ft. x 4 ft.) two-way mirror.

Subjects were brought into the trailer by the experimenter, and asked to read a "general introduction" (see Appendix B). The general introduction presented an outline and description of the research procedures. Its main purpose, however, was to serve as a medium in which the cover story could be presented. The cover story conveyed the notion that the experiment was designed to investigate the effects of mild to moderate physical exercise on moods. It was made clear that the research project was not concerned with an individual's level of fitness. Accordingly, it was stated that the duration and speed of pedaling was to be determined by each individual subject.

Having read the general introduction, subjects were then asked to read and sign a consent form (see Appendix C). The consent form, in part, indicated that subjects would be asked to ride a stationary bicycle, and questioned about their moods. Subjects were informed once again that the experiment was not a test of their endurance; that how long and fast they pedaled was up to them. It was also indicated that participation was voluntary and that they could withdraw their consent at any time.

Once the consent form was signed, the sliding partition was opened and subjects were led into the room containing the stationary bicycle positioned in front of a two-way mirror. The presence of the mirror was attributed to its usefulness in other types of psychology experiments. It
was emphasized that the mirror had no utility in this research project. To further assure the subjects that they were not going to be observed, they were allowed to venture behind the mirror to see for themselves that no one was there.

Subjects were then instructed to sit on the stationary bicycle, and asked, on a scale of one to ten, to rate the extent to which they were feeling each of eight affects (see Appendix D). After the "before" cycling mood data was collected, subjects were instructed to rate the difficulty of pedaling on a scale of one to five, with one signifying "easy" and five signifying "impossible." If the rating did not fall on either two or three, the overall pedal tension was adjusted and the rating repeated. Once the pedal tension ratings had been completed, subjects were reminded that the experiment was not concerned with their level of fitness and that when they had finished pedaling they should tell the experimenter, who would be on the other side of the closed partition. Note that subjects pedaled alone in front of the mirror. The experimenter was not in the room with the subjects while they were pedaling. The dependent measure, time spent pedaling, was recorded on a wrist stop-watch.

After each subject had vocally indicated to the experimenter that they had finished pedaling, the affect questionnaire was administered for a second time ("after" cycling mood data). At this point subjects were told that "phase I" of the experiment had been completed, and that they should now read the "Introduction to phase II" (see Appendix E). The introduction to phase II presented the notion that the experiment was also concerned
with the effects of exercise on people's moods in a naturalistic environment. Accordingly, subjects were requested to return for a subsequent session in order to ride a ten speed bicycle around a prearranged course on campus. The prearranged course was shown to subjects on a map of the campus. The course was in the center of the campus, where a high number of students would almost always be present during the hours available for the "subsequent session." The number of laps selected to pedal around the "naturalistic course" (ranging from one to ten laps) was an individual choice made by each subject. In addition, subjects were told that they would be evaluated by two observers on dimensions to be disclosed at the conclusion of the session. After each subject had selected the number of laps they desired to pedal around the "course" they were debriefed (see Appendix F).

Self-Awareness Manipulation

The self-awareness manipulations were built into the procedures. Each subject exercised by themselves under the private (mirror) self-awareness manipulation, and promised to publicly exercise by choosing to pedal so many laps on a subsequent session. Therefore, for each subject two dependent measures were recorded. Private exercise was measured by the time spent pedaling alone in front of the mirror. The measure of public exercise was "behavioroid" in nature, as subjects did not actually pedal around the "course." Subjects were led to believe, however, that they would need to adhere to their commitment. This type of "behavioroid" measure is therefore believed to be a reliable and valid predictor of their behavior in a public exercise situation.
The design is an independent sample design with two dependent variables. The two samples are the subjects with "positive" discrepancies (n=14) and those with "negative" discrepancies (n=10). The measures of private exercise (pedaling time) and public exercise (number of laps volunteered for) are the two dependent variables.
Results

The means for the two dependent variables were computed and are shown in Table 1. As expected, the means indicate that the positive discrepancy group pedaled for a greater number of minutes than did the negative discrepancy group. Furthermore, subjects with a positive discrepancy volunteered for a fewer number of laps than did subjects with a negative discrepancy.

Table 1
Mean Pedaling Time and Number of Laps Volunteered For By Discrepancy Group

<table>
<thead>
<tr>
<th>Discrepancy Group</th>
<th>n</th>
<th>Minutes Pedaled</th>
<th>Laps Volunteered For</th>
</tr>
</thead>
<tbody>
<tr>
<td>positive</td>
<td>14</td>
<td>14.72</td>
<td>4.10</td>
</tr>
<tr>
<td>negative</td>
<td>10</td>
<td>5.37</td>
<td>7.50</td>
</tr>
</tbody>
</table>

To assess the significance of the means for the two dependent variables, a multivariate analysis of variance was performed. Using the raw data, a Hotelling’s $T^2$ (Tatsuoka, 1971) was computed. This statistic approximates to an $F(2, 23) = 8.38, p < .01$. The analysis indicates that the means for the two dependent variables across discrepancy conditions are significantly different.
In view of the significant multivariate $F$ test, specific analyses of the hypothesized differences within and across discrepancy groups were performed. First, to facilitate comparisons across dependent variables within each discrepancy group, raw scores were converted to $z$ scores. The significance of predicted differences between scores for the two dependent variables within each discrepancy group were then assessed by computing one-tailed $t$ tests for paired samples, while differences between discrepancy groups for the same dependent variable were assessed through the use of one-tailed $t$ tests for independent groups. The results of these tests showed that positive discrepancy subjects scored significantly higher on the private exercise measure than they did on the public exercise measure, $t(13) = 2.48, p < .025$. Conversely, subjects with a negative discrepancy scored significantly higher on the public measure than on the private measure, $t(9) = -3.59, p < .005$. A comparison of the means of the private exercise measures between the two groups revealed that persons with a positive discrepancy spent a significantly greater amount of time pedaling than did persons with a negative discrepancy, $t(22) = 2.69, p < .01$. Furthermore, a between-group comparison of the mean number of laps chosen to pedal around the "course" revealed that subjects with a negative discrepancy volunteered for a significantly greater number of laps than did subjects with a positive discrepancy, $t(22) = -3.86, p < .001$. These results clearly support the Froming, Walker, and Lopyan (1982) finding that when there is a discrepancy between public and private attitudes towards a given behavior, the standards used to regulate the behavior depend upon which
aspect of the self is the focus of attention. The data also concur with the Froming et al. (1982) conclusion that different methods of inducing self-awareness are not interchangeable.

In addition to the forementioned statistical analyses, an exploratory examination of the correlations between affect ratings was conducted. Though these correlations were not uniformly of high magnitude, they generally suggested that the affect dimensions were related. Thus, the ratings were summed to yield a single "before exercise" rating and a single "after exercise" rating (with scoring reversed for negative affect items). This was done per subject, resulting in a total of 23 "before" and "after" ratings. The data for one subject was eliminated from the analysis because the affect sheets were not properly labelled.

A 2 x 2 anova with repeated measures on the second factor (discrepancy group x before and after mood ratings) revealed that subjects in both discrepancy groups felt significantly better after they had exercised, $F (1, 21) = 5.91, p < .05$. However, there were no significant interactions between group discrepancies on either the before or after ratings. It can therefore be argued that there is a direct correlation between moderate exercise and the overall feeling of positive affect, regardless of the discrepancy between an individual's private and public standard towards exercise.

Based upon self-awareness theory, it was also postulated that attitudes towards public exercise would be positively correlated with "number of laps volunteered for." In addition, attitudes towards private exercise
were expected to be positively correlated with "minutes pedaled." Furthermore, due to the measured discrepancies between the subjects' private and public attitudes towards exercise, it was anticipated that "minutes pedaled" would be inversely correlated with "number of laps volunteered for."

A matrix of Pearson correlation coefficients confirmed the predicted patterns in the data. Attitudes towards public exercise were significantly correlated with "number of laps volunteered for", \( r = .371, p = .037 \). Attitudes towards private exercise were positively correlated with "minutes pedaled," although this correlation was not significant \( (r = .245, p = .116) \). Furthermore, there was a significant inverse correlation between "minutes pedaled" and "number of laps volunteered for", \( r = .471, p = .01 \). It can be concluded that, along with implementing the appropriate private and public self-awareness manipulations, the assessment of an individual's private and public standard towards exercise is crucial in the prediction of exercise behavior in females.

Comparisons were also made between the private and public components of the "Self-Consciousness Scale" (Fenigstein, Scheier, and Buss, 1975) and the two dependent variables. It was reasoned that although an individual's disposition to attend to oneself may mediate the general effectiveness of self-awareness manipulations, the "Self-Consciousness Scale" (Fenigstein et al., 1975) would not be an accurate predictor of exercise behavior because it does not delineate between specific private and public attitudes towards exercise. Supporting this contention, the data
reveal relatively weak inverse correlations between private self-consciousness and "minutes pedaled", $r = -.141$, $p = .256$; public self-consciousness and "number of laps volunteered for", $r = -.034$, $p = .437$; and public self-consciousness and "minutes pedaled", $r = -.224$, $p = .146$. Thus, the reliable predictability of exercise behavior in females is untenable along these dimensions. The data does indicate, however, a significant correlation between the private component of the "Self-Consciousness Scale" (Fenigstein et al., 1975) and the "number of laps volunteered for", $r = -.361$, $p = .041$. These results suggest that the less attentive one is to their "inner feelings," the more likely they are to engage in a display of public exercise.
Discussion

The results of this study confirmed the hypotheses as predicted. It was postulated that exercise behavior could be divided into public and private components. The resulting behavior was then predicted to be a function of the aspect of the self most salient in a given situation. Based upon the results of the Froming, Walker and Lopyan (1982) study, it was anticipated that the careful delineation of the type of self-awareness manipulation used would result in the predicted deviations in exercise behavior. As expected, the mirror manipulation had the effect of either augmenting or inhibiting "minutes pedaled," depending upon the individual's private attitude towards exercise. Similarly, the public self-awareness manipulation had the effect of either augmenting or inhibiting "number of laps volunteered for," depending upon the individual's public attitude towards exercise. It is therefore clear that the private and public self-awareness manipulations employed in this study did in fact induce the differential states of private and public self-awareness. Thus, having used a different design, and measuring exercise related behavior, the present study has conceptually replicated the findings of the Froming, Walker, and Lopyan (1982) study. Taken together, the results of these studies suggest that in order to predict adherence to self-proclaimed exercise behavior in females, researchers must formulate divergent predictions based upon the
individual's private and public attitudes towards exercise, while also specifying the type of self-awareness manipulation to be used.

Towards An Interactional Analysis of Human Behavior.

The findings of this research project have important implications regarding the conceptualization of sex-role behavior and traditional personality theories. The existence of trait-like distinctions which are believed to account for sex-typed behavior between the sexes is a long held belief in the field of psychology. Diametrically opposed to this position, however, are theorists who ascribe to the belief that apparent sex differences are due to the demands of a situation. As proponents of the latter hypothesis, Zanna and Pack (1975) have investigated the effects of normative expectations and situational demands within a social context on sex-role behavior. Employing a situational analysis of sex-role behavior, the authors conclude that self-presentation, or the "public self," is a consequence of interpersonal, self-fulfilling prophecies. Inherent in the use of the author's situational analysis is the belief that sex-role behavior is governed by the specific demands within a social environment. The results of this study suggest, however, that the monitoring of an individual's private attitudinal standards towards a given behavior and the recognition of potential private self-awareness cues in the environment are essential for a comprehensive understanding of human behavior. In light of the present discussion, and to the degree that one characteristically attends to oneself, it would appear that an interactional theory of human behavior is needed. The theory of self-awareness may provide such a framework.
Self-awareness theory may be viewed as an interactional theory, integrating personality theory with situational analyses, in that situational demands are believed to induce attention on the aspect of the self most salient at a given moment. Thus, it can be argued that sex-typed behavior is the product of both situational demands and internal standards towards a given behavior.

One final point needs to be made regarding the ramifications this study has in working with overweight individuals. The treatment modality would incorporate the classification of an individual's attitudes toward exercise into its public and private components. This implies that the resulting behavior (to exercise or not) is shaped by the aspect of the self most salient in a given situation. Thus, once these public and private components have been identified, environmental cues may be systematically manipulated such that the individual would be induced to focus on the desired "pro-exercise" aspect of the self. If this process is properly facilitated, a loss of weight would be expected to occur.
Appendix A

Questionnaires
Self-Consciousness Scale

Please answer the following questions about yourself by marking the appropriate letter to the right of each question. For each of the items indicate how characteristic each statement is of you by using the following scale:

a = extremely uncharacteristic
b = uncharacteristic
c = neutral
d = characteristic
e = extremely characteristic

Please be as honest as you can throughout and try not to let your response to one question influence your response to other questions. Thank you.

1. I'm always trying to figure myself out. a b c d e
2. I'm concerned about my style of doing things. a b c d e
3. Generally, I'm not very aware of myself. a b c d e
4. It takes me time to overcome my shyness in new situations. a b c d e
5. I reflect about myself a lot. a b c d e
6. I'm very concerned about the way I present myself. a b c d e
7. I'm often the subject of my own fantasies. a b c d e
8. I have trouble working when someone is watching me. a b c d e
9. I never scrutinize myself. a b c d e
10. I get embarrassed very easily. a b c d e
11. I'm very self-conscious about the way I look. a b c d e
12. I don't find it hard to talk to strangers. a b c d e
13. I'm generally attentive to my inner feelings. a b c d e
14. I usually worry about making a good impression. a b c d e
15. I'm constantly examining my motives. a b c d e
16. I feel anxious when I speak in front of a group. a b c d e
17. I am more valuable as a person than most other people. a b c d e
18. One of the last things I do before I leave the house is look in the mirror. a b c d e
19. I sometimes have the feeling that I'm off somewhere watching myself. a b c d e
20. I'm concerned about what other people think of me. a b c d e
21. I'm alert to changes in my mood. a b c d e
22. I never seem to do very well at the things that really count. a b c d e
23. I'm usually aware of my appearance. a b c d e
24. I'm aware of the way my mind works when I work through a problem. a b c d e
25. Large groups make me nervous. a b c d e
26. In general, I feel very good about myself. a b c d e
27. I make friends very quickly. a b c d e
28. I am very sociable. a b c d e
29. I tend to be shy. a b c d e
30. I usually prefer to do things alone. a b c d e
31. I have many friends. a b c d e
Attitudes Towards Exercise

All of the statements below are concerned with your involvement in vigorous physical activity. No two statements are exactly alike, however, so read and consider each carefully. Please give your reactions to each of these statements using the following scale:

a = strongly agree
b = agree
c = neutral or don't know
d = disagree
e = strongly disagree

As before, indicate your reaction by circling the appropriate letter. Please be as accurate and candid as possible throughout and try not to let your response to one question influence your response to other questions. Thank you.

1. I personally don't care to exercise much.  
2. I feel embarrassed exercising in public.  
3. I'm lazy when it comes to being physically active.  
4. Most people don't like to be around someone who is sweaty.  
5. I enjoy physically exerting myself.  
6. I enjoy exercising with others.  
7. I believe that people who exercise live longer.  
8. Exercising in front of an audience would inspire me to work harder.  
9. My physical condition is very important to me.  
10. I like to wear exercise attire.  
11. Physical exertion is not my cup of tea.  
12. I feel self-conscious around physically fit people.  
13. I use the elevator to avoid having to walk up the stairs.  
14. I'm usually reluctant to exercise for fear others will be evaluating my physical appearance.  
15. My physical condition is very important to me.  
16. I like to exercise in the presence of others.
The purpose of this statement is to give you a general outline and description of this research project. Like many other studies in psychology, however, we will not be revealing the exact nature and all of the aspects of this study to you until after we have finished data collection. We will be able to give you a general idea of what we are interested in and what we will ask you to do. Thus, you should read this statement carefully to determine whether you are willing to participate in this research. If you are willing to participate, we will ask you to sign a consent form which indicates that you have been informed about the nature of the research.

Recently many researchers have begun to focus on the beneficial effects of physical exercise. It is now well documented that exercise can reduce or maintain body weight and promote coping with stress. Many studies have also suggested that moderate exercise can relieve negative emotions, such as anxiety or depression. All of the previous research has focused on long-term effects of exercise on moods and emotions. Surprisingly, no one has yet examined the immediate effects of exercise on moods. That is the purpose of this research project: to see what effects mild to moderate physical exercise has on the moods of persons while they exercise.
Accordingly, what we are going to do is ask you to engage in mild physical exertion, riding a stationary bicycle, and ask you to indicate, before and after exercising, what your moods are at the moment. Please note that this research is not concerned with your level of fitness. We have no desire to push you to your physical limits. We simply want you to perform an amount of exercise with which you are comfortable. How long you pedal the bike is up to you. We do hope that you will exercise long enough for your exertion to have some noticeable effect on you, such as an increase in heart rate or depth of breathing, however, it is important that you exercise only as long as you want to. Even though the physical exertion should be quite mild, it is important that you not have a medical condition which would make participation in this research risky. Please inform the research assistant, Mr. Lopyan, if you have any medical condition or are taking any medication which might make exercise risky or unpleasant for you.

Another aspect of this research is to examine the effects that different exercise environments have on the mood changes produced by exercise. We will have more to say about that later, when we will give you a complete description of all the variables which this research is concerned with.

If you participate in this research project, we will observe many aspects of your moods and behavior. These observations will be converted to numbers and analyzed statistically. We may also publish the results of this study. However, you should know that your data will be coded so that
it will not in any way be identified with your name. It will be essentially anonymous. Furthermore, any report of this research will focus on group trends, not the results of individuals.

There is one final point you should be aware of. You have already earned experimental credit for showing up. You need not participate in order to get this credit. Furthermore, if you wish to discontinue your participation at any point, you may do so without loss of credit.
Appendix C

Consent Form

My signature below indicates that I voluntarily agree to participate in this research, having been informed:

1) That I will be asked to ride a stationary bicycle for a period of time, during which I will have a physiological recording device attached to my finger and be asked questions about my mood.

2) That how long and how fast I pedal the stationary bicycle is up to me, this is not a test of my endurance.

3) That I may discontinue participation in this research any time that I wish. Further, I will still receive full credit for participation even if I do cease participation.

4) That this research is concerned with both environmental and personality variables as they affect my behavior in a physically exerting situation. The full nature of these variables will be explained to me after I have finished my participation.

5) That data from this research may be used for publication in scientific journals, but that only group trends, not the behavior or, identity of individual subjects, will be reported.

Signature: __________________________

Date: __________________________
Appendix D

Affect Rating Sheet

Now I'm going to read several words to you which describe feelings. For each of these feelings, I want you to tell me to what extent you are experiencing it right now. Please describe how much you are experiencing this feeling by giving me a number from 1 to 10. A one indicates "not at all" and a ten indicates "very much".

For example, if you feel very much relaxed you would give me a "10" for that feeling, but might give me a 3 if you were feeling not very relaxed.

If you have no questions, please tell me how much you are feeling:

Tense
Confident
Displeased
Disappointed
Optimistic
Assured
Ill at ease
Satisfied

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10
Appendix E

Introduction to Phase II

As we mentioned before, this research aims to examine the effects of exercise on moods in different environments. So far you have exercised in an indoor and unchanging environment. We also want to determine what effect exercising in a more naturalistic environment has on persons.

Accordingly, we are requesting that you volunteer to participate in the second phase of this project. This will require your meeting Mr. Lopyan at an appointed time in the next few weeks to ride a ten-speed bicycle on campus. If you agree to participate, you will meet Mr. Lopyan in front of the library (across from the reflecting pond) and ride a prearranged number of laps around our "course" (the map on the attached page shows this "course"). Once again, it is up to you how many laps you pedal. However, it is essential that we know in advance how many laps you are going to pedal. This is important to us for planning purposes. You should also know that Mr. Lopyan will have two assistants stationed on the course who will be evaluating you. Also, we will once again be asking you before and after you finish to indicate what your moods are.

Please consider this question carefully. Although we can give you a choice as to how many laps you will make around the course, it is important that you stick to this commitment, since it figures importantly in our planning for subsequent subjects.

Once again, let me remind you that data we get from observing your performance will be anonymous, and that your participation in phase II, as in phase I, is totally voluntary.
Appendix F

Debriefing Form

As we mentioned earlier there are variables which we are interested in which were not fully revealed to you. Now that we have completed data collection, we can reveal all of this to you. We were not primarily interested in the effects of exercise on moods, but rather your willingness to continue exercising in different settings, and the extent to which this is predictable from your responses to the questionnaire which you completed in class. You were selected for participation in this experiment because you showed a clear preference for either "private" exercise or "public" exercise in your questionnaire responses. For example, if you endorsed statements such as "I feel self-conscious exercising in the presence of others" (indicating a negative attitude toward "public" exercise) and agreed with statements like "I enjoy physically exerting myself" (indicating a positive attitude toward "private" exercise) we would expect you to prefer "private" settings for exercise to public ones. We attempted to measure your willingness to actually exercise in such situations by measuring the amount of time you pedalled the exercise bike alone and in front of a minor (the "private" setting) and asking you to commit yourself to a certain number of laps around the campus (a "public" setting). If you haven't already guessed, you will not actually have to ride the bike if you agreed to. We will accept your commitment to do so as our measure. We will also pay attention to your "mood" ratings as an indication of how comfortable you felt in the "private" situation.

At one level, this experiment is another test of the hypothesis that persons' personal standards toward something (in this case, exercise) affects their private behavior, but that their feelings about how others react to this thing influences their public behavior. At another, more practical level, we are interested in the factors which encourage persons to engage in exercise or discourage them from doing so. We suspect that the factors are different for men and women.

Now that the experiment is over, there are two concerns that we still have. The first is for you and your feelings about having participated in this study. Do you have any feelings that you would like to express about any part of what went on during this session?

Our second concern has to do with the experiment itself. In order for this study to provide information that is useful, we need YOUR help. It is absolutely essential for the success of the experiment that no one who serves as a participant be aware of the nature or purpose of the study. Therefore, we ask you not to discuss the experiment at all with anyone who might later be a participant. We appreciate your help. If you have any further questions,
or if you have any suggestions about how we can make
the experiment better or more believable, we'd be
happy to discuss it with you further.

We want to thank you for your help in this study. We
appreciate your cooperation and hope that you found it
to be an interesting experience.

Sincerely,

Randy Fisher, Ph.D.
Kevin J. Lopyan

I hereby affirm that a full and complete explanation
of this experiment has been given to me by the experimenter,
including an explanation of the manipulations involved.
Now, knowing the true intent of the experiment, I agree to
allow my responses to be used as data.
References


