



# If I Value the Test Do I Feel More or Less Emotion? Exploration of Value and Emotions

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## Introduction

### Introduction

Students' academic *achievement emotions* (AAE), such as shame, pride, enjoyment, and anger figure prominently when taking exams, particularly in high stakes engineering courses, because they contribute to how we perceive, decide, respond, and problem-solve (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011). Control-value theory contends that these emotions are explained by the interaction between students' assessments of their ability, academic self-efficacy (ASE), and their valuing of the content or activity (Pekrun, 2006). Self-efficacy is negatively related to negative emotions (e.g., shame, anger, etc.), positively related to positive activating emotions (e.g., pride, enjoyment, etc.) (Putwain, Sander, & Larkin, 2013). *Perceptions of instrumentality* (PI), is a form of value, and represent perceptions about whether a task or outcome is instrumental for a future goal (Husman & Hilpert, 2007). Research indicates that those who perceive a task or outcome as instrumental, exhibit emotional reactions when compared to those who do not value the task (Steele, 1997). Efficacy and PI independently impact emotional experiences, they may also exert a mutual influence. Self-efficacy's influence on emotion may be moderated by perceptions of instrumentality. In addition, PI may mediate, or account for the relations between self-efficacy and emotions (Turner & Schallert, 2001). Although, value, is related to intense emotions (e.g., shame, pride, joy), we anticipate that, within the context of a highly valued future goal (e.g., passing an important exam), students' who value the course for their futures may engage in strategies to refocus their academic emotions and allow them to fully engage in the exam. Turner (Turner & Schallert, 2001) and colleagues found that students' PI is related to their ability to recover from shame response. It is possible, therefore, that in the case of this particular negative emotion, PI may reduce the intensity of a negative emotion, independent of their anticipated success. Much of the research on academic achievement emotions has been conducted through self-report or laboratory studies. Findings on students' emotional responses to tasks in experimental contexts may not generalize to more realistic learning and performance situations, as they may lack relevance to students' actual performance, which likely impacts students' valuing of the task, which may alter the valence and intensity of students' emotions.

## Research Hypotheses & Questions

In this study, we explored self-reported exam-related emotions (i.e., pride, shame, anger, enjoyment) and their associations with self-efficacy and perceptions of instrumentality. Based on control-value theory we hypothesized that:

1. Self-efficacy would be positively related with positively valenced emotions (i.e., pride, and enjoyment) and negatively related with negatively valenced emotions (i.e., shame, and anger).
2. PI would be exhibit positive associations with positive emotions, and negative association with negative emotions.
3. Perceptions of instrumentality would moderate relations between self-efficacy and emotions. Additionally we explored whether PI mediated the relationship between self-efficacy and emotions

## Methods

### Context

We examined 68 undergraduate students' (52 males, 59 European Americans) emotions (i.e., pride, shame, anger, enjoyment), perceptions of instrumentality, and self-efficacy beliefs during practice test for a difficult and required 2<sup>ND</sup> year engineering Statics course from a large university in the United States of America. Practice test content was developed with the course instructor from which participants were recruited, and aligned to a midterm exam to be taken the following week. The pre-test was administered in a testing center designed to mirror their mid-term exam context. Students' average performance on the practice exam was low ( $m = 9.51/23$ ).

### Measures

**Self-Efficacy.** Self-efficacy was assessed in two ways. At the beginning, middle, and end of the exam students were asked about their expectations of success in the exam. These questions focused on the exam as a whole. We refer to this as "exam level self-efficacy". We also asked students to rate their capability of completing each exam question (on a scale of 0-10) prior to completing that question. The item level self-efficacy was calculated by averaging all of the students' responses to the 23 exam items. The mean of those scores represents our testing self-efficacy for that scale ( $\alpha = .96$ )

**Perceptions of Instrumentality.** Husman and colleagues' (2004) 5-item measure (5-point Likert scale) of students' value of the engineering course for their future was used An example item is "I will use the information I learn in my statics course in other classes I will take in the future." ( $\alpha = .96$ ).

**Academic Achievement Emotions.** Emotions were assessed using 7-point likert scales from the *Achievement Emotions Questionnaire* (AEQ). Shame (4 items,  $\alpha = .67$ ), pride (7 items,  $\alpha = .82$ ), enjoyment (2 items,  $\alpha = .46$ ), and anger (5 items,  $\alpha = .76$ ) were all assessed.

## Procedure

Procedures were approved by the Institutional Review Board (IRB) at the participants' university for studies on human subjects. Upon entering the test site, participants were seated at a private desk with a laptop by a trained proctor, and asked to sign in. Psychological and emotion data were solicited 4 times (pre-exam, mid-exam (45 minutes), post-exam, and 20 minutes post-exam). Following the pre-exam survey, 23 practice-exam questions were provided. Students were given a preview of the upcoming exam question and rated their efficacy for answering that question correctly, and then asked to answer the practice exam question. This process continued iteratively until the conclusion of the exam, save for being asked to answer mid-exam survey questions 45 minutes into the exam.

## Results

Table 1. *Correlations*

Measure	1	2	3	4	5	6	7	8	9	10	11
1. Item SE	--										
2. SE2	.744 **	--									
3. SE3	.794 **	.889**	--								
4. PI	.168	.157	.058	--							
5. ANG3	-.419**	.343**	.354**	-.278*	--						
6. ENJ2	.541**	.439**	.471**	.386**	-.425**	--					
7. ENJ3	.453**	.329**	.436**	.095	-.282*	.472**	--				
8. PR2	.423**	.413**	.357**	.370**	-.224	.673**	.440 **	--			
9. PR3	.629**	.525**	.604**	.064	-.361**	.570**	.753**	.552**	--		
10. SH2	-.590**	-.486**	-.544**	-.055	.406**	-.490**	-.369**	-.225**	-.628**	--	
11. SH3	-.693**	-.549**	-.607**	-.206	.403**	-.542**	-.454**	-.364**	-.633**	.818**	--
M	5.24	6.75	6.10	4.26	2.20	3.00	2.02	2.90	2.26	2.30	2.67
SD	1.83	2.15	2.22	.79	0.74	.76	.67	.82	.71	.88	.87

Variable	Emotions		
	1 Enjoyment 2	2 Pride 2	3 Shame 2
	$\beta$	$\beta$	$\beta$
Self-Efficacy2	.394**	.358*	-.518**
PIEN	.324*	.314**	
R <sup>2</sup> / R <sup>2</sup> change	.198/.300	1.66/2.62	.264

Variable	Emotions			
	1 Anger 3	2 Enjoyment 3	2 Pride 3	3 Shame 3
	$\beta$	$\beta$	$\beta$	$\beta$
Self-Efficacy3	-.336*	.451**	.615**	-.607**
PIEN	-.258*			
R <sup>2</sup> / R <sup>2</sup> change	.123/.190	.189	.378	.368

Variable	Emotions			
	1 Anger	2 Enjoyment	3 Pride	4 Shame
	$\beta$	$\beta$	$\beta$	$\beta$
Item SE	-.411**	.452**	.622**	-.692
PIEN				
R <sup>2</sup>	.169	.205	.387	.479

## Discussion

The relationship between self-efficacy and academic achievement emotions were strong and in the expected direction. Interestingly, the strength of item level self-efficacy and general end of exam level self-efficacy were similar. Perceptions of instrumentality did not interact with self-efficacy as expected. PI was only moderately related to students' positive emotions at the mid-point in the exam. PI was moderately-negatively related to students' anger at the end of the exam. Tests of mediation and moderation models were not statistically significant. This study replicates previous findings relating self-efficacy to strong, specific academic emotions. This study design allows us to examine this relationship in situ. The findings also suggest that while students are mid-exam their reported value of the task going into the exam is related to their positive emotions and not related to negative emotions during the exam. Future research should examine the efficacy of reminding students' of the future oriented value of an exam. This study has a small sample size and the sample is overwhelmingly composed of white men. Future research is needed prior to implementation of any experimental research.

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