Self-Efficacy and Perceptions of Effort: A Reciprocal Relationship

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It is well documented that exercise participation is associated with enhanced psychological health (for reviews see McAuley & Rudolph, 1995; North, McCullagh, & Tran, 1990; Petruzzello, Landers, Hatfield, Kubitz, & Salazar, 1991). However, much less attention has been given to the influence of preexisting psychological factors on perceptions of effort during exercise and, in turn, how those responses influence postexercise psychological changes. In a recent review, Morgan (1994) summarized the research demonstrating that the psychological constructs of anxiety, depression, neuroticism, and extroversion influence perceptions of effort during exercise. Furthermore, Morgan (1994) emphasized the need for further examination of psychological factors that have the potential to influence perceptions of effort during exercise. Few studies have examined the influence of preexisting levels of self-efficacy on perceptions of effort during exercise and the subsequent influence of those responses on postexercise self-efficacy (e.g., McAuley & Courneya, 1992). Therefore, the purpose of the present study was to examine the relationship between individuals' confidence in their exercise capabilities, or self-efficacy, and their perceptions of effort responses to acute exercise. It was hypothesized that preexercise efficacy would predict perceptions of effort during exercise. Furthermore, it was expected that perceptions of effort during exercise would predict postexercise self-efficacy. Finally, as numerous studies have demonstrated that acute exercise increases self-efficacy (McAuley & Courneya, 1992; McAuley, Courneya, & Lettunich, 1991; Rudolph & McAuley, 1995), it was hypothesized that self-efficacy would increase in the present experiment.

Fitness and health professionals are increasingly telling people to monitor their perceptions of effort to determine their exercise intensity rather than to use the more traditional method of monitoring heart rate (American College of Sports Medicine, 1990). With the exception of populations requiring more precise knowledge of heart rate, such as postinfarct patients, the use of perceived effort has become a valid tool for monitoring exercise intensity (Birk & Birk, 1987). One rea-
son for using perceived effort as an intensity guide is that attaining a specified heart rate zone may not always be necessary or desirable, especially if the primary goal is to promote regimen adherence. Unlike heart rate monitoring, teaching individuals to “listen” to their bodies allows for periodic fluctuations in physiological and psychological responses that occur during exercise. During the adoption phase of an exercise regimen, an individual who is simultaneously determined to reach a specified heart rate and having a “bad exercise day” is likely to perceive the bout to require formidable effort and thus experience a considerable degree of negative affect. According to self-efficacy theory (Bandura, 1986), these negative feelings have the potential to result in decreases in self-efficacy which, in turn, will increase the likelihood that the individual will discontinue the exercise regimen. Indeed, it has been demonstrated that efficacy cognitions play an important role in adherence to exercise programs, particularly during the critical early stages of participation (McAuley, 1992).

Bandura (1986) hypothesizes that efficacy cognitions have the potential to predict physiological arousal, stress reactions, pain tolerance, physical stamina, and affective states. Moreover, Bandura’s (1986) self-efficacy theory posits that the relationship between efficacy cognitions and affect is reciprocal, that is, preexisting efficacy has an impact upon affective responses during a challenging task and, in turn, those subjective psychological responses influence posttask self-efficacy. It is clear that acute exercise generates subjective interpretations of somatic sensations during and following exercise. However, whether perceived somatic states such as fatigue, pain, and exertion represent affective states is debatable (McAuley & Courneya, 1994). Nevertheless, physiological cues are inherent in the exercise environment, and they possess the potential to generate subjective psychological responses resulting from those cues. As it has been previously demonstrated that increased perceptions of effort are related to increased negative affect responses during exercise (Hardy & Rejeski, 1989) and that high pre- and postexercise efficacy are related to positive affective responses during exercise (McAuley & Courneya, 1992), we believe that it would be reasonable to expect high pre- and postexercise efficacy to be inversely related to perceptions of effort during exercise.

To our knowledge, only one study has examined the relationship between self-efficacy and perceptions of effort. In a sample of middle-aged and older adults, McAuley and Courneya (1992) reported preexercise efficacy to be related to perceptions of effort \( r = -0.22 \) during a cycle ergometer test to 70% of participants’ predicted maximal heart rate. However, participants’ perceptions of effort were not related to their postexercise efficacy levels. Furthermore, hierarchical regression analyses showed that preexercise efficacy did not predict perceptions of effort, and perceptions of effort during exercise did not predict postexercise efficacy. Although McAuley and Courneya controlled for the varying length of exercise time in the regression analyses, the employment of predicted maximum heart rate to determine exercise intensity may have contributed to their weak findings with respect to the relationship between efficacy and perceptions of effort. That is, using predicted maximum heart rate instead of a more objective measure of exercise intensity may have resulted in greater variability in perceived effort and postexercise efficacy scores, which lead to the absence of a significant relationship. It should be noted that McAuley and Courneya were limited to this less risky method for determining maximal oxygen uptake because of the age and physical condition of their sample. A similar study, which employed more accurate measures of aerobic capacity and exercise intensity