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Observational learning use and self-efficacy beliefs in adult sport novices

Barbi Law*, Craig Hall[1]

School of Kinesiology, The University of Western Ontario, London, ON N6A 3K7, Canada

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ABSTRACT

Objectives: The purposes of this study were to investigate adult sport novices' use of the functions of observational learning and to examine its relationship to their self-efficacy beliefs to learn sport-related skills and strategies, and to regulate mental states during the learning process.

Method: Adults enrolled in beginner level sport classes completed the Functions of Observational Learning Questionnaire (FOLQ; Cumming, J., Clark, S.E., Ste-Marie, D.M., McCullagh, P., & Hall, C. (2005). The functions of observational learning questionnaire (FOLQ). *Psychology of Sport and Exercise, 6*, 517–537.) as well as a self-efficacy questionnaire. Internal consistencies were acceptable for all subscales and a factor analysis confirmed that this instrument can be used with sport novices.

Results: Athletes' use of observational learning and their self-efficacy beliefs differed according to sport type. Hierarchical multiple regression analyses revealed that for adults learning an independent sport, more frequent use of the skill function of observational learning predicted higher self-efficacy to learn skills and self-efficacy to learn strategies. For adults learning an interactive sport, more frequent use of the performance function predicted higher self-efficacy to regulate mental states during the learning process.

Conclusions: Results suggest that factors related to specific sport types, such as sport demands and model availability, may differentially influence learners' use of observational learning as well as its impact on their self-efficacy for learning technical sport components and self-efficacy for controlling their mental state during learning. This has implications for sport instructors and coaches regarding optimal methods for structuring observational learning experiences to enhance learners' self-efficacy beliefs.

Observational learning, the process of learning by watching a demonstration of a desired behaviour, is one of the most powerful means of transmitting information about how to perform a skill (Bandura, 1986). In fact, observational learning is probably one of the most widely advocated methods for teaching motor skills in education and sport settings (Rink, 1998).

Within the motor learning domain, it has been well established that observational learning is effective for facilitating motor skill acquisition and performance (for reviews see McCullagh & Weiss, 2001; Williams, Davids, & Williams, 1999). Observational learning has also been shown to help learners develop error detection and correction abilities (Black & Wright, 2000; Blandin & Proteau, 2000; Hodges, Chua, & Franks, 2003) and to enhance both the outcome as well as the dynamics (i.e., form) of movement execution (Ashford, Bennett, & Davids, 2006).

Within the sport psychology domain, researchers have also established that observational learning can have beneficial psychological effects (McCullagh & Weiss, 2001). From a theoretical perspective, both social cognitive theory and self-efficacy theory (Bandura, 1986, 1997) suggest that observational learning produces improvement in skill performance by influencing the learner's self-efficacy. Self-efficacy refers to "beliefs in one's capabilities to organize and execute the course of action required to produce given attainments" (Bandura, 1997, p. 3). These beliefs are derived from four sources: mastery experience, vicarious experience, social persuasion, and affective and physiological states, with mastery and vicarious experiences being the two strongest sources. Observational learning can be considered a form of both a mastery experience (e.g., watching yourself on video) and a vicarious experience (e.g., watching someone else). Bandura (1997) suggests that observing similar others succeed will increase a learner's self-efficacy for the task, whereas seeing someone perceived as being similar fail will decrease the learner's self-efficacy for the task. The greater the degree of perceived similarity of the model to the learner, the stronger the hypothesized influence the observation will have on self-efficacy beliefs. Self-efficacy beliefs are hypothesized to be especially sensitive to observational learning under several

* Corresponding author. Present address: School of Kinesiology & Health Studies, Queen's University, Kingston, ON K7L 3N6, Canada. Tel.: +1 613 533 6000x79155; fax: +1 613 533 2009.

E-mail addresses: barbi.law@queensu.ca (B. Law), chall@uwo.ca (C. Hall).

[1] Tel.: +1 519 661 2111x88388; fax: +1 519 661 2008.

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circumstances (Bandura, 1997). One such circumstance is when the individual has relatively little experience with the skill, such as learning to play a new sport. Novices have very little or no previous mastery experience upon which to base their beliefs about their abilities, and therefore, must rely on vicarious experiences to learn the skills necessary to play the sport and to form beliefs about being able to successfully engage in that sport. A related circumstance where vicarious experience has a more potent influence on self-efficacy is when the learner experiences a mixture of success and failure. When learning a new sport, success and improvement will likely be mixed with many failed or incorrect attempts at the skill, leading the learner to seek ways to reaffirm their ability to succeed. Observing effective coping strategies can be one such way of overcoming personal failures and maintaining self-efficacy for the task.

This link between observational learning and self-efficacy is also made within other social cognitively based frameworks, such as Zimmerman's (1989) framework for self-regulated learning. Self-regulated learning involves "self-generated thoughts, feelings, and actions that are systematically designed to influence one's acquisition of knowledge and skill" (Schunk, 2001, p. 125). One of the key processes involved in generating and employing these learning strategies is through the learner's self-efficacy perceptions (Zimmerman, 1989). Self-regulated learning is seen as the product of interactions between environmental influences (e.g., observational learning), the individual's thoughts and self-reactions (e.g., self-efficacy beliefs), and the individual's behaviour (e.g., physical practice attempts at the skill). Zimmerman (1989) suggests that self-regulatory competence develops in four levels, with the first being based on observation. For individuals learning a new skill, self-regulatory strategies and their belief in their ability to perform them (i.e., self-efficacy), are based on the observation and perceptions of models within the learning environment. When applied to the learning of motor skills, research has provided support that observing a model early in skill learning, particularly a coping model, leads to enhanced self-efficacy, intrinsic motivation, improved self-regulation, and improved learning (Kitsantas, Zimmerman, & Cleary, 2000).

For unskilled individuals learning complex sport skills, it appears that model type differentially influences skill learning and self-efficacy beliefs. Studies have found that observing both a correct model and a learning model (i.e., one who gradually improves in performance) is effective for enhancing skill acquisition (Lirgg & Feltz, 1991; McCullagh & Meyer, 1997; Weir & Leavitt, 1990) and in some cases can also increase the learner's self-efficacy (Lirgg & Feltz, 1991). Modeling effects are also enhanced when the model is perceived to be similar in skill level to the learner (George, Feltz, & Chase, 1992; McCullagh, 1987). However, studies examining the effect of peer models have demonstrated that observing a peer coping model (i.e., a fellow learner who shows gradual skill improvement and progressively more positive cognitions) is beneficial for increasing self-efficacy beliefs, while observing a peer mastery model (i.e., a fellow learner who always shows correct performance and positive cognitions) is beneficial for improving skill performance (Clark & Ste-Marie, 2002; Weiss, McCullagh, Smith, & Berlant, 1998).

A more ecologically valid method of examining modeling has been to examine the effect of learning in dyads (i.e., two learners observing each other and working together, similar to real world school and sport environments) on skill performance and self-efficacy. Studies that have utilized this approach have shown that dyadic practice is better for skill acquisition than working alone (d'Arripe-Longueville, Fleurance, & Winnykamen, 1995; Shea, Wulf, & Whitacre, 1999) and enhanced self-efficacy beliefs (Legrain, d'Arripe-Longueville, & Gernigon, 2003a, 2003b).

However, there are several limitations to the findings of these studies. First, the majority have been conducted in lab-based settings, with typically only one available model, and therefore have not addressed how learners naturally use observational learning when presented with a variety of other learners and teachers in natural sport environments. As well, these studies have focused almost exclusively on how observational learning can be used to improve sport skills typically seen in independent sports, such as swimming (Clark & Ste-Marie, 2002; Lirgg & Feltz, 1991; Weiss et al., 1998), squat lifting (McCullagh & Meyer, 1997), dart throwing (Weir & Leavitt, 1990), and tumbling (d'Arripe-Longueville et al., 1995), and have therefore neglected to examine observational learning effects for skills involved in more interactive sports, such as passing a ball, returning a serve, or executing a play or strategy. One exception is a line of studies by Legrain et al. (2003a, 2003b) who used French boxing versus an opponent as the experimental task and demonstrated that observational learning can improve performance and enhance self-efficacy in an interactive sport environment. Further, modeling studies have not yet examined how sport strategies can be acquired through observation. To our knowledge, the sole exception is the work of Boschker and Bakker (2002) who found that novice climbers could acquire strategies for wall climbing by observing a model, and that observing an expert model produced a more efficient climbing performance, measured by geometric entropy, than observing a novice or no model.

From a practical standpoint, it is clear that observational learning is a preferred teaching tool (Coker, 2004) and is one of the most frequently reported strategies that coaches employ to enhance their athletes' performance and self-efficacy beliefs (Gould, Hodge, Peterson, & Giannini, 1989). Learners themselves report using observational learning and imagery as preferred strategies to help acquire new skills (Kermarrec, Todorovich, & Fleming, 2004). While most of these studies have been lab-based, various researchers have highlighted the need to move beyond examining the impact of observational learning on simple motor skills and to examine how it is employed for more complex sport skills in naturalistic environments (Cumming, Clark, Ste-Marie, McCullagh, & Hall, 2005; Hars & Calmels, 2007).

To address this issue, Cumming et al. (2005) conducted three studies to develop and test the psychometric properties of the functions of observational learning questionnaire (FOLQ). The purpose of the FOLQ is to measure the frequency with which athletes report employing observational learning for a variety of different reasons, or functions, in their respective sports. Based on current research and theory in observational learning as well as research supporting the functions that other mental skills, such as imagery, serve in sport (Paivio, 1985; Hall, Mack, Paivio, & Hausenblas, 1998), a preliminary version of the FOLQ was created. Through exploratory factor analysis, the FOLQ was reduced to a 17-item version representing three distinct factors or functions of observational learning: to learn and execute skills (i.e., the skill function), to learn and execute strategies (i.e., the strategy function), and to reach optimal arousal and mental states for performance (i.e., the performance function). The resulting version of the FOLQ was then tested with new heterogeneous athlete samples and found to demonstrate acceptable internal consistencies, good model fit, temporal stability, and concurrent validity with other measures of distinct but related mental skills (i.e., the Sport Imagery Questionnaire for measuring frequency of imagery use; Hall et al., 1998).

Across all three studies, Cumming et al. (2005) found that athletes reported employing the skill function most frequently, followed by the strategy function, and then the performance function. They also examined whether athletes' use of the functions of observational learning varied according to gender, competitive level, and sport type. No differences were found for gender or competitive level. With respect to sport type, athletes in