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EFFECTS OF SHAME ON NOVEL MOTOR SKILL LEARNING

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EFFECTS OF SHAME ON NOVEL MOTOR SKILL LEARNING

By

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B.S. University of Central Missouri, 2011

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the
Master's of Science in Education

Department of Kinesiology
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RESEARCH PAPER APPROVAL

EFFECTS OF SHAME ON NOVEL MOTOR SKILL LEARNING

By

Elizabeth Harrison

A Research Paper Submitted in Partial
Fulfillment of the Requirements
for the Degree of
Masters' of Science in Education
in the field of Kinesiology

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AN ABSTRACT OF THE RESEARCH PROJECT OF

ELIZABETH HARRISON, for the Master of Science in Education degree in Kinesiology, presented on July 1, 2013, at Southern Illinois University Carbondale.

TITLE: EFFECTS OF SHAME ON NOVEL MOTOR SKILL PERFORMANCE

MAJOR PROFESSOR: Dr. Julie Partridge

Appropriate motivation and feedback are important components of success in the athletic world. Augmented feedback has two common forms: knowledge of results and knowledge of performance. Within these two forms, negative and positive feedback can be utilized to deliver the results and performance. Negative feedback delivered in the presence of others may cause the development of feelings of shame. Shame is defined as an individual's perception of others viewing him or her as "less than" and can include feelings of humiliation and embarrassment. This research discussed the use of negative feedback and investigated the effects that being shamed in front of a peer may have on performance of a novel motor skill. In order to accomplish this, two individuals were paired together for the experiment. One was a confederate in the control condition and the second was the participant who was shamed by being given negative false feedback on the anticipation-timing task. The results did not indicate significant differences between the shamed and control conditions on the retention and transfer tests on absolute error, absolute constant error, constant error, and variable error. These results indicate that using shame as a teaching technique may not be beneficial or detrimental for motor performance.

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CHAPTER 1

INTRODUCTION

Motivation is a vital component to success in competitive athletics, and providing feedback is a common tool coaches use to motivate athletes in their performances. Normative feedback (i.e., feedback that provides information about a performance in comparison to a specific standard) can be positive, negative, or neutral. Positive normative feedback is defined as feedback that indicates above-average performance that enhances task enjoyment, while negative normative feedback is defined as feedback that would indicate below-average performance (Wulf, Chiviacowsky, & Lewthwaite, 2010). Many coaches use negative feedback in hopes of motivating an athlete, or a team in a positive way (Seifried, 2008); however, existing research has not supported the benefits of using this type of feedback for learning of motor skills (Saemi, Porter, Ghotbi, Zarghami, & Maleki, 2012). Providing negative normative feedback to athletes, while a common coaching/teaching technique, could have other, more negative consequences that could lead to decreases in performance. Specifically, negative normative feedback provided to an individual could elicit negative emotional states that might lead to performance decrements. One negative emotion with close connections to receiving negative feedback is shame.

The current working definition of shame is a topic of controversy in the scientific literature, but for the purposes of this paper, shame is defined as an intensely negative experience resulting from an individual's perception of being devalued. Experiencing shame is thought to frequently result in maladaptive coping behaviors, including avoidance and inwardly-directed anger (Nathanson, 1992; Partridge & Elison, 2009). To date, a limited amount of research has addressed the importance of understanding the impact of psychosocial variables on sport performance, although the importance of this type of research has been noted (Lewthwaite &

Wulf, 2010). The current study attempts to address this type of research and is the first to attempt to manipulate shame-inducing feedback and assess the impact on learning of a novel motor skill. The purpose of this study was to investigate the effects of inducing shame through the use of negative feedback on novel motor skill learning.

What is Feedback?

Research in motor learning has defined feedback in many ways. Within this study, feedback is defined as a generic term referring to the information a person receives during a performance related to the successfulness of the skill (Chiviakowsky & Wulf, 2002). Feedback can be broken into two categories: task- intrinsic feedback and augmented feedback. Task- intrinsic feedback occurs at the sensory level and is naturally perceived by the performer during the performance of a task. Therefore, task-intrinsic feedback is sensory-perceptual information that comes naturally with the performing of the skill (Schmidt & Lee, 2011). For example, a basketball player shooting a free throw is typically able to visually determine whether or not their shot was successful. Augmented feedback (AF), which was the focus of this study, is feedback that is provided from an external source (e.g., a coach). An example of AF would be when a coach provides an athlete with feedback or instruction on how the skill was performed.

Augmented feedback exists in two forms. Knowledge of results (KR) is information received about a particular outcome of a performance. Knowledge of performance (KP) is information about the specific body movements that led to the outcome (Schmidt & Lee, 2011). For example, providing someone with the distance they have thrown a ball would be knowledge of results and telling them their arm angle at the point of release would be knowledge of performance. The main goal when using AF is to help increase skill development and to aid in the motivation and continued development of the skill. The law of effect states that positive

feedback acts as positive reinforcement and negative feedback serves as a punishment of the behavior. This law suggests that both types of feedback can help improve performance (Cianci, Schaubroeck, & McGill, 2010). AF is most commonly used in providing reinforcement or punishment and attempts to get the athlete to repeat a specific behavior (Cianci et al., 2010). Coaches can also use AF as a form of punishment in an attempt to get athletes to not repeat a behavior, such as when AF is used to correct skills which athletes may be performing incorrectly. In sport, punishment is often used as a form of discipline that helps to restore order and reaffirm the team's core values when threatened (Seifried, 2008). The problem with using punishment is that most athletes with a higher skill set can acknowledge through task-intrinsic feedback when a task has been performed incorrectly and may already be attempting to correct it. Explicitly and publicly calling attention to mistakes or performance in a peer setting may not be beneficial, and could elicit a shame response, because shame elicitation is dependent upon the presence of others (Nathanson, 1992; Tangney & Dearing, 2002).

Shame

Shame is an important, yet little understood emotion within the physical domain. Researchers have more recently begun to examine the impact of self-conscious emotions on performance outcomes (Lewthwaite & Wulf, 2010b). The shame family of basic emotions, which includes embarrassment and humiliation, is an individual's perception of others viewing him or her as "less than" (Partridge & Elison, 2009). Shame can be triggered by feeling exposed to external or internal judgment, a sense of feeling "small," or feeling that a situation is out of control (Johnson, 2012); therefore, the highly social nature of sport seems a highly likely achievement context in which this emotion might be experienced. Shame is a self-conscious emotion that can commonly go hand in hand with athletic performances because the nature of

sport involves exposure to the public and the outcomes of the competition can open the athlete up to a flood of emotions, as well as social evaluation from significant others (Partridge & Elison, 2009). Not all emotions experienced during sport are positive. Shame and anger are two common negative emotions that may be experienced in sport settings, particularly since negative, evaluative feedback is often provided in the presence of others (e.g., a coach correcting an athlete in front of his or her teammates).

The Compass of Shame model is a coping model that identifies four different maladaptive coping styles that are frequently used to deal with experiencing shame (Nathanson, 1992). These styles, or poles, are labeled as Withdrawal, Attack Self, Avoidance, and Attack Other. Each of the poles has its own maladaptive styles in which shame is reduced, ignored, or magnified. All of this is done without addressing the source of the shame (i.e., taking steps to correct the action that led to the shame experience initially). At the Withdrawal pole, a person acknowledges the negative experience, accepts the shame as valid, and attempts to hide from the situation. At the Attack Self pole, the individual also acknowledges the experience of the shame and accepts that it is valid, as occurs in Withdrawal. Individuals who identify with the Attack Self tend to accept shame in order to maintain relationships with others. In other words, an individual might make fun of his own performance to other people around him following a shaming experience. Withdrawal and Attack Self are both internalizations of the negative experience.

Avoidance and Attack Other are externalizing coping strategies. An individual at the Avoidance pole completely avoids the situation. The person using this maladaptive style is in a complete state of denial, refusing to acknowledge the experience, does not acknowledge validity in the claim, and attempts to distract themselves and anyone else avoid from the painful

situation. Lastly, the Attack other pole may or may not acknowledge the situation and validity. Instead, the person will make a great attempt to make someone else feel worse (Partridge & Elison, 2009). All of these behaviors are maladaptive coping mechanism to negative feedback.

Currently, we are aware of no other research studies in the motor learning domain that have manipulated shame to determine the impact on motor skill performance. The purpose of this study was to examine the relationship of negative feedback, specifically shame-inducing augmented feedback, and the effect it has on performance of an anticipation-timing task. The first hypothesis was that negative, shame-inducing normative feedback would not be an effective learning tool and those performers who experience negative normative feedback will perform worse on measures of absolute error, absolute constant error, constant error, and variable error on transfer tests as those performers who receive average normative feedback. The second hypothesis was that negative, shame inducing normative feedback would not be an effective learning tool and those performers who experience negative normative feedback will perform worse on retention tests on measures of absolute error, absolute constant error, constant error, and variable error on transfer tests as those performers who receive average normative feedback.

CHAPTER 2

Method

Sample

Participants for this study consisted of 30 female, undergraduate students at Southern Illinois University Carbondale who were enrolled in Department of Kinesiology classes.

Participants were randomly assigned to one of two groups. One group was the control group while the other was the experimental, or shame group. Southern Illinois University Human Subjects Committee approved this study prior to any recruitment and data collection.

Apparatus and task

The Bassin modified anticipation timer is a device that is used to measure the perception of motion and a visual estimate of speed. The participant responds to a moving stimuli (e.g., lights on a runway) and the response of depressing the button should coincide with the stimuli's arrival time. The anticipation timer used in this study was a light relay. Participants were asked to hold on to a plunger in their dominant hand and press the button located on the top of the plunger with their thumb when they anticipated that the light had reached the destination. The runway was approximately 2.286 meters long and was lined with red lights. When the trial began, the first light turned yellow for three seconds. The rest of the lights were red with the exception of the final light (i.e., target light), which was white. SymSoft2 psychomotor control software was used to collect data and manipulate the normative feedback received in the shaming condition.

Procedure

During day one of the experiment, the participants signed up to come to the laboratory, and were randomly assigned to either a control or shame condition, and were paired with a

female confederate when they got to the lab, whom they were told would be their partner for the laboratory session. Participants were asked to stand directly behind the apparatus and hold the plunger in their dominant hand. Each participant was given three trials to familiarize herself with the apparatus with the speed set at 8.047 kilometers per hour. Once the practice trials were completed, the light was set to run at 32.19 kilometers per hour. Both groups were instructed to depress the plunger when the light reached the end of the runway. The participants alternated turns. After each block of 10 trials, the participants were provided with feedback of their performance. Participants in the control group were told, “Good job, your performance is well within the normal limits for your age group.” The experimental group participants were told, “You need to try harder. Your results are well below the normal limits for your age group.” After each practice trial, the participants were also allowed to look at their results and the confederate’s results on the computer screen. After 24 hours, the participants returned individually (i.e., without the confederate) to the lab for a transfer test and retention test. No feedback was provided on day two. Each participant performed one block of ten trials during the transfer test at 48.28 kilometers per hour. For the retention test, the light was set to 32.19 kilometers per hour.

Once both days were completed, the participants were fully debriefed about the true intentions of this study. Participants were told that the results were manipulated in order to elicit the feeling of shame during the practice trials. They were also asked to not discuss this study for the rest of the semester in order to maintain the necessary deception for the experiment.

Data Analysis

After collecting the data as constant error (CE) from the transfer and retention test, the data were converted to measures of absolute error (AE), absolute constant error (ACE), and

variable error (VE), and then eight separate one-way ANOVAs were used to compare differences between the groups on the retention and transfer tests. These analyses compared condition main effects for each error measure during the retention and transfer test and determined if one feedback type aided more in retention or transfer performance. Outliers from the data were identified during the analysis and were removed from the results.

CHAPTER 3

Results

The data were analyzed using a series of eight one-way ANOVAs. No significant differences were found in any of the analyses.

Retention test

AE. A one-way ANOVA indicated no significant differences between the control and experimental group on AE on the retention test ($F(1,23) = .019, p > .05$). Therefore, it appears that inducing shame did not have an impact on absolute error during the retention test.

ACE. A one-way ANOVA indicated no significant differences between the control and experimental group on ACE on the retention test ($F(1, 25) = 3.328, p > .05$). It appears that the introduction of shame did not have an impact on the absolute constant error on the retention test.

CE. A one-way ANOVA indicated no significant differences between the control and experimental group on CE on the retention test ($F(1,23) = .287, p > .05$). This concludes that shame appears to not have an effect on the constant error.

VE. A one-way ANOVA indicated no significant difference between the control and experimental group on VE on the retention test ($F(1, 25) = .320, p > .05$). It again would appear that shame being elicited did not have an impact on the variable error.

Transfer

AE. A one-way ANOVA indicated no significant difference between the control and experimental group on AE on the transfer test ($F(1, 26) = .619, p > .05$). It appears that the introduction of shame did not have an impact on the absolute error transfer test.

ACE. A one- way ANOVA indicated no significant difference between the control and experimental group on the ACE on the transfer test ($F(1, 27) = 1.279, p > .05$). This shows that shame introduction did not have an impact on the absolute constant error during the transfer test.

CE. A one- way ANOVA indicated no significant differences between the control and experimental group on CE on the transfer test ($F(1, 27) = 1.279, p > .05$). This indicated that shame does not have an impact on the constant error during the transfer test.

VE. A one- way ANOVA indicated no significant differences between the control and experimental group on VE on the transfer test ($F(1, 27) = .365, p > .05$). Again, this indicated that shame had no impact on the variable error during transfer test.

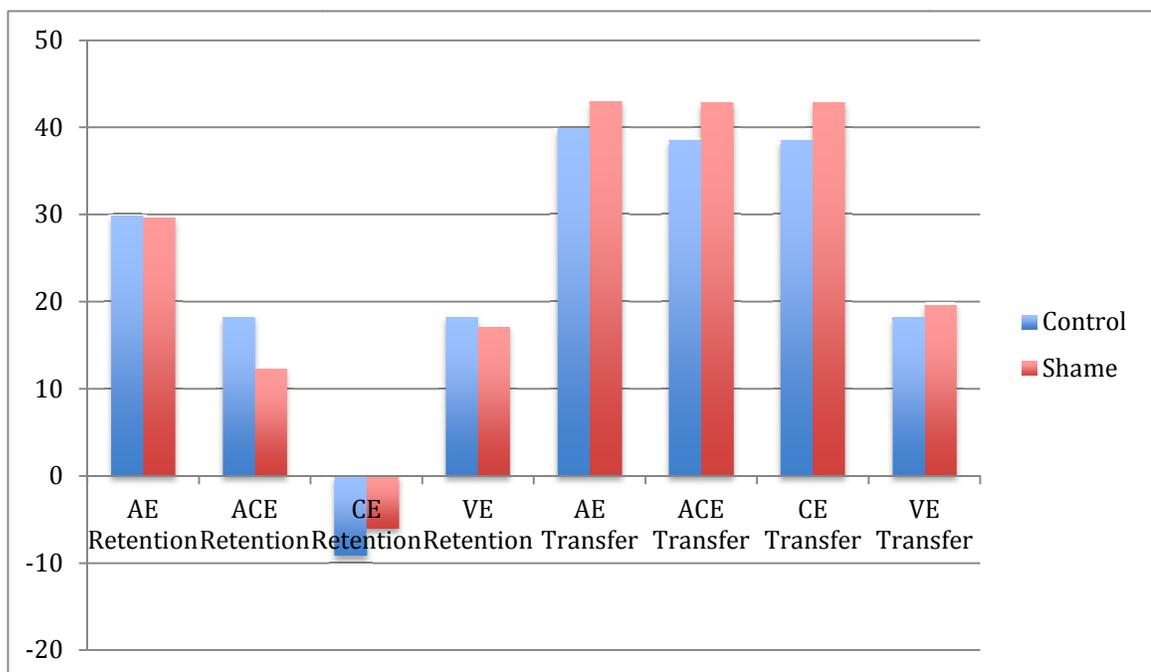


Figure 1. Comparison Between Shame and Control Conditions on Retention and Transfer Tests

CHAPTER 4

Discussion

While there have been other studies that have assessed the impact of negative normative feedback on motor skill performance, this study differs because participants were provided false comparative feedback in comparison to a fictitious sample population which was intended to induce shame. While the results of the retention and transfer tests did not indicate significant differences, we can still gather valuable information from this process. Our hypotheses stated that negative, shame-inducing feedback would not be an effective learning tool and those performers who experience negative feedback would not perform as well on transfer tests and retention tests as those performers who receive normative feedback indicating they were average. Even though the results from this study did not support this, one can speculate that those being shamed during the task tried to consciously overcompensate for performing poorly and may have pushed the button sooner than instructed. Based on this, it could be that in order to not look like more of a failure in front of the peer, attempting to cheat on the task would give the participant better results and could replace the negative feedback they had been receiving. Cheating, in this instance, would be considered purposely pushing the plunger before the light reaches the end of the runway. This would give the participant faster anticipation times in the data and would impact the results in a false positive way. This could have been a factor in the retention and transfer tests not yielding significant differences. This would be an interesting topic for further study to see if participants would admit to cheating on the task in order to not be shamed.

Throughout the practice trials, the shamed group results were manipulated to be worse than the control group, and although no statistically significant differences were found between the two groups, anecdotally, the experimenters informally observed distress and unease during

the shamed participants' poor performance. When the shamed participants came in for day 2, many were noticeably uneasy and expressed feelings of not wanting to perform the task again. It seemed though, that once the retention and transfer tests started, the participants did not seem to care how they performed. However, this uneasiness did not seem to affect the performance on the task, as the retention and transfer tests did not show significant differences.

One possibility for why the shamed participants seemed less concerned with their performance during the transfer and retention tests during day 2 could have been because they had stopped caring about how well they did at the task. A day of practice during which they were repeatedly told they needed to “try harder” without seeing any improvement could have proven too stressful or negative and the participants may have given up hope in improving in the skill. Ironically, this might have made it easier for the participants to actually perform the task. The constrained action hypothesis proposes the use of an internal focus of attention (i.e., focusing on the movements) can actually interfere with the automatic processes that regulate the movement (Wulf, McNevin, & Shea, 2010). However, if an external focus of attention (i.e. focus of the movement effect) is used, this allows a more natural self- organization when performing the task. This hypothesis could help to explain the results of this study. After hearing during the practice sessions that they needed to try harder while also repeatedly receiving negative normative feedback, perhaps our participants stopped focusing internally on depressing the button and were able to relax and not feel the “pressure” of the task.

Previous research has indicated that negative normative feedback is not an effective learning tool for motor skills, however, this study might suggest otherwise. It would seem that negative feedback did not affect the performance of the shamed participants on a novel skill.

However, this study did support previous findings that the use of negative feedback does not help to improve performance.

This study expanded upon previous research by providing false normative feedback to the shamed participants in order to induce a sense of failure and shame in front of a peer. Other work has closely looked into the benefits of providing normative feedback (Wulf et al. 2010) as well as the benefits of allowing participants to choose when feedback is provided to them (Wulf et al. 2002), however, research was lacking in how participants would perform after being shamed purposely during practice. One interesting question that remains after this study is how self-confidence was affected during the practice trials and how shaming affected the participants' motivation to continue. Continual shaming during activities can have a negative impact on one's self-confidence. If someone's self-confidence is lowered, this can decrease the motivation to try and continue the activity.

Limitations for this study include that only female college-aged students were sampled. It is possible that if college-aged males were used in this study, then there may have been different results. Males may be affected by shame in a different way than the females were. Males tend to use more externalization forms of coping with shame while females tend to internalize their shame (Campbell & Elison, 2005), and therefore, it is possible that their reactions to this type of feedback could be different. Also, the task used may not be applicable into more real-world settings. Perhaps, more significant results would have occurred if the task took place in front of more relevant significant others (e.g., teammates, friends, other competitors). If a coach were to shame an athlete during a game or practice, the athlete may then be able to understand more of what needs to be improved based on the knowledge of their skill level. The relationship between a coach and an athlete is a complex one. It is likely that an

athlete would be much more concerned with not living up to the expectations of a coach as opposed to a stranger they just met for a study. The coach and athlete relationship develops into one that is mirror to that of a parent- child relationship (Seifried, 2008). The shame athletes would feel during a practice or game would affect them much more greatly, especially if they felt they had been working hard to gain the necessary skills for the game. Shaming one in front of a person they just met is perhaps not as effective. The athlete may feel as though the shame isn't real because the chances of seeing that individual again are slim while if it is a teammate, they will see them again daily. The shamed person is not easily able to escape that feeling.

In conclusion, the results of this study did not support the hypotheses and negative, shame-inducing feedback did not impact the learning of a novel motor skill. Future research may determine if shame has more of an effect on motor learning performance if a "real world" skill or situation (e.g., throwing at a target) is used.

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Research Paper: Effects of Shame on Novel Motor Skill Learning

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