Exercise Identity and Attribution Properties Predict Negative Self-Conscious Emotions for Exercise Relapse

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Research on exercise identity (EXID) indicates that it is related to negative affect when exercisers are inconsistent or relapse. Although identity theory suggests that causal attributions about this inconsistency elicit negative self-conscious emotions of shame and guilt, no EXID studies have examined this for exercise relapse. Weiner’s attribution-based theory of interpersonal motivation (2010) offers a means of testing the attribution-emotion link. Using both frameworks, we examined whether EXID and attributional properties predicted negative emotions for exercise relapse. Participants (n = 224) read an exercise relapse vignette, and then completed EXID, attributions, and emotion measures. Hierarchical multiple regression models using EXID and the attributional property of controllability significantly predicted each of shame and guilt, R² adjusted = .09, ps ≤ .001. Results support identity theory suggestions and Weiner’s specific attribution-emotion hypothesis. This first demonstration of an interlinking of EXID, controllability, and negative self-conscious emotions offers more predictive utility using complementary theories than either theory alone.

Keywords: causal attributions, negative emotion, attribution-emotion link

Exercise relapse is defined as a return to a sedentary life that follows when individuals confront circumstances in which they completely abandon regular exercise (Lox, Martin Ginis, & Petruzzello, 2010). In the relapse prevention model introduced by Marlatt and George (1984), relapse is associated with negative emotional responses and self-attribution for failure (cf. Lox et al., 2010, Marlatt & Gordon, 1985). According to the model, a relapse is cued by high-risk situations that challenge exercisers’ normal routines (i.e., exercising regularly). This results in a subsequent reaction consisting of negative emotions expressed as guilt or shame with accompanying self-attributions for failure (cf. Lox et al., 2010; Marlatt & Gordon, 1985; Meichenbaum & Turk, 1987), thus perpetuating or spurring on the relapse.

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Implicated in this description of reactions to a relapse are several related psychological perspectives associated with the self-regulation of behavior. These perspectives are (a) as a behavioral challenge to an exerciser’s self-identity, (b) self-reflection in the form of attributions about the relapse, and (c) negative emotions as reactions to the attributional explanations individuals offer themselves for the failure to behave as exercisers (i.e., relapsing from regular exercise to being sedentary).

Meichenbaum and Turk (1987) offer a description of an incongruity among individuals being treated for relapse using cognitive behavioral therapy. They noted that individuals who struggle with short lapses learn to cope with setbacks and avoid relapse. In contrast, individuals with a record of perfect adherence who then lapsed had trouble recovering (cf. Brownell et al., 1986). While periodic lapses are likely among adherent individuals, what reactions does an exercise relapse elicit among those individuals who self-identify as exercisers? Surprisingly, the negative emotions associated with self-reflection about exercise relapses have not been systematically studied in the exercise literature.

However, several areas of psychological research concerning self-reflection and self-regulation provide common insight about how exercisers might cognitively appraise exercise relapses. These areas are self-conscious emotions, exercise identity, and exercise attributions.

**Self-Conscious Emotions**

The importance of examining negative emotions in relation to relapse relates to those self-conscious emotions that involve self-reflection and self-evaluation. Price Tangney (2003), in her seminal chapter in the *Handbook of Self and Identity*, notes that self-conscious emotions are fundamentally those of self-regulation. In particular, she clarifies that negative emotions of shame and guilt have a function in self-regulation because they provide a form of critical feedback to the self. In addition, she states that shame and guilt are distinctive self-conscious emotions that differ in the way they motivate behavior. When individuals stray from or anticipate straying from important standards (e.g., the regular exercise associated with their identity), they may experience each of these negative self-conscious emotions. This feedback may either motivate them to resume and adhere to such standards or motivate them to avoid striving toward the standards. Thus, for the purpose of understanding the response of individuals to exercise relapses relative to their own exercise standards, the examination of self-conscious emotions is important. This theoretical perspective is consistent with the self-evaluation process described in high-risk situations in the Marlatt and George (1984) relapse prevention model. Self-conscious emotions (body related) have been examined relative to motivation and women’s physical activity participation (Sabiston, Brunet, Kowalski, Wilson, Mack, & Crocker, 2010) and in relation to self-compassion in young female athletes (Mosewich, Kowalski, Sabiston, Sedgwick & Tracy, 2011), but have not been examined relative to exercise relapse.

The specific nature of emotions in reaction to a relapse may also be examined from several other social psychological perspectives. Two theoretical frameworks which have predominantly been used in the exercise literature to investigate the relationship between failure to exercise and individuals’ negative emotional reactions are identity theory (Burke, 1980) and Weiner’s attribution-based theory of interpersonal motivation (1986, 2010).
Identity Theory: The Role of Identity

Identity theory describes how identity influences behavior through its impact on affect. Identity is a subcomponent of the self, and is composed of the meanings a person holds in a particular role (i.e., as a mother, a friend; Stets & Burke, 2003). According to identity theory (Burke, 1980; Gecas & Burke, 1995; Stryker & Burke, 2000), identities and their associated expectations are thought to provide a standard for behavior (Stryker & Burke, 2000). A discrepancy (e.g., failure to exercise) between the identity meaning individuals hold and their perception about their own behavior in a particular role (e.g., I am a regular exerciser) reflects a problem in verifying their identity. As a result, individuals experience negative affect (see Bartels, 1997; Burke, 1991; Burke & Stets, 1999; Cast & Burke, 2002). In turn, this negative affect is suggested as providing part of the motivation for individuals’ efforts to reduce the discrepancy between identity meanings and perceptions of the self (Burke, 2006). This idea parallels the motivational role Price Tangney (2003) described for the negative self-conscious emotions of shame and guilt.

Attribution-Based Theory of Interpersonal Motivation

Weiner (2010) contends that emotional reactions can result from attributions which individuals use to explain the cause of an outcome. Weiner’s (1986) early attribution-emotion model suggested that individuals automatically search for the causes of success/failure in important events, and the attributonal explanation of these outcomes may be associated with subsequent emotions. In his most recent description of the attribution-based theory of interpersonal motivation (Weiner, 2010), he outlines causal dimensions or properties of the attributions that individuals make for events (locus of causality, stability, and controllability).

With respect to the negative emotions associated with failure, Weiner proposes that failure evokes attributional thinking that is characterized by specific causal properties (e.g., controllability). When a person does not expect to fail, the causal properties of this thinking elicit specific, unanticipated emotions. In the case of personal failure, Weiner (2010) suggests that the attribution dimension of controllability is linked to the emotions of shame and guilt (cf. Hanrahan & Biddle, 2008; Weiner, 2010). Controllability relates to the possible volitional alteration of the cause (controllable or uncontrollable).

How does this theoretical perspective mesh with Stets and Burke’s (2005) discussion about identity and behavioral discrepancy? Weiner would suggest that thinking about the cause of the discrepancy would lead to specific feelings and notes there is voluminous empirical evidence to support this (cf., Weiner, 2010). Interestingly, Stets and Burke (2005) also suggest the idea that attributions may be related to the emotional responses that follow identity-behavior inconsistency. To date, however, there is no identity theory-based exercise research demonstrating this relationship.

For the study of the link between exercise relapses and specific emotional reactions, identity theory and the attribution-based theory of motivation offer complementary theoretical perspectives. As well, Price Tangney’s (2003) description of the role of self-conscious emotions as part of the self-regulation process fits well with these perspectives. The three psychological perspectives concern the self and self-evaluation, and in complementary fashion may be more useful for
examining and understanding emotional reactions to exercise relapse than using the models individually.

**Identity, Attributions, and Emotions in Physical Activity Research**

In the exercise-identity literature, the term affect has been used to describe the summation of multiple emotions, and is generally reported as either positive or negative. For example, several studies have examined the affective reactions of individuals with stronger and weaker exercise identity to a perceived challenge to exercise, an identity-relevant behavior (Strachan & Brawley 2008; Strachan, Brawley, Spink, & Jung, 2009). When exercise behavior was inconsistent with identity, individuals with stronger exercise identity reported less positive affect and greater negative affect. These findings were consistent with predictions from identity theory but there remains a gap in the literature because the identity-attribution-specific emotion link suggested by Stets and Burke (2005) remains unexamined.

Research based on an earlier version of Weiner’s model (1986) has reported an association between attributional dimensions and emotions (cf., Biddle, 1993; Cournaya & McAuley, 1993, 1996; Hanrahan & Biddle, 2008; Inglede we et al., 1996; Nickel & Spink, 2010). However, the findings are mixed and limited to a relatively small number of studies. Useful comparison of extant evidence is difficult (See Biddle, 1993; Hanrahan & Biddle, 2008) due to a focus on both specific emotions and affect (i.e., either negative or positive). Furthermore, none of the existing studies are clearly linked to individuals’ exercise identity.

**Using the Attribution Model to Consider the Identity-Attribution-Emotion Link**

*Previous Work.* As part of a larger study, we investigated whether varying (a) the strength of identity (stronger/weaker) and (b) the source of causality for exercise relapse (i.e., personal/situational) differentially affected self-regulatory efficacy, attributions, and affect (Strachan, Flora, Brawley & Spink, 2011). These effects were observed in experimental conditions where source of causality was manipulated and failure was common for all participants, presented as a personally-relevant exercise relapse for a month. We found main effects of identity strength on social cognitions and affect where greater exercise identity strength elicited stronger self-regulatory efficacy and greater negative affect in the face of exercise relapse. The source of causality main effect served as a manipulation check, which verified that participants saw our manipulation of the relapse being caused either by personal factors or situational factors. Personally-caused exercise relapse resulted in stronger expressions of the attributional properties. The effects supported theory-driven hypotheses from both identity theory (e.g., reactions to behavioral discrepancy) and Weiner’s attribution model (e.g., strength of ascription to attribution dimensions).

*Present Study.* The data we obtained in our previous study provided us with an opportunity to examine social-cognitive concepts not previously considered together and linked specific, negative self-conscious emotions in the exercise literature. Our original study measured affect as the sum of a number of different
emotions proposed by Weiner (1986). In the present secondary analysis of that data, we were able to use specific negative emotions identified by Weiner as reactions to failure to examine the relationships between exercise identity, a specific attributional property (controllability), and specific self-conscious emotions (shame and guilt). The relationships examined are in accordance with theoretical relationships described by Price Tangney (2003), suggested by Stets and Burke (2005), and theorized by Weiner (2010).

The propositions from Weiner’s (2010) model argue that the attributional properties characteristic of the reasons individuals use for failure subsequently elicit the emotional reaction (i.e., attribution-dependent emotion). Thus, while a behavioral discrepancy with exercise identity may be viewed negatively by stronger identity individuals (Stets & Burke, 2005), the emotional specificity is elicited by the specific attributional property when a search for causality is involved. This latter association is suggested in Marlatt and George’s (1984) relapse prevention model. Both of the above associations are described by Price Tangney relative to self-evaluation of personal standards leading to shame and guilt. All of these models describe common elements. They have a focus on the self and self-evaluation in the case of a failure to sustain a personal standard of behavior (i.e., exercise relapse), and this self-evaluation is associated with specific negative emotions. The present study is a secondary analysis of data to determine if we can empirically demonstrate these associations in the case of an exercise relapse. If demonstrated, this would extend and make more specific findings in both the exercise attribution and identity literature.

Accordingly, we advanced the following hypotheses. First, we expect that strength of exercise identity will predict the negative emotions of shame and guilt. A stronger exercise identity will positively correlate with greater shame and guilt when individuals relapse from exercise. Second, we hypothesize that the attributional property of controllability will contribute unique variance to the prediction of shame and guilt (cf., Biddle, 1993; Hanrahan & Biddle, 2008) after controlling for the variance accounted for by identity and source of causality. Specifically, greater perceived controllability relative to exercise relapse will be positively correlated with greater shame and guilt. Neither identity theory nor Weiner’s (2010) model offer other hypotheses about these specific negative emotions when causal reasoning about the case of undesired failure is involved. Aspects of our original research design require inclusion in the analyses examining our hypotheses and this will be specified later in our analytical plan.

**Method**

**Participants and Design**

Two hundred and twenty-four university students who self-identified as regular exercisers as per our minimum activity definition, volunteered to participate in the study. For participants to have some minimum frame of reference for recruitment purposes, an exerciser was defined as anyone who was currently exercising at least 2 days per week, thus guaranteeing the participants ability to relate to the exercise identity scale, other measures, and stimulus materials. The mean frequency of activity per week was 4.2 ($SD = 2.4$) sessions per week. Participants were from
a variety of academic programs at a university in a midsized Canadian city. The majority of the participants were female (70%), with ages ranging from 17 to 40 years ($M_{\text{age}} = 22.41$ years, $SD = 3.95$).

Participants in this experiment were randomized to relapse conditions that were clearly caused either by person factors or by situational factors. The common control was that all participants responded to a failure to exercise where they had relapsed over the past month and would continue to do so over the next month.

**Measures**

**Exercise Identity Strength.** This construct was measured using the nine-item Exercise Identity Questionnaire (Anderson & Cychosz, 1994), where participants rate the extent to which they identify with being an exerciser. Each item was rated on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). Example items include, “When I describe myself to others, I usually include my involvement in exercise,” and “I have numerous goals related to exercise.” Test–retest reliability of this scale has been demonstrated with a Cronbach’s alpha of .94 observed among a sample of healthy students (Anderson & Cychosz, 1994). An acceptable alpha of .88 emerged for the sample in this study (Tabachnick & Fidell, 2007).

**Emotion.** Shame and guilt were assessed using the individual emotion responses to a scale derived from Weiner’s (1986) article on attributions and emotion and used in other published exercise studies (e.g., Shields, Brawley, & Lindover, 2006). The items assessing shame and guilt were, “To what extent do you feel ashamed?” and “To what extent do you feel guilty?” Participants used a 9-point scale (1 = do not feel at all; 9 = feel very much) to indicate the extent to which they would feel these self-conscious emotions in response to perceived failure to exercise.

**Attributions.** The Causal Dimensions Scale (CDSII: McAuley, Duncan, & Russell, 1992) was used to assess the strength of attributional properties participants use to characterize their expressed reasons for failing to exercise. In the original study, they provided their reasons after reading about the exercise relapse described in the vignettes in the condition to which participants were randomly assigned. Finally, they characterized their explanation for failure to exercise by rating the strength of the attributional properties associated with their personal explanation using the CDSII 9-point Likert-type scale. In our previous study, we reported significant main effects for locus of causality, which indicated that the source of causality for failure was differentially perceived by the two groups, with participants in the relapse condition due to personal factors reporting significantly greater internal locus of causality as compared with participants in the situational relapse condition. These findings functioned as a manipulation check to confirm that participants perceive the source of causality for failure as intended in each relapse condition.

In our present secondary analysis, we focused on the causal property of personal controllability, given it is the sole attributional relation to the negative emotions of shame and guilt as described by Weiner (2010). As well, our stated hypothesis in this analysis is based upon the suggestions of the other models we discussed earlier, which propose a similar relationship. An example item for controllability is, “Is this reason something manageable by you or not manageable by
you?” (1 = not manageable by you; 9 = manageable by you). Higher mean scores on this subscale indicate that attributions were more personally controllable. The CDSII has been shown to have acceptable internal consistency and construct validity using similar populations (McAuley et al., 1992) and in related research (Nickel & Spink, 2010; Shields, Brawley, & Lindover, 2006). Internal consistency for the personal controllability subscale was acceptable, $\alpha = .85$ (Tabachnick & Fidell, 2007).

Stimulus Materials

The stimulus materials were carefully constructed vignettes. They were designed so that relapse (i.e., failure to exercise) was common for all participants but the source of causality was manipulated. One vignette described the relapse as being due to completely personal causes and the other described the relapse as being due to completely situational causes. In previous exercise-identity research the cause has been uncontrolled. Using the results of a pilot study, the vignettes were created to be discrepant (i.e., relapse and failure to exercise) with participants’ exercise identities as exercisers and be relevant to participants. The vignettes described that the participant had failed to maintain his or her regular physical activity routine, that he or she had not exercised at all over the past month (a relapse to sedentary behavior), and that circumstances causing the relapse in each vignette would not change over the next month. Relevance to the participants was achieved through pilot work that suggested that greater relevance about the people and circumstances in the vignettes would be achieved by describing the participants as students just like the main study respondents, and by describing real-life challenges that they would normally experience in their current city.

Vignette Quality, Relevance, and Believability Checks. Vignette quality checks were administered to ensure that the quality and believability of both vignettes was high and that their content could be accurately recalled. Regarding quality, similarity, and relevance to participants, realism of the situation and believability, participants were asked to respond to six items and rate their agreement with the statements on a 9-point Likert scale (1 = strongly disagree; 9 = strongly agree). Example items included, “The person in the written scenario could be someone like me,” and “The situation described was realistic.” For content recall, participants assessed whether the content in the vignettes could be accurately recalled by responding to four true or false statements about the vignettes.

Procedure

Participants in the original study were recruited via an online bulletin announcement and classroom visits. Participants were directed to a website hosting the online survey, where they provided informed consent and then were randomly assigned to one of the two relapse vignettes by an online procedure. Subsequently, they read the appropriate vignette about a person like themselves being unable to exercise for a month. They were asked to place themselves in their assigned situation and relate to the similar other described. After reading, they completed the measures and quality/believability checks. Participants received a small honorarium for their participation.
Analysis

As recommended by Weiner (1986), separate hierarchical multiple regression analyses were conducted to predict each emotion of shame and guilt and hierarchical multiple regression procedures were consistent with those advocated by Cohen, Cohen, West and Aiken (2003). Our hypotheses were based primarily on (a) the identity theory suggestion that exercise identity would predict the two negative emotions, and (b) the attribution theory proposition that controllability would predict shame and guilt. The hypothesis is also encouraged by discussions by Marlatt and Gordon (relapse prevention, 1985) and self-conscious emotions (Price Tangney, 2003). Weiner specifically theorizes that controllability will be the attributional dimension related to shame and guilt. No attribution theory proposition concerns other dimensions in regard to these specific emotions.

However, our controlled manipulation of source of causality in our original study design was used as a predictor because there was a main effect of locus of causality associated with that manipulation. In the original study, this effect served as a manipulation check confirming that the cause of relapse in each of the two vignettes was perceived as constructed (i.e., personal, situational). Participants in the personal condition reported significantly greater internal locus of causality for failure to exercise as compared with participants in the situational condition. Thus, we needed to control for that effect in our regression model so that we could examine the unique contribution of the hypothesized controllability dimension to the prediction of emotions (Weiner, 2010). The theory-based order of entry consistent with hypotheses and the control for design was as follows: Exercise identity (Block 1); source of causality (personal, situational; Block 2); personal controllability (Block 3).

Results

Assumptions for linearity and homoscedasticity were examined and all variables were normally distributed. Multicollinearity and singularity were assessed and determined to be unproblematic.

Participants’ mean score on the seven-item exercise identity scale was 5.45 ($SD = 1.06$), on locus of causality for personal and situational conditions were 6.08 ($SD = 1.52$) and 4.86 ($SD = 2.17$), and on the personal controllability scale was 5.98 ($SD = 2.16$). The mean score for the sample for guilt was 5.75 ($SD = 2.47$) and for shame was 4.86 ($SD = 2.46$).

Vignette quality/believability checks indicated the quality/believability of the vignettes was good. The mean for the quality/believability of the vignettes was 6.96 ($SD = 1.5$). Further, means of participants’ percent accurate recall of the scenario information was 64.55 ($SD = 17.17$).

Identity and Attributions Predicting Shame and Guilt

Results of the hierarchical multiple regression analyses including $R^2\Delta$ and $\beta$ can be seen in Table 1. In the first entry in each of the regressions, strength of exercise identity significantly predicted shame, $F(1, 222) = 13.3, p < .001$, and guilt, $F(1, 222) = 14.5, p < .001$, respectively. Identity independently and positively predicted each of shame and guilt.
As the second entry to the models, the source of causality did not contribute significantly to the prediction of either shame or guilt. Recall that no direct effects were anticipated, as source of causality for failure is not theorized as eliciting a specific emotion.

In the third and final entry to the models, personal controllability contributed unique variance by significantly predicting shame, $F_{\Delta}(3, 220) = 11.5, p = .001$. In the model predicting guilt, the unique contribution made by personal controllability was also significant, $F_{\Delta}(3, 220) = 7.8, p < .01$. As hypothesized, both stronger exercise identity and stronger personal controllability predicted stronger negative self-conscious emotions.

**Discussion**

We investigated the emotional reaction to an exercise relapse. Several social psychological models that link regular behavior to self-identification and self-evaluation of failure suggest that individuals have a common emotional reaction. The emotions manifested are the negative self-conscious emotions of guilt and shame. Based upon this common reaction element being evident in the theoretical models, a contribution to the exercise literature would be to use the models in complementary fashion to determine the relation of key variables to the prediction of negative emotion. The benefit of using complementary models is one where, if hypotheses are supported, more knowledge is gained than by the use of the models individually. We examined whether exercise identity and the attributional dimension of controllability would predict each of the self-conscious emotions of shame and guilt. Consistent with our hypotheses, our findings indicate that exercise identity strength significantly predicted each of shame and guilt and that controllability added significant unique variance to the prediction model for each emotion.

These findings add to the exercise literature in several ways. First, our findings agree with identity theory, which indicates that identity strength may be related to negative emotional responses following situations that give rise to identity-behavior
inconsistency (Stets & Burke, 2005). Past exercise-identity research has typically examined positive and negative affect as a response to not behaving consistently with individuals’ exercise identity. Specific negative emotions, although theoretically suggested, have gone unexamined.

Second, we supported Weiner’s (2010) contention that controllability is related to shame and guilt in the context of failure to exercise. Past research studies concerning attributions in an exercise setting have mainly examined emotions following outcomes of success, while few have examined emotional reactions to failure (cf. Biddle, 1993). This study extends that research by examining emotional reactions relative to exercise identity-behavior inconsistency (i.e., a prolonged exercise relapse of one month extending to a second month).

Considering the identity and attribution findings together, the complementary overlap between the theories we used is apparent. Specifically, identity theory and the suggested attribution-emotion relationships in the case of identity-behavior inconsistency (Stets & Burke, 2005) complement propositions from the attribution-based theory of intrapersonal motivation (Weiner, 2010), which link controllability and specific negative emotions. Our findings lend credence to the suggestions offered by these theorists. The theories have not previously been examined in complementary fashion relative to specific emotions in the physical activity literature. Examining the relationship through the additional lens of the attribution model allows us to identify the link between a specific role of the self (exercise identity) and the attributional property of controllability.

The focus on shame and guilt as self-conscious emotions offers a different perspective than typically advanced about emotions in the social psychology of exercise behavior. Whereas the study of emotions in regard to exercise/physical activity has received some attention based upon Weiner’s (1986) earlier attribution-emotion model, their examination through the lens provided by the self generally, and self-conscious emotion specifically, is new.

The common element of emotional reaction offered by our study concerns the “self” perspective of both of the models we used and in particular, exercise identity. When individuals relapse from or anticipate lapsing from their exercise standards that are linked to their identity, they are prone to experience negative self-conscious emotions. Consistent with identity theory, this self-conscious emotional feedback may motivate them to self-regulate to adhere to their exercise standards (cf. identity theory, Stets & Burke 2005). Thus, for understanding the emotional response of individuals to exercise relapses and whether these motivate people to engage in self-regulatory actions to resume behavior, self-conscious emotions are important.

Lastly, support for the relationship we tested follows the suggested course of events outlined in Marlatt’s (1986) phenomenon of relapse and Marlatt and Gordon’s (1985) relapse prevention model. Specifically, they suggested that individuals experiencing a relapse would also feel shame and guilt and they link the relapse behavior (being sedentary) to attributions to the self and the resulting uncomfortable feelings to the conflict with individuals’ self-concept as a regular exerciser.

**Strengths and Trade-Offs of the Analysis**

The examination of our hypotheses was through secondary data analysis and therefore the analyses inherit the original study’s strengths and limitations. Chief among the strengths of the original study were its theoretical foundations, the
controlled manipulation of causality and common experience of failure, and the prolonged duration over which individuals considered their exercise relapse (i.e., two months). The quality/believability of the vignettes was strongly endorsed by participants and they correctly recalled the content of the vignettes as described at a level greater than expected by chance.

Readers should also consider some design trade-offs of the original study. One of the most obvious is the generalizability to a broader population. Our university sample consisted primarily of young, educated females to whom we had access for the experimental portion of the main study. Although there is other evidence that the premises about exercise identity and affect (vs. emotion) apply to both young and older audiences (e.g., Strachan & Brawley, 2008; Strachan, Brawley, Spink, & Jung, 2009; Strachan, Brawley, Spink, & Glazebrook, 2010), the complementary use of these two theories in the exercise literature (i.e., identity and attribution theory of motivated behavior) has only been with a young adult sample.

Another trade-off of external validity in favor of internal validity was the conscious use of controlled vignettes as the stimulus to which participants responded. Our formative work and piloting of our stimulus materials were stronger than in previous studies to heighten internal validity. Participants did feel the failure to exercise context was quite believable and relevant as described. As well, previous research has supported the use of vignettes during both interventions and programs to elicit responses relevant to joining a future program or reacting to barrier/stressful conditions (e.g., Mancuso, Sayles, Robbins, & Allegrante, 2010; Woodgate & Brawley, 2008). Indeed, in cognitive behavioral training on what to do in the case of an exercise relapse, participants react to and rehearse what to do as part of their preparation should they encounter these events (e.g., Meichenbaum & Turk, 1987). Nonetheless, participants’ reaction to an exercise relapse vignette that described the relapse occurring and continuing over a two-month period was imaginal and an experimental proxy for experiencing a real relapse. As well, literature on evaluative judgments people make about their lives may differ from actual experience even though they are related (Kahneman, 2011). Our conclusions about evaluations of a life circumstance such as a relapse, even if one has had a past experience with a relapse, are not identical to experiencing the relapse as suggested by Kahneman’s research on experienced well-being (2011).

However, there are practical liabilities and feasibility issues to consider when attempting to use a real relapse in an experiment. Two reasons for not conducting an experiment of this sort are that it would be unethical to actually remove people from exercise for such an extended period (ethics boards as well as participants would not approve) and it would be difficult to recruit people to have them give up their exercise for as much as a month.

An acute failure situation, real or hypothetical, is not theorized to engage a strong exercise identity and elicit a negative reaction. By contrast, extended inconsistency characteristic of a relapse does do this as the exercise identity literature indicates. Although manipulations of actual acute failure could be constructed, they are not likely to engage exercise identity as hypothesized.

**Future Research**

**Questions Needing Theoretical Direction.** While this study provides support for the complementary use of identity theory and Weiner’s (2010) attribution-based
theory of intrapersonal motivation, it also provokes some additional questions about the theoretical relationships of interest. One question that requires future examination is how the strength of identity influences the type of attributional property primarily used to explain failure and the strength of the subsequent self-conscious emotion expressed. When confronted with an unexpected, extended lapse in exercise behavior, individuals’ strong identification with self as exerciser generates thoughts primarily characterized by the specific attributional property of controllability (i.e., despite source of causality, participants viewed the context as personally controllable as reflected by the average score of 6 on this 9-point scale). In turn, the strength of this property may be partly responsible for eliciting the specific emotions of shame and guilt (Weiner, 2010) in response to a conclusion that the lack of exercise (i.e., behavior inconsistent with identity) is not going to be remedied soon (i.e., at least another month). In the vignettes, this exercise relapse conflicts with exercise identity and there was no controllable opportunity to self-regulate to return to behavioral consistency with identity. This may have contributed to the variance accounted for by the two theoretically based predictors. Clearly, further research is needed to yield more specific answers.

Motivational and Behavioral Challenges. One challenge for future research will be to determine if these attributionally linked, self-conscious, negative emotions actually motivate individuals to return to the exercise behavior that verifies their exercise identity (Price Tangney, 2003). Will such specific emotions influence greater efforts to return to adherence when exercise identity is compromised? Do specific negative emotional reactions to exercise relapses such as guilt or shame motivate individuals toward action if they wish to be consistent with their exercise identity? Price Tangney (2003) argues that these self-conscious emotions may differentially motivate. For example, studies about guilt suggest that it can motivate people in a constructive, proactive fashion (i.e., attempt to resume and exercise standard). By contrast, shame appears to motivate in less constructive ways, toward defensiveness and denial or painful rumination over failure. Where might we investigate differentially motivated behavior due to self-conscious emotional reactions to exercise relapses? One possibility might be in exercise therapy contexts where individuals are rehabilitating (e.g., cardiac rehabilitation) or in disease prevention contexts where physical activity and diet modification are used together to address overweight or obese conditions. Would guilt over an exercise relapse promote exercise resumption and would shame promote defensiveness and dropout?

The findings from the present secondary analysis represent a “foot in the door” to an area of research where the self and self-reflection about relevant personal behavior link together important constructs (identity, attributions, self-conscious emotions, and exercise relapse) mainly investigated independently. The questions that follow from the effects we detected suggest interesting new research directions framed by complementary theories about the self and have implications for the study of exercise adherence.

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