

Self-Efficacy Theory

STUDENT LEARNING OUTCOMES

After reading this chapter the student will be able to:

- Explain the concept of Self-Efficacy Theory.
- Identify the constructs of Self-Efficacy Theory.
- Explain how vicarious experience influences self-efficacy.
- Describe the influence of mastery experience on self-efficacy.
- Demonstrate how verbal persuasion impacts self-efficacy.
- Explain how the somatic and emotional states affect self-efficacy.
- Use Self-Efficacy Theory to explain one health behavior.

THEORY ESSENCE SENTENCE

People will only try to do what they think they can do, and won't try what they think they can't do.

Self-Efficacy Constructs Chart

Mastery experience:

Prior success at having accomplished something that is similar to the new behavior

Vicarious experience:

Learning by watching someone similar to self be successful

Verbal persuasion:

Encouragement by others

Somatic and emotional states:

The physical and emotional states caused by thinking about undertaking the new behavior

IN THE BEGINNING

For eons of time, we have been trying to understand and explain why people do what they do. Early on, the theories used to explain behavior had a psychodynamic basis and shared three characteristics—that behavior is regulated psychically at a sub-consciousness level; that behaviors diverging from the prevailing norm are a symptom of a disease or disorder; and that behavior changes as a result of gaining self-insight through analysis with a therapist (Bandura, 2004). These theories formed the foundation of the “lie on the couch” approach of talk therapy thought to be the magic bullet of behavior change. Unfortunately, research on the outcome of talk therapy showed that although people did gain insight into their behavior, their behavior usually didn’t change (Bandura, 2004).

In the 1960s an alternative behaviorist approach to the explanation of human behavior was introduced. This new approach viewed behavior as the result of an interplay between personal, behavioral, and environmental factors rather an unconscious process with psychodynamic roots, and it did not consider deviant behavior a disease symptom (Bandura, 2004).

A shift in treatment also occurred at this time in terms of content, location, and (behavior) change agent. Treatment content became action oriented and focused on changing the actual deviant behavior rather than on trying to find the psychological origins of the behavior. Mastery experiences were used to give people the skills and belief in themselves to adopt healthier behavior. Treatment occurred in the settings where the behavior occurred—at home, school, workplace, and community rather than in a therapist’s office. And this new approach did not limit treatment change agents to being mental health professionals only. For example, teachers were trained to assist in reducing problem behaviors in the school setting

and peers or role models who had overcome the problem behavior themselves were also change agents (Bandura, 2004).

Although both approaches were very different, research done on phobias showed that both were equally as effective. Since both approaches worked, it was apparent there was some underlying mechanism connecting them. It was Albert Bandura in the late 1970s who proposed Self-Efficacy Theory as the unifying mechanism (Bandura, 1977, 2004).

THEORETICAL CONCEPT

If you were given the opportunity to fund your college education by swimming 10 laps in a pool, you surely would give it a try, assuming you can swim. Now imagine you were given the same opportunity to raise tuition money, but had to swim the English Channel instead. Would you still go for it? If your swimming ability is like the average person's, there's no way you'd even attempt it. Why the difference? In the first case, you believe you can swim the 10 laps. In the second, you don't believe you can swim the English Channel, and so you won't even try. Think back to your childhood and the book *The Little Engine That Could*: "I think I can. I think I can." This is the concept of self-efficacy.

Self-efficacy is the belief in one's own ability to successfully accomplish something. It is a theory by itself, as well as being a construct of Social Cognitive Theory. Self-Efficacy Theory tells us that people generally will only attempt things they believe they can accomplish and won't attempt things they believe they will fail. Makes sense—why would you try something you don't think you can do? However, people with a strong sense of efficacy believe they can accomplish even difficult tasks. They see these as challenges to be mastered, rather than threats to be avoided (Bandura, 1994).

Efficacious people set challenging goals and maintain strong commitment to them. In the face of impending failure, they increase and sustain their efforts to be successful. They approach difficult or threatening situations with confidence that they have control over them. Having this type of outlook reduces stress and lowers the risk of depression (Bandura, 1994).

Conversely, people who doubt their ability to accomplish difficult tasks see these tasks as threats. They avoid them based on their own personal weaknesses or on the obstacles preventing them from being successful. They give up quickly in the face of difficulties or failure, and it doesn't take much for them to lose faith in their capabilities. An outlook like this increases stress and the risk of depression (Bandura, 1994).

THEORETICAL CONSTRUCTS

The theory introduces the idea that the perception of efficacy is influenced by four factors: mastery experience, vicarious experience, verbal persuasion, and somatic and emotional state (Bandura, 1994, 1997; Pajares, 2002).

MASTERY EXPERIENCE

We all have mastery experiences. These occur when we attempt to do something and are successful; that is, we have mastered something. Mastery experiences are the most effective way to boost self-efficacy because people are more likely to believe they can do something new if it is similar to something they have already done well (Bandura, 1994).

Perhaps you never thought about this, but babysitting is a significant mastery experience (**Figure 2–1**). Babysitting is among the strongest predictors of a new mom's belief in her ability to take care of her own children. Women who have experience taking care of infants prior to becoming mothers themselves are more confident in their maternal abilities, and even more so in completing infant care tasks they did frequently (Froman & Owen, 1989, 1990; Gross, Roccissano, & Roncoli, 1989). So, babysitting as a teenager pays off in many ways.

Mastery is the basis for preoperative teaching of men undergoing surgery for prostate cancer. Since this type of surgery can result in urinary incontinence, it is important for men to do pelvic exercises postoperatively to restore urine control.



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FIGURE 2–1 Babysitting provides mastery experiences

If they are taught these exercises before surgery and practice them, their self-efficacy increases and they are more likely to regain urine control more quickly after surgery (Maliski, Clerkin, & Litwin, 2004).

Providing opportunities for people to gain mastery is the reason why workshops, training programs, internships, and clinical experiences are offered. These are ways people can become proficient at new skills and increase their self-efficacy. For example, training programs are one way of providing mastery experiences for people with disabilities who are entering the labor market (Strauser, 1995). Hours in the clinical practice areas provide opportunities for student nurses to master nursing skills, and internships afford health education students the chance to master the competencies needed for professional practice.

In a fall prevention program for older adults, mastery experiences in the form of practice opportunities for negotiating outdoor activities such as using public transportation, stairs, and crossing streets proved to be one of the most effective strategies of the program for increasing participants' self-efficacy (Cheal & Clemson, 2001). Falls are a major contributor to morbidity in people 65 and older, with one in three older adults falling each year. Of those who do fall, 20 to 30% have injuries severe enough to impact their ability to live independently (Centers for Disease Control and Prevention [CDC], 2012). Increasing self-efficacy through mastery experiences is one way of assisting older adults at risk of falling to gain confidence in safely participating in everyday activities (Cheal & Clemson, 2001). For personal trainers, mastery experiences are effective ways to support client exercise self-efficacy. Starting with a simple exercise program that can be successfully completed creates a mastery experience that can lead to success with more challenging programs (Jackson, 2010).

It would seem that mastering something new is relatively simple: all you have to do is practice. However, this isn't always the case. If the new tasks are always easy and similar to ones already mastered, and difficult, unfamiliar ones are avoided, then a strong sense of efficacy does not develop. To develop a strong sense of efficacy, difficult tasks also need to be attempted, and obstacles worked through (Bandura, 1994). In reality, it's great if you tried to make brownies, were successful, and now make them all the time. But you can't live on brownies alone. At some point, you need to try making a meal.

VICARIOUS EXPERIENCE

Another factor influencing perception of self-efficacy is vicarious experience, or the observation of the successes and failures of others (models) who are similar to one's

self. Watching someone like yourself successfully accomplish something you would like to attempt increases self-efficacy. Conversely, observing someone like you fail detracts or threatens self-efficacy. The extent to which vicarious experiences affect self-efficacy is related to how much like yourself you think the model is (Bandura, 1994). The more one associates with the person being watched, the greater the influence on the belief that one's self can also accomplish the behavior being observed.

This construct can be used to explain how group weight loss programs work. If an obese person sees someone just like himself or herself lose weight and keep it off by following a sensible diet and exercise, then the belief in his or her own ability to also do this is strengthened. Watching friends who have taken a nutrition course choose healthy foods at a fast food establishment may increase your belief in your ability to also choose healthy foods: "If they can do it, so can I."

Not only do workshops and training sessions increase mastery, they can also provide vicarious experiences, as well. Watching others in a training session, a class, or during role playing can provide observational experiences that enhance self-efficacy, especially if the person performing or learning the behavior is similar to the observer.

In the "Sun Protection Is Fun" program (Tripp, Herrmann, Parcel, Chamberlain, & Gritz, 2000), developed to teach children about cancer prevention, vicarious learning was used not only with the children, but with the parents and teachers as well. Within the context of the curriculum, children observed their teachers and other students demonstrating how to protect their skin by using sunscreen and wearing protective clothing. In parent and teacher videos developed for this intervention, instead of using actors as the role models in the video, families and teachers from the intervention schools were used instead.

Vicarious learning is at the core of coach/trainer–student/client instruction. The coach or trainer demonstrates the skill, the student/client then copies. This is also how you learned to tie your shoe, brush your teeth, eat with a fork. You watched, observed your parents or older siblings, then copied what they did. Think about all the things you learn, every day, by watching others and how successfully accomplishing the skill increases your self-efficacy (**Figure 2–2**).

VERBAL PERSUASION

The third factor affecting self-efficacy is verbal or social persuasion. When people are persuaded verbally that they can achieve or master a task, they are more likely to do the task. Having others verbally support attainment or mastery of a task goes a long way in supporting a person's belief in himself or herself. Coaches



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FIGURE 2-2 Learning by watching others

frequently use this tactic with their teams. They psyche them up, verbally, before a game or a meet (**Figure 2-3**). The coach tells the players that they are going to win, that the other team is no match for them, that they are stronger, faster, better prepared, and so on.



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FIGURE 2-3 Coaches use verbal persuasion to psyche up players

If a team performs poorly, the team members' perception of ability can be negatively affected depending on the coach's reaction. For example, saying we lost the game because you are all lousy players doesn't do much for improving self-efficacy, whereas saying we lost because we need more practice does (Brown, Malouff, & Schutte, 2005).

Conversely, when people are told they do not have the skill or ability to do something, they tend to give up quickly (Bandura, 1994). Imagine the same coach telling his team that they can't possibly win against the opposition. What would the likely outcome be?

SOMATIC AND EMOTIONAL STATES

The physical and emotional states that occur when someone contemplates doing something provide clues as to the likelihood of success or failure. Stress, anxiety, worry, and fear all negatively affect self-efficacy and can lead to a self-fulfilling prophecy of failure or inability to perform the feared tasks (Pajares, 2002). Stressful situations create emotional arousal, which in turn affects a person's perceived self-efficacy in coping with the situation (Bandura & Adams, 1977).

People new to exercising at a gym, especially if they perceive that others are watching them, may become anxious in anticipation of an exercise session. This is a negative somatic state that may be detrimental to their self-efficacy, and in turn, threaten their continued exercising. The fitness professional in this situation can minimize the negative effects by teaching relaxation techniques and positive self-talk in an effort to reduce anxiety and support self-efficacy (Jackman, 2010).

A classic example of how the emotional state affects self-efficacy and, ultimately, health behavior is fear of the dentist (**Figure 2-4**). For millions of people in this country, the mere thought of going to the dentist is associated with intense pain and anxiety. It is certainly a stressful situation. As a result, they cannot bring themselves to make appointments or keep appointments for even routine, preventive dental care. This avoidance behavior results in a situation in which dental health deteriorates, causing them to have the very pain they wanted to avoid, and the need for more extensive treatment or possible tooth loss (Rowe & Moore, 1998).

As is evident from this example, emotional arousal affects self-efficacy, and self-efficacy affects the decisions people make. If the emotional state improves—that is, emotional arousal or stress is reduced—a change in self-efficacy can be expected (Bandura & Adams, 1977).



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FIGURE 2–4 Fear of the dentist can lead to avoidance behavior

While we tend to think about negative examples of how the emotional state impacts self-efficacy and health behavior, sometimes the emotional state is positive. Think about the effect of the “runner’s high” on health behavior. In this case, the emotional state that results is pleasurable, rather than uncomfortable. This would positively impact self-efficacy, and support continued engagement in the behavior that created it.

In summary, according to Self-Efficacy Theory, verbal persuasion, mastery experiences, vicarious experiences, and somatic and emotional states affect our self-efficacy and, therefore, our behavior (**Figure 2–5**).

THEORY IN ACTION—CLASS ACTIVITY

In all aspects of life, sometimes we win and sometimes we lose. Learning how to cope with the losses is extremely important as loss can affect our health in many ways. In a small group, identify a “loss” situation—perhaps loss of a job, a scholarship, or a relationship. Discuss how this type of loss might affect the way people think about themselves, their mental health, and how it might affect their behavior. Brainstorm ways in which the constructs of Self-Efficacy Theory might be used to help people cope with this type of loss. Read the following article and then answer the questions at the end.

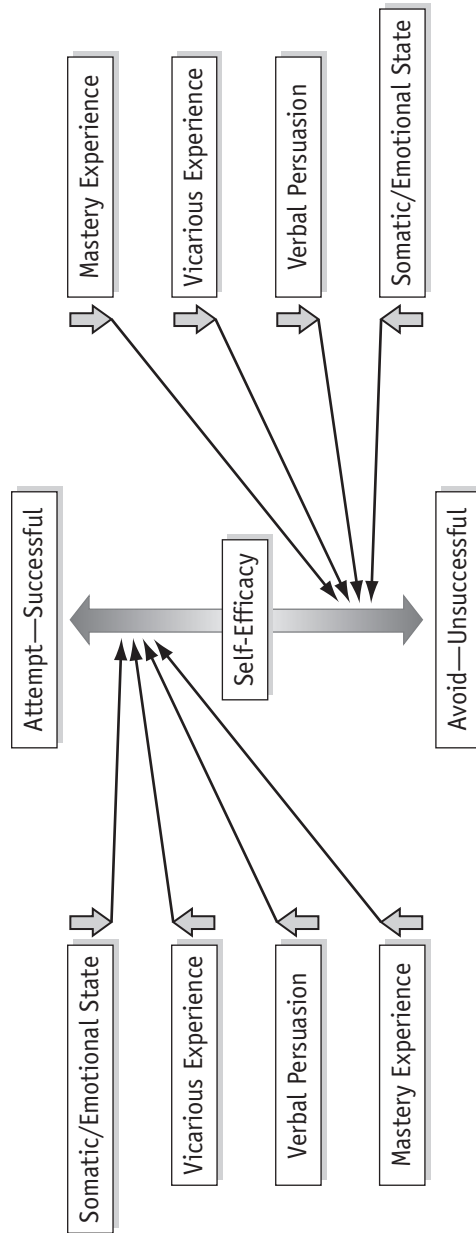


FIGURE 2-5 Self-Efficacy Theory

Chapter 2 Article: The Effectiveness of a Self-Efficacy Intervention for Helping Adolescents Cope with Sport-Competition Loss¹

Brown, Lisa J; Malouff, John M; Schutte, Nicola S

Abstract (summary)

Building on prior intervention research with women athletes (Arathoon & Malouff, in press), this study examined the effectiveness of a self-efficacy intervention for helping adolescents cope with sport-competition loss. The study included 111 adolescent netball and soccer participants (mean age = 13.98, SD = 1.36), who completed a positive affect scale prior to competition. Defeated participants were randomly assigned to intervention or control groups. Intervention participants were asked to choose one or more of six thoughts related to self-efficacy and apply those to themselves before both groups again completed the positive affect scale. Control group participants showed a significant decline in self-reported positive affect compared to intervention participants. Observational ratings also indicated that the control group showed less positive affect after the loss than the intervention group. The results provide support for self-efficacy theory as applied to helping individuals cope with competition loss.

Winning and losing are fundamental outcomes faced by adolescents not only in the sporting arena but also within a competitive modern society. There is evidence that losing in competitive sport can instigate a decline in positive affect among adult competitors (Arathoon & Malouff, in press; Cox & Kerr, 1990; Robinson & Howe, 1978). High positive affect involves “high energy, full concentration, and pleasurable engagement” and low levels of positive affect involve “sadness and lethargy” (Watson, Clark, & Tellegen, 1988, p. 1063). It seems plausible that adolescent athletes, like adult athletes, experience a decline in positive affect as a result of competition defeat.

The consequences of a reduction in positive affect following competition defeat can be far reaching, with the perceived importance of the loss mediating

¹ Reproduced from Brown, L.J., Malouff, J.M., & Schutte, N.S. (2005). The effectiveness of self-efficacy intervention for helping adolescents cope with sport competition loss. *Journal of Sports Behavior*, 28(2), 136–150.

the degree of influence of the loss (Bandura, 1997). A decline in positive affect in response to competition loss tends to lead to negative cognitive and behavioral responses (Morris, 1989). Cognitive consequences of a decline in positive affect can include impaired decision making and problem solving (Isen, 1999). Behavioral consequences can include acts of frustration, anger, and aggression (Isberg, 2000; Wehlage, 1980), with the social consequence of being labeled a “poor loser.”

Research has shown that affect is associated with self-efficacy (Bandura, 1997; Forgas, Bower, & Moylan, 1990; Heimpel, Wood, Marshall, & Brown, 2002). These findings raise the possibility that one way to enhance affect after a competition loss is to enhance self-efficacy.

Self-efficacy involves individuals’ beliefs about their own ability to successfully engage in a task in order to obtain a desired outcome (Bandura, 1977). Self-efficacy is important because individuals with high self-efficacy for a task tend to try harder at the task and experience more positive emotions relating to the task (Bandura, 1997).

In competitive sport, desired outcomes include winning and playing well. It seems likely that when sport competitors lose, their self-efficacy in the sport decreases (Lane and Terry, 2000). Athletes saying dejectedly after a loss that “I stink” or “I don’t even belong on the field” provide examples of the sort of low self-efficacy that can result from a loss and lead to lowered positive affect. If one could boost athletes’ self-efficacy after a loss, their prior level of positive affect might be preserved (Bandura, 1997; Hanin, 2000).

There are various possible ways of boosting self-efficacy in young athletes following a loss. Parents, coaches, and teammates might be able to help through providing encouragement and positive evaluative feedback (Feltz & Lirgg, 1993) and prompting adaptive attributions about the loss (see Robinson & Howe, 1981; McAuley & Gross, 1983), such as that “we played poorly today because we haven’t practiced enough” rather than “we played poorly because we are no good.” A related possibility involves causing the athletes to think in such a way, initially through prompting, that boosts self-efficacy, e.g., by thinking about prior successes or positive aspects of their play in the just completed game (Bandura, 1997).

Prompted cognitions have successfully influenced affect and behavior in a variety of studies (Brewer, Doughtie & Lubin, 1980; Thayer, Newman & McClain, 1994). For instance, Velten (1968) used cognition prompting to decrease and then increase positive affect. Arathoon and Malouff (in press) found that asking women field hockey players to think for two minutes about their choice of six different positive or coping thoughts led to less of a decline in positive affect after losing a game. The type of thought most commonly chosen involved the individual or

the team playing well at some point in the game. According to Bandura (1997), success thoughts like these, along with thoughts about encouragement or positive feedback from others, and thoughts about observing another person succeed, tend to enhance self-efficacy. Hence, the findings of the study of Arathoon and Malouff suggest that enhancing self-efficacy might be the key element of any intervention that prevents a decrease in positive affect following competition loss.

The purposes of the present study were to investigate the results of losing competitively on the positive affect level of adolescents and to examine the effectiveness of a self-efficacy intervention for helping adolescents cope with competition loss. The first hypothesis was that adolescents who experience defeat in a sport competition (and receive no intervention) would show a significant lowering of positive affect from pre to post-competition. The second hypothesis was that following competition defeat, adolescent athletes prompted to focus on thoughts suggested by self-efficacy theory would experience less decline in positive affect than athletes who received no intervention.

METHOD

PARTICIPANTS

The 111 participants included 53 males and 58 females who were 11 to 17 years old, with an average age of 13.98 (SD = 1.36). Participants were recruited from local netball and soccer clubs in eastern Australia as part of a convenience sample intended to include adolescent males and females and two different sports. Participants provided written assent and a parent provided written consent.

MEASURES

Positive Affect Self-Report Measure. All participants completed the 10-item Positive Affect scale of the Positive and Negative Affect Schedule present-moment version (PANAS; Watson, Clark, and Tellegen, 1988) as a pre and post-competition measure of positive affect. Respondents used a 5-point response scale ranging from 1 “very slightly or not at all” to 5 “extremely” to indicate the degree to which they feel (1) interested, (2) excited, (3) strong, (4) enthusiastic, (5) proud, (6) alert, (7) inspired, (8) determined, (9) attentive and (10) active, at the present moment. Scores on the PANAS can range from 10–50, with low positive affect scores signifying sadness and lethargy, and high positive affect scores indicating enthusiasm, high energy and full concentration levels (Watson et al., 1988).

According to Watson et al. (1988), the Positive Affect scale of the PANAS has good internal consistency with a Cronbach's alpha coefficient of .89 reported when respondents focus on the present moment. Long-term stability has also been shown with a correlation of .54 over three months for measurement of the present moment (Watson et al., 1988). The Positive Affect scale of the PANAS has been shown to be a useful measure of changes in affect (Watson et al., 1988) and shares good convergent validity with other measures of positive affect (Watson et al., 1988). The scale's psychometric properties in adolescent populations were investigated by Huebner and Dew (1995), who found a coefficient alpha of .85 along with support for the independence of negative and positive affect dimensions.

The Negative Affect scale of the PANAS was not used in the study because (a) the Negative Affect scale, with items such as "tense, anxious, nervous, and jittery," has been found to be related closely to anxiety (Watson et al., 1988), an emotion that one would not expect athletes to experience after losing and that Abadie (1989) and Sanderson and Ashton (1981) found did not significantly increase after losing; and (b) the additional time needed to complete the scale might have reduced participant cooperation.

Observational Measure of Positive Affect. An independent observer, blind to the research hypotheses, observed the behavior of small subgroups of the experimental and control conditions following the intervention procedure in the post-competition phase, in order to determine which small group of individuals showed greater levels of positive affect. The observational rating was based on evidence that facial expressions and overt behavior tend to indicate level of positive affect (Ekman, 1999; Parrott & Hertel, 1999). So, if a team was divided into two small groups of (a) three members in the experimental condition and (b) two members in the control condition, the observer would decide after the intervention which small group as a whole appeared to have more positive affect.

INTERVENTION

The intervention participants were asked to focus on or imagine for a minute one or more certain thoughts or images that related to three sources of self-efficacy (Bandura, 1997). The items were (1) personal mastery: (a) "Think about something you did really well during the game" and (b) "Think about winning your next game and how you will feel"; (2) verbal encouragement: (a) "Think about a time when your team-mates or coach praised you" and (b) "Think about a time when your team-mates or coach showed confidence in you"; (3) vicarious

mastery: (a) “Think about a great athlete who failed at first and then succeeded” and (b) “Think about a great athlete who works harder after losing so he or she can win in the future.” The paired items were randomly assigned to create two forms. To create Version 1 (1) the three pairs of items were blocked, (2) a random numbers table was used to randomly choose the order of the three pairs and (3) the randomization process was used to determine which item in each pair would be used first. To create Version 2, the order of items was reversed.

PROCEDURE

Netball and soccer clubs were contacted and provided with written and verbal information regarding the study. Clubs then signed forms to indicate their consent for involvement. Team coaches were approached one week prior to the game, and parents or caregivers of competitors were provided with information sheets and participation consent forms to sign.

The senior author asked coaches which teams were likely to win and lose and used team won-loss records to select teams that were likely to lose an upcoming game. Competitors on these teams were requested to arrive at the field 10 minutes prior to the start of the game. During this period players anonymously completed the pre-competition Positive Affect scale. Competitors were asked to place completed measures in boxes adjacent to the field. Following competition, athletes who played on losing teams were randomly assigned to a control and an experimental condition. Individual participants were assigned to either the experimental or the control group on the basis of a coin toss done before the game.

Coaches and parents or caregivers were asked to refrain from offering any post-competition feedback to the competitors in order to control for any changes in competitors’ positive affect in response to positive or negative exchanges. Participants in the control group were asked to remain separate from the experimental group and wait quietly until experimental group participants completed the self-efficacy intervention. Experimental group participants were asked to read the six-item self-efficacy intervention and visualize or focus on one or more of the statements for one minute. A randomly selected half of the intervention participants were given the first order of the six self-efficacy items; the other half received the items in the reverse order. Both groups were then requested to complete anonymously the positive affect measure again. Code words on pre and post measures allowed sets of responses for each participant to be combined. The independent observer observed and recorded the behavior of the experimental and control groups while they completed the positive affect measure postgame.

Sixteen teams in total participated in the study (six netball teams and ten soccer teams), over a period of three months. Three teams won their game. Thirteen teams were defeated in competition. Two teams experienced game delays of one week due to inclement weather conditions and forfeiting. For both these teams, new Positive Affect scales were completed prior to competition the following week.

PILOT STUDY

A pilot study was undertaken prior to commencement of the main study in order to clarify the suitability of assessment procedures. Four female netball players aged between 12 and 14 years, whose team was defeated in competition, participated in the pilot study. The precompetition measures took approximately three minutes to complete and the post-competition measures approximately five minutes. In the post-competition phase, two players were assigned to the control condition and two to the experimental condition. The data for these players were excluded from the main study sample. The pilot test was useful in identifying that (1) language used throughout the assessment procedure was appropriate for the adolescent cohort, (2) the experimental intervention was completed by two players without difficulty, and (3) specific modifications would be likely to enhance the procedure. These modifications, which we made, included (a) requesting the coach's assistance in coordinating players participating in the study directly before and after the competition, (b) ensuring players were given clipboards to write on, (c) utilizing areas beside the court that were relatively free of distraction for the competitors, and (d) requesting that the coach refrain from offering any post-competition discussion prior to the survey.

RESULTS

Collation of pre and post-competition scores and responses yielded 97 useable data sets, including 75 for losing competitors and 22 for winning competitors. Fourteen data sets of players were excluded from the final analyses because the players left during the game ($N = 7$) or after the game but before being given the post-game research materials ($N = 7$). Three data sets failed to reveal age details, but these sets were still included in the final analyses.

The main analyses involved a within-group t test to determine mean changes between pre and post-competition measures of positive affect for players who

lost and did not receive an intervention, and an ANCOVA, as recommended by Tabachnick and Fidell (2001), to determine group differences in post-competition measures of positive affect (the dependent variable) controlling for the influence of pre-competition measures of positive affect (the covariate). Assumptions of the statistics, including normality of the data, homogeneity of variance, linearity of relationship between the pre and post-competition measures of affect, and homogeneity of regression slopes, were met. Also, the reliability of the covariate, pre-competition Positive Affect, was adequate, with Cronbach's alpha at .80.

The first hypothesis was that adolescents who experienced defeat in a sport competition and received no intervention would show a significant lowering of positive affect from pre to post-competition. A within-group *t* test was done to evaluate the impact of competition loss on measures of competitors' positive affect, specifically to determine whether positive affect for control group participants decreased following defeat. See **Table 1** and **Figure 1** for the group means for pre-competition and post-competition measures of positive affect. Control group participants showed a statistically significant decrease in positive affect from precompetition scores to post-competition scores, $t(36) = 5.42$, $p < .001$ two-tailed. Cohen's *d* was 0.61, indicating a moderate effect size in terms of the standards of Cohen (1988), who described effects of .20 as small, .50 as moderate, and .80 as large.

Table 1 Descriptive Statistics for pre- and post-competition positive affects scores

Groups and Times	Positive Affect Scale Scores			
	<i>n</i>	Mean	<i>SD</i>	Range
Winning Teams				
Pre-Competition	22	34.23	6.50	22–44
Post-Competition	22	37.82	11.15	19–50
Losing Teams				
Control Group				
Pre-Competition	37	35.54	4.87	27–48
Post-Competition	37	30.03	8.14	16–50
Experimental Group				
Pre-Competition	38	33.68	7.81	16–48
Post-Competition	38	32.08	10.41	13–50

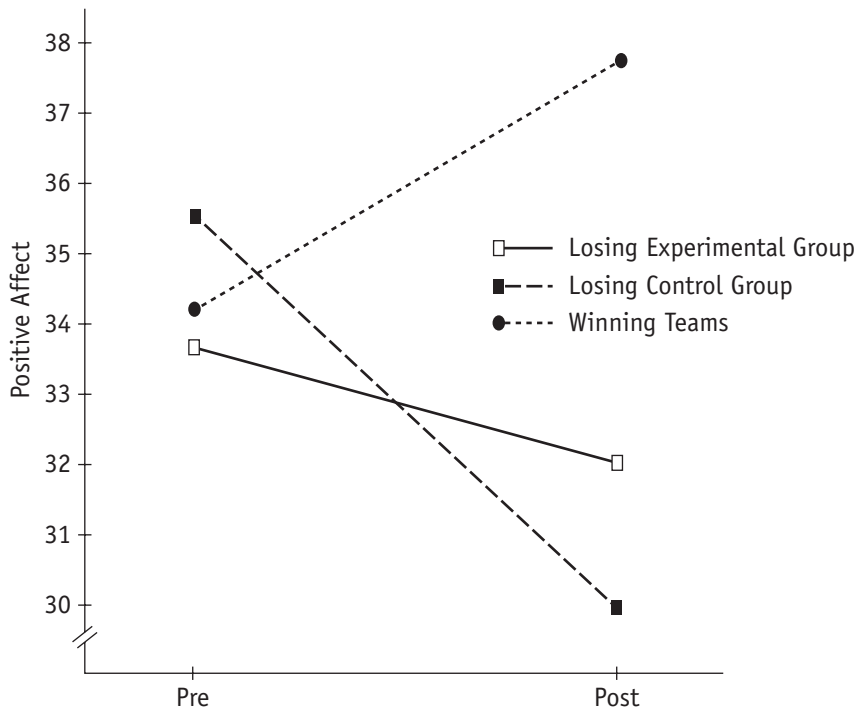


Figure 1 The Effectiveness of a Self-Efficacy Intervention for Helping Adolescents Cope with Sport-Competition Loss

Source: Reproduced from Brown, L.J., Malouff, J.M., & Schutte, N.S. (2005). The effectiveness of self-efficacy intervention for helping adolescents cope with sport competition loss. *Journal of Sports Behavior*, 28(2), 136–150.

In order to obtain as much useful information as possible from the study, we conducted some supplemental, exploratory analyses relating to the first hypothesis. To determine whether declines of positive affect were different between gender groups, male and female control group participants were compared. After adjusting for pre-competition measures of positive affect, a one-way between-groups ANCOVA revealed there was no significant difference between males and females in terms of a reduction in positive affect following competition loss, $F(1, 34) = 1.36, p = .25$.

In order to test the unhypothesized possibility that just playing, regardless of outcome, leads to a decrease in positive affect, we analyzed whether adolescents on defeated teams decreased in positive affect more than adolescents on winning teams. For the relevant ANCOVA the assumption of homogeneity of variance was violated, so we followed the recommendation of

Tabachnik and Fidell (2001) and set alpha at .01. A comparison of the winning players and the losing control players showed a significant difference in post-game positive affect, $F(1,56) = 15.01$, $p < .001$, with the losing players decreasing in positive affect from pre-game to post and the winning players increasing from pre to post.

In order to determine whether the three groups in the study, the winning players, the losing players in the intervention, and the losing players in the control condition, varied across all three groups in post-game positive affect, we used an ANCOVA to compare the three groups. The differences in group means at post-game were statistically significant, $F(1,93) = 7.78$, $p = .001$, laying a foundation for testing the second hypothesis, which stated that following competition defeat, adolescent athletes prompted to focus on thoughts suggested by self-efficacy theory would experience less decline in positive affect than control group participants. We conducted a one-way between-groups ANCOVA comparing post-competition self-report positive affect between experimental and control group participants. After adjusting for the pre-competition positive affect scores, there was a significant difference between the control and experimental groups' post-competition measures of positive affect following the intervention procedure $F(1,72) = 4.67$, $p = .034$. The effect size of the difference in mean scores at post-game between the groups was small, with $d = 0.22$. Another way to interpret the meaningfulness of the effect is to consider what percentage of athletes in each group suffered a large decline in positive affect, for instance of more than the pooled standard deviation at pre-game (6.55). For the control group, 17 of 37 players (46%) decreased that much in positive affect; for the intervention group, only 9 of 38 players (24%) decreased that much.

In order to obtain as much useful information as possible from the study data, we conducted a supplemental, exploratory analysis to determine whether changes in self-reported positive affect were different for males and females in the comparison of the intervention group and the control group. A 2 (intervention versus control conditions) by 2 (genders) between-groups ANCOVA using scores on the pre-competition positive affect scale as a covariate showed that gender did not significantly interact with which condition the participants were in, $F(1,70) = 0.08$, $p = .78$.

In all 12 of the 12 post-intervention comparisons of small same-team subgroups of experimental and control participants, the observer rated higher the overall positive affect shown by members of the experimental subgroup. A binomial probability distribution test (Howell, 1997) indicated that this pattern showed a statistically significant difference between conditions, $p < .001$.

Table 2 Self-efficacy Intervention Choice Frequency

Option	Response Frequency	Response Percentage
Direct experience of success		
1. Think about something you did really well during the game.	23	26.74%
2. Think about winning your next game and how you will feel.	18	20.93%
Subtotal	41	47.67%
Encouragement or positive feedback regarding one's performance		
3. Think about a time when your teammates or coach praised you.	12	13.95%
4. Think about a time when your teammates or coach showed confidence in you.	16	18.60%
Subtotal	28	32.55%
Vicarious mastery		
5. Think about a great athlete who failed at first and then succeeded.	7	8.14%
6. Think about a great athlete who works harder after losing so he or she can win in the future.	10	11.63%
Subtotal	17	19.77%

Note. Respondents were able to choose more than one self-efficacy option. Each pair of options relate to one of the following three factors that can influence self-efficacy: (1) direct experience of success, (2) encouragement from others, and (3) observation of another person succeeding (Bandura, 1997).

An analysis was conducted into the selection of self-efficacy options made by respondents during the intervention procedure. **Table 2** shows choice frequency. Participants in the experimental condition were randomly assigned one of two orders of the self-efficacy options in order to minimize order effects. In determining whether selection responses of participants were equally distributed across items, analysis revealed the obtained chi-square value (11.81) for the 6 categories and 86 choices exceeded the critical value (11.07), $p < .05$ (Howell, 1997). This indicates a significant difference among the options chosen by participants in the experimental condition, with more participants choosing options which related directly to personal experience of success (47.67%).

DISCUSSION

The results provided support for the first hypothesis in that defeated competitors in the control group experiencing a significant decline in positive affect levels from pre to post-competition. Further, the defeated competitors showed a significantly greater decrease in positive affect than did winning competitors. These findings are congruent with research carried out on adult field-hockey (Arathoon & Malouff, *in press*), soccer (Robinson & Howe, 1978), and squash players (Cox & Kerr, 1990), indicating that participants who were defeated in competition experienced a lowering of positive affect in relation to pre-competition levels.

The finding that winning competitors did not experience a decline in positive affect suggests that playing itself, regardless of outcome, does not produce a decrease in positive affect. Hence, the decrease in positive affect in the losing athletes is more likely due to losing than mere playing. The findings of the decline for losing adolescent competitors support Wehlage's (1980) comments that likened competition loss to a psychological grief reaction due to the occurrence of affective changes. The finding that males and females did not differ significantly in their positive-affect decline suggests that the effect is a broad one.

The second hypothesis was supported by results that indicated participants in the experimental group exposed to the self-efficacy intervention experienced less decline in positive affect than control group participants. This effect was shown to be similar for males and females. The size of the effect with regard to self-report data was moderate. The finding provides support for Bandura's (1997) theoretical view that high self-efficacy tends to lead to high positive affect.

The present study found, as did the study of Arathoon and Malouff (*in press*), that prompting athletes to think theoretically adaptive thoughts helped prevent a decline in positive affect after losing. The current finding extends the finding of Arathoon and Malouff (*in press*) to adolescents as well as adults, to males as well as females, and to soccer and netball players as well as field hockey players. The findings with regard to the observer rating of positive affect extend the self-report findings of Arathoon and Malouff to the realm of systematically observed signs of positive affect, which one might think less susceptible to experimenter-demand effects. The current findings also show that somewhat different thoughts from those suggested to the players in the study of Arathoon and Malouff can have a positive effect.

The present study found, as in the study of Arathoon and Malouff (*in press*), that the types of thoughts most commonly chosen by defeated athletes were

those that dealt with performing well. In the study of Arathoon and Malouff, the thoughts selected most were “something [I] did well in the game” and “we didn’t win but we really played well.” In the present study the two thoughts most selected were “something you did really well during the game” and “winning your next game and how you will feel.” Thinking along those lines of good and successful performance could be at the heart of self-efficacy and positive affect for athletes.

The results should be interpreted with consideration of several methodological characteristics of the study. First, the observer measure lacked demonstrated reliability and validity. However, the results of the observer ratings were consistent with the self-report results and also with casual observations in another study of losing woman field hockey players (Arathoon & Malouff, in press). Second, the study did not examine whether the intervention procedure based on self-efficacy theory produced changes in self-efficacy or was more effective than any other type of cognitive intervention. The effects might be due to competitors merely being distracted from their loss. Future research might shed light on this issue. At any rate, the intervention did produce a valuable effect in adolescent athletes. Third, to control for extraneous influences, the control group participants were asked to wait quietly for a minute or so while experimental participants completed the self-efficacy intervention. It is possible that during this period, control group participants actually dwelled on their loss and as a result experienced greater decline of positive affect than they might have under ordinary circumstances. However, it is quite common for athletes after a game to remain silent for a minute or so as they start to gather gear, change clothes, or go home, so the control condition created nothing unusual.

Fourth, it is possible that playing in a game we expected them to lose might have influenced the positive affect of the players at pre or post-game. Perhaps they also expected to lose and so had less of a decline in positive affect than if they had expected to win. However, for the main analysis between intervention and control group members, this expectation effect, if any, would have been equivalent for both groups and so not affected group differences.

Although the study had certain methodological limitations, it also had methodological strengths, for instance in the random assignment of participants to conditions and use of a well-validated self-report measure of positive affect as well as an observation measure. The safest conclusion is that the findings provide some support for the theory of self-efficacy and some support for a specific application of self-efficacy principles to helping adolescent athletes cope with losing by prompting them to think about some good aspects of their recent or

other performance in the sport. The main implication of the findings is that the self-efficacy intervention is worthy of further examination. The high participation levels of adolescents in organized sport (see, e.g., Australian Bureau of Statistics, 1997) provide coaches and parents with many opportunities to test informally the ability of self-efficacy strategies to help individual athletes cope with losing. Large-scale experimental research might profitably clarify whether the specific self-efficacy intervention thoughts (1) produce a positive effect on self-efficacy and (2) are of more benefit than other thoughts.

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AUTHORS' NOTES

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CHAPTER ACTIVITY QUESTIONS

1. What was the problem or behavior the authors were trying to address in this article?
2. Which constructs did they use?
3. What was the intervention they developed based on the constructs?
4. How was this intervention similar or different from the ones you identified in your brainstorming session?
5. Using the results of your brainstorming session, what else could have been done?

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