RATEE REACTIONS: NEGATIVE FEEDBACK AS A MOTIVATING SOURCE

A Thesis

by

ADAM HOWARD KABINS

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

December 2010

Major Subject: Psychology

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Approved by:

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Committee Members,	Mindy Bergman
	Elizabeth Umphress
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ABSTRACT

Ratee Reactions: Negative Feedback as a Motivating Source. (December 2010)

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The majority of empirical research on responses to negative feedback has focused on affective responses to negative feedback, which have largely been adverse**.** The purpose of this study was to examine how negative feedback enhances motivation. A key feature of this study is the conceptualization of motivation using Edward Deci and Richard Ryan's self-determination theory. Self-determination theory proposes a continuum of motivation, based on one's regulation, or contingency for performance. Goal orientation and social dominance orientation are proposed as two moderators of the negative feedback-regulation relationship.

Two studies were conducted to examine the relationship between negative feedback and regulation. Study 1 used a survey-based instrument with a work sample after a performance appraisal was conducted (N = 221), and Study 2 took place in a psychology statistics undergraduate course (N = 156). Negative feedback yielded a decrease in obligated motivation in Study 1. Mastery prove goal orientation and performance prove goal orientation were consistent significant moderators of the negative feedback-regulation relationship, such that individuals with high levels of Mastery prove goal orientation increased their autonomous regulation at higher levels of negative feedback, while individuals with high levels of performance prove goal

orientation decreased their autonomous regulation at higher levels of negative feedback. Implications for feedback delivery are discussed.

This study contributes to the literature by being the first to examine the effects of negative feedback on all forms of regulation, and is the first to use goal orientation and social dominance orientation as moderators of the negative feedback – regulation relationship. Further, this study demonstrated the positive motivational effects of giving positive feedback as well as setting mastery prove based goals.

ACKNOWLEDGMENTS

I would first like to thank Stephanie Payne and Mindy Bergman for their constant help and guidance throughout this project. With their direction, this research was designed, organized, and written in a far better manner than I would have ever been able to accomplish alone. I have learned a great deal from their instruction for which I cannot thank them enough.

Elizabeth Umphress and Aaron Taylor have also contributed greatly to this work as well as my understanding of proper research methods. Their guidance has helped to explain theoretical concepts, as well as the plethora of statistical issues I have come across.

Fellow graduate students, Ismael (Izzy) Diaz and Margaret (Meg) Horner, helped complete both data collections. Meg was instrumental to the design of the survey and collection of the data for Study 1, and Izzy was crucial to data collection for Study 2.

Finally, I would like to thank my parents and family for their never ending encouragement and support. Without their help and guidance throughout my life, this study, as well as most of my accomplishments, would have never been possible.

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1. INTRODUCTION

1.1 Study 1 Introduction

Performance appraisals (PAs) are a pertinent part of a strong business model (Murphy & Cleveland, 1995). Oftentimes, the evaluation is used to identify who should be promoted, who deserves a raise, or who needs training. While some researchers have studied rater motives (Bernadin & Villanova, 2005; Jawahar, 2001), few researchers have examined ratee motivation following a PA, particularly a negative feedback session (Audia & Locke, 2003). In this paper, goal orientation (GO) and social dominance orientation (SDO) are theorized to moderate the effect of feedback on motivation.

Research has demonstrated that people tend to have adverse reactions to negative feedback (Cron, Slocum, VandeWalle, & Fu, 2005; Hong, Chiu, Dweck, Lin, & Win, 1999; Jussim, Yen, & Aiello, 1995; VandeWalle, Cron, & Slocum, 2001). Almost all of this research has been limited to affective as opposed to cognitive or motivational reactions. Shrauger (1975) theorized that an individual's response to negative feedback depends in part on the type of reaction assessed. He posited that individuals are likely to have adverse affective responses to negative feedback, while cognitions and evaluations of such feedback are likely to vary. Based on Shrauger's (1975) suppositions, I propose that negative feedback will lead to perceptions of accurate feedback and greater motivation under certain circumstances. For example, individuals with different GOs (the learning goals one sets in achievement situations) or

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This dissertation follows the style of *Journal of Applied Psychology*.

SDOs (social structure perspectives) will most likely have different levels of perceptions of accuracy regarding the feedback and regulation for a given task. Hence, the purpose of this paper is to identify when negative feedback leads to higher levels of motivation and speculate why motivation is enhanced.

Feedback

PAs in an organizational setting are formalized performance reviews which typically occur annually. PAs are a mechanism for conveying feedback to employees by providing them with information about their performance. Negative feedback in a PA takes the form of a less than satisfactory performance rating (Ilgen & Davis, 2000). In this study, negative feedback was operationalized as a continuous variable. Extremely dissatisfactory ratings represent a high level of negative feedback. In contrast, satisfactory ratings represent a low level of negative feedback. Operationally, I define negative feedback in the following two ways: (1) agreement with survey items about receiving negative ratings/comments, and (2) as a discrepancy between one's supervisor's rating of overall performance and one's self-rating of overall performance.

Ilgen, Fisher, and Taylor (1979) posit three categories of variables that determine how individuals respond to feedback: (1) the message (the feedback itself), (2) the makeup of the recipient (the ratee), and (3) the rater (typically the supervisor). Correspondingly, all three components are considered in this study. In the next section, I describe the feedback message, focusing on the overall process of receiving feedback at first, then narrowing the focus to exclusively examine negative feedback. Then I discuss ratee characteristics and, finally, I review necessary assumptions about the rater.

Kluger and DeNisi (1996) meta-analytically examined outcomes of feedback interventions in organizations, which they define as "actions taken by external agents to provide information regarding some aspect(s) of one's task performance" (p. 255). Kluger and DeNisi found that on average, feedback interventions had a moderately strong positive effect on performance (d = .41); however, over a third of all feedback interventions resulted in reduced performance. Based on these results, Kluger and DeNisi (1996) developed the feedback intervention theory (FIT) which describes the feedback process from the perspective of the ratee.

FIT is an integration of several of behavioral and motivational theories. It proposes that ratees' behavior following feedback is determined by a comparison between the feedback given and the standards and goals individuals have (Kluger & DeNisi, 1996). Attention is drawn to the feedback if there is a discrepancy between one's standards and the feedback received, which can result in a positive, negative, or no discrepancy. This suggests that negative feedback is idiosyncratically defined, which others have corroborated (Audia & Locke, 2003; Ilgen & Davis, 2000). Further, Kluger and DeNisi (1996) proposed that excessive praise was negatively associated with future performance, and that feedback that threatened one's self esteem lowered future performance. Kluger and DeNisi (1996) concluded that feedback must be constructive, but not caustic, in order for performance to improve.

According to FIT, when individuals receive negative feedback, the ratees' locus of attention is drawn towards the task or towards themselves; they then either set goals to accomplish what was not done properly (Locke & Latham, 1990), attempt to eliminate the discrepancy by correcting what was done wrong (Podsakoff & Fahr,

1989), dismiss the feedback, or disregard the standards (Kluger & DeNisi, 1996). However, correcting one's behavior is dependent upon there being a discrepancy. If there is no discrepancy between the feedback given and the feedback expected as well as the standards set, effort will be maintained if all other factors remain constant. The discrepancy can be assessed by comparing a self-evaluation to the supervisor's evaluation. If individuals rate themselves higher than their supervisor rated them, they are said to have received negative feedback. Similarly, Kluger and DeNisi (1996) posited that negative feedback may activate learning processes via motivation. When individuals receive negative feedback, they may attempt to reduce the discrepancy by enacting different learning strategies to improve performance. Further, Kluger and DeNisi (1996) also suggested that when individuals are confronted with a negative discrepancy, they want to overcome their past performance and try to work harder. Therefore, it seems feasible that individuals can be motivated by negative feedback, and previous empirical research supports this. For example, Podsakoff and Fahr (1989) showed that individuals were more motivated after receiving negative feedback compared to their initial motivation levels, which suggests that negative feedback can serve as a motivational tool for management.

While the focus of this research is on negative feedback, most ratees do not receive purely positive or purely negative feedback. Therefore, in the current study, positive feedback is controlled for in order to assess the direct effects of negative feedback on motivation, thus parsing out any effects due to positive feedback.

Self-Consistency versus Self-Affirmation

Audia and Locke (2003) proposed that two theories are useful for explaining reactions to negative feedback: self-consistency theory and self-affirmation theory. Whereas consistency and affirmation theories were originally proposed to explain feedback seeking, Audia and Locke (2003) hypothesized that feedback acceptance and motivation may also align with these perspectives.

Self-consistency theory posits that individuals want to receive information which is consistent with their self image (Festinger, 1957; Shrauger, 1975; Swann, Stein-Serroussi, & Giesler, 1992). For example, if individuals have generally received negative feedback about their past performance and have subsequently internalized those beliefs as part of their self-image, then they will seek feedback that corresponds with previous feedback (i.e., consistent information). The same is true for individuals who have received consistent positive feedback. They will seek information that is positive, consistent with what they have been told in the past, and therefore be more accepting of positive rather than negative feedback.

In contrast, self-affirmation theory posits that individuals seek positive feedback regardless of what has been told to them in the past (Steel, 1988). Therefore, individuals will seek out positive feedback regardless of their self-image. Audia and Locke (2003) suggested that there is more empirical evidence to support self-affirmation theory than self-consistency theory, but results have been inconsistent across studies.

In his review of self-consistency theory and self-affirmation theory, Shrauger (1975) assessed the discrepant results and proposed both theories are valid. He suggested that reactions to negative feedback vary across types of reactions. Negative

feedback is likely to yield negative emotional responses, because negative feedback is displeasing to hear (Shrauger, 1975). However, with cognitive reactions, individuals may use a self-consistency approach, whereby individuals seek out information consistent with previous feedback. Thus, Shrauger (1975) argues that affective responses to negative feedback are consistent with self-affirmation theory, while cognitive responses to negative feedback are consistent with self-consistency theory.

Shrauger's (1975) propositions were corroborated in Jussim et al. (1995) and in Swann, Griffin, Predmore, and Gaines' (1987) studies. Jussim et al. (1995) showed that participants generally had favorable affective reactions to positive feedback and unfavorable affective reactions to negative feedback. However, for evaluations of feedback accuracy and attributions, which Shrauger (1975) posits are more cognitively-based processes, individuals utilized self-consistent processes, such that individuals expecting low ratings (low self esteem) rated negative feedback as more accurate than those expecting high ratings (Jussim et al., 1995). Further, Swann et al. (1987) directly assessed self-enhancement (affirmation) theory and self-consistency theory in three empirical studies and concluded that individuals' cognitive responses were determined from consistency-based processes, while their affective responses were determined from self-affirming processes. Therefore, the first goal of this study is to replicate Shrauger's (1975) proposition that individuals seek consistency for cognitive reactions (e.g., feedback accuracy, motivation).

The Ratee

The second factor Ilgen et al. (1979) identified as critical for determining how people respond to feedback is the recipients of the feedback (i.e., the ratees) and how

they process the feedback. The recipient is often expected to translate the feedback into what needs to be improved and what needs to be maintained. Previous research has shown that individual differences play a pertinent role in determining feedback reactions (Ilgen et al., 1979). For example, Mitchell and Daniels (2003) discussed self-efficacy, self-esteem, and personality as important correlates of motivation.

Building on Ilgen et al. (1979), Ilgen and Davis (2000) proposed a negative feedback response model and posit, like Kluger and DeNisi (1996), that a negative discrepancy between feedback expected and feedback received will result in negative reactions. Their model identified the following three variables as pertinent for understanding how individuals react to negative feedback: (a) self-efficacy, (b) attributions, and (c) GO. Whereas an individual's self-efficacy and attributions following negative feedback have been researched extensively (Anshel & Mansouri, 2005; Hareli & Hess, 2008; Hong et al., 1999; Liden & Mitchell, 1985, Stucke, 2003; Tolli & Schmidt, 2008), little research has examined GO as a moderator of motivational reactions to feedback (Cron et al., 2005; Ilgen & Davis, 2000).

Goal orientation theory suggests that individuals approach achievement situations in different ways; some individuals focus on learning (learning GO) whereas others focus primarily on results (performance GO; McGregor & Eliot, 2002). Ilgen and Davis (2000) posit that individuals with high levels of learning GO may respond positively to negative feedback, because they set goals to learn, which are facilitated by negative feedback. For individuals with high levels of performance GO, negative feedback is a direct indication of their failure to perform well. The authors did not make predictions for prove or avoid GOs, which will be discussed later. Ilgen and Davis'

(2000) propositions have only been partially tested in terms of all GO dimensions (only two of its four dimensions), as researchers have mainly examined satisfaction and other affective reactions to negative feedback (Cron et al., 2005). I return to discussions regarding GO later in the paper.

Rater Credibility

The final factor determining reactions to feedback is perceived credibility of the rater. Feedback in an organization most likely originates from one of three sources: people in the organization, the task environment, or the individuals themselves (Ilgen et al., 1979). The source must have some relevance to the ratee in order for the ratings to be meaningful. Higher source credibility results in a higher likelihood that the feedback recipient will accept the feedback and respond positively (Ilgen et al., 1979). Source credibility is determined by the rater's knowledge of the task and positional power, as well as the ratee's beliefs about the rater's motives (Murphy & Cleveland, 1995). Podsakoff and Fahr (1989) found that negative feedback provided by a credible source led to the greatest increase in motivation and led to greater increases in performance over those given negative or positive feedback from non-credible sources. Therefore, in order for negative feedback to increase motivation, the source must be viewed as credible. Accordingly, an underlying assumption of all hypotheses is that the rater is viewed as credible; therefore it is treated as a control variable in all analyses.

Podsakoff and Fahr (1989) called for more research on negative feedback to understand the process and conditions in which an increase in motivation occurs. I propose that self-determination theory (SDT) provides a particularly meaningful conceptualization of motivation when predicting reactions to negative feedback.

Self Determination Theory

Deci and Ryan (2008) proposed self determination theory (SDT) as a macrotheory of motivation. SDT explains why individuals persist at solving problems and how an individual's psychological makeup, desires, effort, and approach to relationships develop. SDT advances this research because it proposes that motivation can be understood on a continuum of autonomy with multiple underlying contingencies (via obligation, interest, rewards, etc.), which I propose is pertinent to understanding reactions to negative feedback.

Ryan and Deci (2001) focus most on how autonomy affects the motivational experience. Gagné & Deci (2005) distinguish between autonomy and independence by explaining that autonomy refers to the feeling that decisions are made entirely under the individual's volition. Independence, however, refers to performing a task without the aid of others, and that regulation, or one's contingency for performance, is tied directly to the perceived autonomy. Thus, more autonomy means that individuals perceive the motivation to be more regulated by the self (as opposed to others), whereas less autonomy means that the individual perceives the motivation to be more regulated by others.

Gagné and Deci (2005) propose a continuum of self-determination, ranging from entirely non-autonomous motivation to complete internal motivation with the following three anchors: amotivation, extrinsic motivation, and intrinsic motivation (see Figure 1). In this research, I focus exclusively on external motivation. In Study 1, I examine feedback delivered in an organization, whereas in Study 2, I investigate feedback in a classroom setting. In both environments, performance is tied, in part, to external rewards

(i.e., a raise and grades, respectively). Thus, extrinsic motivation is the most relevant focus since all performance is being tied to some external reward.

SDT differs from most other motivation theories by proposing multiple kinds of extrinsic motivation that form a continuum, with controlled regulations as a lower form of motivation, to autonomous regulations which yield more effortful behavior (Gagné & Deci, 2005). Extrinsic motivation refers to the motivation to perform a task that requires externally provided incentives (praise, punishments, etc.) for performance. Four anchors of extrinsic motivation are proposed to fall on a continuum of least autonomous to most autonomous. The least autonomous regulation of extrinsic motivation is *external regulation* whereby effort is entirely contingent on the expectation of an external result of an individual's actions (i.e., receive reward or avoid punishment). This is perceived as a controlled action and is therefore not an autonomous regulation.

Introjected regulation is less controlling whereby individuals perform tasks to avoid anxiety or guilt. This regulation stems from a sense of obligation or responsibility to perform the tasks; thus, it is a contingency-based regulation, whereby performance is dependent on the expectation of avoiding negative feelings (i.e., anxiety, guilt). Accordingly, this regulation is not fully internalized to the individual, for if the feelings of anxiety were removed, performance ceases (Gagné & Deci, 2005).

Next is *identified regulation*, which is phenomenologically experienced as more autonomous whereby the task is important to the individual, but the individual does not enjoy performing the task itself (Gagné & Deci, 2005). Individuals performing tasks that align with their goals and desires are more likely to experience identified regulation. For example, individuals raising funds for a philanthropic organization might not enjoy

asking others for donations, but the organization for which they are fundraising for supports an issue they believe to be important. Therefore, their effort stems from the task's importance in relation to their value system and not from the pleasure of enacting the specific behavior. The last anchor of extrinsic motivation is *integrated regulation*, where not only is the task important to the individual, but it is also enjoyable. The task is enjoyable not because it has intrinsic enjoyment (i.e., intrinsic motivation), but because the task is such a deep part of the individual's identity, it becomes enjoyable, and therefore engagement in the task feels self determined. For example, teachers who have high integrated regulation will view even mundane aspects of their job as being enjoyable. However, Gagné and Deci (2005) note that this is different from intrinsic motivation in that the enjoyment of the task develops from its importance, not because the task itself is inherently enjoyable.

Gagné and Deci (2005) note that SDT is not a stage theory. This is important to this research, because it suggests that an individual's regulation can change based on the situation and need not follow a set order of steps in increasing/decreasing regulation. I propose that an individual's response to negative feedback can be studied in terms of these four forms of extrinsic motivation.

Researchers have shown that negative feedback can increase motivation (Podsakoff & Fahr, 1989), yet little is known about how this happens. For example, it has yet to be established whether individuals are more motivated by their (a) fear of punishment or desire for rewards (external regulation); (b) a sense of obligation to follow through on the feedback given (introjected regulation); (c) the importance of the task (identified regulation); or (d) the enjoyment experienced and identity held with the

tasks (integrated regulation). In this research, I seek to answer this question by assessing all four types of regulation after participants receive negative feedback.

SDT proposes that individuals must feel competent in order for their motivation to increase. The primary means for this competence to develop is through positive feedback (Deci, Connell, & Ryan, 1989). When individuals receive positive feedback, their perceived competence increases, which makes their regulation more autonomous. Thus, Deci et al. (1989) proposed that when an individual receives negative feedback, competence is threatened. This is based on Deci's (1971) findings that positive feedback was strongly correlated with intrinsic motivation.[1] Therefore, negative feedback is expected to make an individual feel inadequate and reduce the more autonomously motivated types of regulation. Specifically, I posit that negative feedback will reduce integrated and identified regulation due to the competence threat that the negative feedback places on the individual.

> *Hypothesis 1:* Negative feedback will be negatively associated with (a) integrated and (b) identified regulation.

Further, negative feedback is predicted to obligate an individual to perform better, which will force the individual to put forth more effort and subsequently focus on the external rewards as the basis for performance. As Kluger and DeNisi (1996) posit, when individuals receive negative feedback, it is viewed as a discrepancy that the individual wants to resolve. Therefore, negative feedback will be positively associated with the more controlled forms of regulation (external and introjected regulations) due

[1] The four forms of extrinsic regulation were not developed at that time.

to their association with feelings of obligation to perform and greater perceptions of control.

Hypothesis 2: Negative feedback will be positively associated with (a) external and (b) introjected regulation.

I now turn to the conditions that determine when an individual who receives negative feedback is likely to accept the feedback and has a desire to improve from such feedback.

Feedback Accuracy

Feedback accuracy is the main determinant of feedback acceptance (Murphy & Cleveland, 1995). In fact, some researchers *define* feedback acceptance as how accurate ratees report the feedback to be (e.g., Ilgen et al., 1979). Therefore, the ratee's perception of the accuracy of the feedback, at a minimum, determines to a great extent how much the participants are willing to accept the feedback and subsequently change their behaviors. Similarly, Ilgen and Davis (2000) posit that in order for feedback, especially negative feedback, to influence an individual to change, it must first be viewed as accurate. If the feedback is not viewed as accurate, then individuals will not adjust their behaviors because the feedback is dismissed.

Gilliland and Langdon (1998) theorized that individuals who accept their feedback are more likely to find the feedback useful and therefore will change behaviors because of it. Correspondingly, I propose feedback accuracy as a more proximal reactionary outcome for the feedback recipient and a moderator of the negative feedback-regulation relationship (Cascio & Aguinis, 2005). I predict that at low levels of negative feedback, motivation will be comparable at both high and low levels of

accuracy; however, as negative feedback increases, low levels of accuracy, coupled with high levels of negative feedback will result in lower levels of all regulation types (see Figure 2*).* This is predicted because increases in motivation are dependent on perceptions of accuracy (Ilgen & Davis, 2000). Without perceiving the feedback as accurate, individuals will dismiss and remove effort from the task because it is perceived as a threat to one's competency. However, high perceptions of accuracy will yield unchanged motivation at all levels of negative feedback. Thus, I predict an interaction between negative feedback and accuracy on all forms of regulation.

> *Hypothesis 3:* The positive relationship between negative feedback and regulation will be moderated by feedback accuracy, such that the more accurate the feedback is perceived to be, the stronger the relationship.

Self-Consistency Predictions

As mentioned previously, Shrauger (1975) proposed that individuals will be self affirming on affective responses and self-consistent on cognitive responses. Accuracy of the feedback is proposed to be a cognitive evaluation by the ratee. When given negative feedback, individuals are expected to display self consistent processes. Individuals who have been given negative feedback in the past will perceive current negative feedback as more accurate. However, individuals given positive feedback previously will seek consistency and therefore will not perceive the negative feedback as accurate, subsequently rejecting it.

In order to examine the consistency of feedback, information is needed about past feedback. It was not possible to measure every achievement setting for each participant in the past; however, self-efficacy can be easily assessed. Self-efficacy is the

belief that individuals have about themselves that they can garner the resources necessary to "exercise control over events in their lives" (Wood & Bandura, 1989, p. 364). Wood and Bandura (1989) propose four ways in which an individual can develop self-efficacy, but the primary and most effective way is through mastery experiences (i.e., successes in achievement settings). When individuals have experienced success in their previous achievement settings, they will then have a high level of self-efficacy. When individuals have experienced failure in their previous achievement settings, then they will have a low level of self-efficacy. Thus, higher levels of self efficacy suggest positive previous feedback and lower levels of self efficacy suggest negative previous feedback.

> *Hypothesis 4:* The relationship between negative feedback and accuracy will be moderated by self-efficacy, such that higher levels of self-efficacy will yield a weaker the relationship.

Goal Orientation and Negative Feedback

In accordance with Ilgen and Davis (2000), I also propose GO as a moderator of the negative feedback-motivation relationship. In its original conceptualization, GO had two dimensions: learning and performance (Dweck & Leggett, 1988). However, current GO theory proposes that individuals can approach achievement settings in four ways: mastery approach (MPGO), mastery avoidance (MVGO), performance approach (PPGO), and performance avoidance (PVGO; Elliot & Murayama, 2008; McGregor & Elliot, 2002). Individuals with high levels of MPGO view achievement situations as opportunities to learn new skills and ideas, whereas individuals with high levels of MVGO also focus on learning, but effort stems more from a fear of failing to learn

something new rather than from striving to understand. Individuals with high levels of PPGO perceive work and learning as important only for the end results. Similarly, individuals with high levels of PVGO view learning as important for end results, however, they avoid negative ratings more than they seek out positive ratings.

GO and reactions to negative feedback have been examined in only three studies. First, Cron et al. (2005) focused particularly on GO when they tested Ilgen and Davis' (2000) model. In this longitudinal study, Cron et al. (2005) examined if GO influenced affective reactions to a negative PA. Their results suggest that individuals with high levels of MPGO are better able to buffer the effects of a negative PA, while individuals with high levels of PVGO react more negatively to the feedback.

Second, VandeWalle et al. (2001) examined the relationship between GO and effort in a classroom setting in which feedback was operationalized as performance on a previous exam. They found that MPGO and PPGO were positively related to effort, whereas PVGO was not significantly related to effort; MVGO was not assessed. However, effort was measured before feedback was given. Thus, GO was related to motivation, but the effect of feedback on subsequent motivation was not examined.

Third, Hong et al. (1999) assessed an individual's attributions about ability and effort following feedback. Attributions were assessed as either entity-based or incrementally-based. An entity-based theory of intelligence, which is positively related to performance GO (PGO; Button, Mathieu, & Zajac, 1996), is the belief that abilities are fixed and therefore effort is a non-factor because results are already determined by one's abilities (Hong et al., 1999). In contrast, an incremental theory of intelligence, which is related to mastery GO (MGO; Button et al., 1996), is the belief that ability is

malleable and effort is therefore important (Hong et al., 1999). These attributions were assessed following negative feedback to Chinese undergraduate students regarding their English abilities as well as their intelligence. Individuals who made entity attributions were less likely to try to improve after receiving negative feedback compared to individuals making entity-attributions given positive feedback. However, individuals who made incremental attributions were just as likely to try to improve regardless of the feedback sign. Therefore, Hong et al. (1999) provided indirect support for Ilgen and Davis' (2000) model, in that individuals who made entity attributions (presumed high levels of PGO) responded less positively to negative feedback than individuals who made incremental attributions (presumed high levels of MGO). Further, these results corroborate Cron et al.'s (2005) results, because it suggests that individuals with high levels of MGO can buffer negative affective reactions to negative feedback. However, Hong et al. (1999) assessed attributions of intelligence, which is an indirect reflection of GO. A more direct assessment of GO with negative feedback is warranted.

Although all three studies previously described provide support for Ilgen and Davis' (2000) model of reactions to negative feedback, none of the studies directly examined motivation in response to negative feedback. Further, by examining the regulation of motivation using SDT's framework, I hope to explain why some individuals are more motivated, which previous research has failed to address.

Goal Orientation Hypotheses

Avoidance GOs (MVGO and PVGO) are both associated with an aversion to some form of failure. Therefore, for individuals with high levels of avoidance GO, negative feedback will likely lower intrinsic motivation. Specifically, I posit that the

more autonomous forms of regulation (integrated and identified regulation) will be adversely affected by the negative feedback for individuals with high levels of MVGO and PVGO. As noted earlier, integrated and identified regulation develop from value congruency and identification with the task, respectively. Because avoidant GO individuals remove themselves from situations that challenge their competence, they will enjoy performing the task less and experience less identification with the process of performing the task following negative feedback. Therefore, individuals with strong avoidance GOs will remove themselves from the task, because their approach to learning stems from an avoidance of the precise situation negative feedback places them in. However, there will be strong external pressures for the individual to perform (e.g., grades, raises, etc.) with subsequent increased feelings of obligation; therefore, external and introjected regulation will increase for individuals with strong avoidance GOs. As individuals focus more on the controlled reasons for performance, which I predict negative feedback will do, one's obligation-based regulation will likely increase as well, because neither regulation is autonomously perceived. Therefore, both external and introjected regulation are predicted to increase at higher levels of negative feedback.

Dweck and Leggett (1988) demonstrated that students who had strong performance GO (PGOs)[2] felt that more effort on tasks was a result of a lack of ability, due to their entity attributions of intelligence. Thus, exerting a high level of effort is perceived negatively by individuals with performance goals because it suggests a lack of intelligence. Individuals with high MVGOs may have similar perceptions due to their

[2] Approach and avoidance were not yet developed.

avoidant nature. Thus, individuals with strong avoidance GOs will want to quit the tasks in order to avoid failing again (decreased integrated and identified regulation) and will instead focus on the external rewards and subsequent feelings of obligations due to its controlled nature (external and introjected regulation). Therefore, I predict an interaction between negative feedback and GO, such that high levels of MVGO and PVGO will lead to higher external and introjected regulation, and lower integrated and identified regulation.

Hypothesis 5: The positive relationship between negative feedback and (a) external regulation and (b) introjected regulation depends on MVGO, such that at higher levels of MVGO, the relationship is stronger.

Hypothesis 6: The positive relationship between negative feedback and (a) external regulation and (b) introjected regulation depends on PVGO, such that at higher levels of PVGO, the relationship is stronger.

Hypothesis 7: The negative relationship between negative feedback and (a) integrated regulation and (b) identified regulation depends on MVGO, such that at higher levels of MVGO, the relationship is stronger.

Hypothesis 8: The negative relationship between negative feedback and (a) integrated regulation and (b) identified regulation depends on PVGO, such that at higher levels of PVGO, the relationship is stronger.

Individuals with high levels of MPGO focus their efforts on increasing their knowledge of a task or subject material. Therefore, these individuals will respond more positively to negative feedback than individuals with low levels of MPGO, because they perceive such events as an opportunity to learn and increase their knowledge. Dweck

and Legget (1988) point out that "whereas helpless individuals view challenging problems as a threat to their self-efficacy, mastery-oriented ones appear to view them as a opportunities for learning something new" (pp. 258-259). Similarly, Dweck and Leggett (1988) explained that individuals with high levels of learning GO (the current four dimensions were not yet developed) view effort positively, because they view intelligence as incremental.[3] Further, whereas positive feedback offers little opportunity to improve, negative feedback provides an opportunity for growth. Because individuals with strong MPGO want to increase their knowledge base, the more autonomous forms of regulation (integrated and identified) will increase following negative feedback because of the opportunity to gain knowledge in an area where they are lacking. Identified and integrated regulation stem from performing tasks that result in accomplishing an individual's goals. Receiving negative feedback, while affectively displeasing, does accord with the goals of individuals with high levels of MPGO, because it provides for an opportunity to learn. Thus, it is likely to positively affect an individual's identified and integrated regulation. However, negative feedback simultaneously decreases feelings of competence for individuals with high levels of MPGO. Therefore, I posit that the more controlled forms of regulation (external and introjected) will increase due to a stronger focus on rewards for performing.

> *Hypothesis 9:* The negative relationship between negative feedback and (a) integrated regulation and (b) identified regulation depends on MPGO, such that at higher levels of MPGO, the relationship is weaker.

[3] It is implied that Legget and Dweck's (1986) discussion of learning goal orientation was referring to MPGO.

Hypothesis 10: The positive relationship between negative feedback and (a) external regulation and (b) introjected regulation depends on MPGO, such that at higher levels of MPGO, the relationship is stronger.

Individuals with high levels of PPGO view proving their knowledge as the purpose of learning exercises. These individuals are not concerned with improvement for the sake of learning; their primary goal is to prove their ability. Therefore, they prefer positive feedback because it indicates satisfactory performance. When individuals with high levels of PPGO are provided negative feedback, they will become more obligated to the task at a superficial level and focus on the external rewards due to the controlled nature of negative feedback. Their regulation will stem from a desire to prove the rater wrong by succeeding, as well as the external rewards that demonstrate successful performance. Thus, negative feedback will prime those feelings and increase their introjected and external regulation. Similarly, because individuals with high levels of PPGO will want to remove themselves from a task that they are not performing well, the more autonomous forms of regulation (integrated and identified) will be reduced.

Hypothesis 11: The positive relationship between negative feedback and (a) external regulation and (b) introjected regulation depends on PPGO, such that at higher levels of PPGO, the relationship is stronger.

Hypothesis 12: The negative relationship between negative feedback and (a) integrated regulation and (b) identified regulation depends on PPGO, such that at higher levels of PPGO, the relationship is stronger.

Social Dominance Orientation

A second goal of this study is to assess how SDO affects regulation in the context of negative feedback. Social dominance theory posits that some individuals have a greater desire for hierarchical structure in social organizations than others (Sidanius & Pratto, 1999). The individual difference variable associated with social dominance is SDO, whereby individuals with a high level of SDO are more likely to support domination over other groups.

According to social dominance theory, individuals high in SDO wish to support the social hierarchy. Both high and low status individuals can demonstrate a high level of SDO. For example, Umphress, Smith-Crowe, Brief, Dietz, and Baskerville (2007) found that members of high and low status groups who were high in SDO were attracted to organizations composed of high status groups. In a follow-up study, Umphress, Simmons, Boswell, and Triana (2008) found that participants high in SDO were significantly less likely to choose the most qualified candidate when that candidate was a member of a low status group. However, this discrimination against the candidate was buffered when an authority figure gave instructions to select the candidate with the best qualifications. With these instructions present, people high in SDO chose the most qualified candidate when compared to situations where these instructions were not present. Umphress et al. (2008) concluded that these results were consistent with the inherent nature of SDO. Individuals high in SDO are more inclined to uphold the social hierarchy in an organization; therefore, those same individuals will be more likely to take directives from authority figures, even if these directives contradict one's

preference to support the hierarchy and subsequently discriminate against members of low status groups.

The current research consists of two studies: one that takes place in an organization and one that takes place in a classroom, both of which contain social hierarchies. The subordinates/students (lower status group) are provided with feedback from a supervisor/instructor (higher status group) because of some knowledge or power that the supervisor/instructor has. When supervisors/instructors give feedback, I propose that they are maintaining the hierarchical structure in the organization/classroom. This is because they are demonstrating power (they have control over administrative decisions/grades), and expert knowledge (they are correcting incorrect behavior, suggesting they know the correct behavior).

As mentioned earlier, source credibility is an important feature of the rater when predicting how individuals will respond to negative feedback. This will be especially true for individuals high in SDO. If they perceive the rater as being in either a lower social status group, or lacking credibility, they will dismiss the ratings. However, if they perceive the supervisor/instructor as being in a high status group, then they will be more likely to accept the feedback due to their desire to maintain the social hierarchy.

Extending Umphress et al.'s (2008) research, I propose that if the source is perceived as credible, individuals high in SDO will view feedback sessions as an opportunity to uphold the social hierarchy, and that negative feedback is particularly likely to be perceived as an attempt to maintain that hierarchy (Sidanius & Pratto, 1999). Therefore, I hypothesize that individuals who are high in SDO will be more accepting of negative feedback than individuals who are low in SDO, if they view the rater as a

legitimate leader and a member of a high status group (i.e., tested as a control). Thus, because individuals who are high in SDO are more likely to accept directives in order to uphold the social hierarchy (Umphress et al., 2008), it is predicted that individuals high in SDO will be more accepting of negative feedback.

> *Hypothesis 13:* SDO will moderate the negative relationship between negative feedback and perceived accuracy, such that higher levels of SDO yield weaker relationships.

Further, it is expected that individuals who are high in SDO and receive negative feedback will increase their introjected regulation. As stated above, introjected regulation stems from feelings of obligation and avoidance of anxiety (Gagné & Deci, 2005). In this situation, individuals with high levels of SDO will perceive the task as important because it is maintaining the social hierarchy, which will elicit feelings of obligation to maintain said hierarchy, thus affecting introjected regulation. Therefore, the relationship between negative feedback and introjected regulation is predicted to be dependent on SDO.

> *Hypothesis 14:* SDO will moderate the positive relationship between negative feedback and introjected regulation, such that higher levels of SDO yield stronger relationships.

I will also investigate how SDO moderates the relationship between negative feedback and the other three regulations. However, because there is little theoretical guidance as to what relationships might occur, I will treat these analyses as exploratory and will not offer any specific hypotheses.

Research Question 1: To what extent does SDO moderate relationships between negative feedback and (a) external, (b) identified, and (c) integrated regulation relationships?

1.2 Study 1 Method

Participants were employees at a large southern university. An annual PA was conducted in the spring of 2009 in which study participants received specific ratings and feedback from their supervisor regarding their performance on the job. Approximately four months after receiving their evaluation, 1154 employees were asked to complete a survey about their experiences with their PA evaluation. Two hundred twenty employees responded for a 19% response rate. There were 105 females (47.7%), 58 males (26.4%), and 57 (25.9%) chose not to provide this information. The average age was 45 years (*SD* = 10.57). The majority of participants were White (82%), 6% Black, 6% Latino, 1% Asian, and 1% Native American. Most participants had a master's degree (26%) or a bachelor's degree (25%) and the mean tenure in the current position was six and a half years (*SD* = 6.71).

According to a power analysis, if a small effect size (.10) is found with 221 participants, I will achieve a .44 level of power ($\alpha = .05$). If a medium effect size (.30) is found with 221 participants, I will achieve a .99 level of power ($\alpha = .05$). Finally, if a large effect size (.50) is found with 221 participants, I will achieve a .99 level of power ($\alpha = .05$).

Measures

All measures were responded to on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Coefficient alphas are displayed on the diagonal in Table 1.

Correlations among the variables are displayed below the diagonal in Table 1 while partial correlations (controlling for credibility, positive feedback, and rater status) are displayed above the diagonal.

Goal Orientation. The four types of GO were assessed using an abbreviated version of Elliot and Muryama's (2008) measure. This measure had 12 total questions, three for each type of GO, and was adapted to focus on one's GO within the context of an organizational PA. Participants were instructed to think back to their most recent performance evaluation and answer questions concerning what they hoped to gain from their evaluation. A sample MPGO item read: "I wanted to learn as much as possible." A MVGO item read, "I worried that I may not learn all that I possibly could from this evaluation." A PPGO item read, "It was important for me to do better than other employees," and a PVGO item read, "I just wanted to avoid being rated poorly compared to other employees."

Motivational Regulation. The four regulation types (external, introjected, identified, integrated regulations) were measured via three items each drawn from Deci, Hodges, Pierson, and Tomasson (1992). An example external regulation item read, "I will do my work so that my supervisor won't yell at me." An introjected regulation item read, "I try to do well at work because I will feel bad about myself if I don't do well." An identified regulation item read, "I will do my work because I want to learn new things about my work," and an integrated regulation item read, "I will do my work because it is fun."

Social Dominance Orientation. SDO was measured using seven items taken from Sidanius, Pratto, Sinclair, and van Laar's (1996) 12-item scale.[4] Sample items included: "To get ahead in life, it is sometimes necessary to step on other groups," and "Superior groups should dominate inferior groups." Four items were reverse scored.

Perceived Feedback Accuracy. Feedback accuracy was measured using an abbreviated version of Stone, Gueutal, and McIntosh's (1984) four-item feedback accuracy scale, adapted to be relevant to the workplace. An example item read "My performance was accurately measured in this appraisal."

Job Self-Efficacy. Three items measured how confident and capable individuals felt at performing their job (Chen & Bliese, 2002). A sample item read, "My current job is well within the scope of my abilities."

Negative Feedback. Negative feedback was operationalized in two ways. First, respondents completed a three item scale (Steelman, Levy, & Snell, 2004). The negative feedback items read: "My supervisor told me my work performance does not meet organizational standards," "My supervisor told me my job performance falls below what is expected," and "My supervisor pointed out mistakes I made at work." Second, a feedback discrepancy score was calculated by subtracting the respondent's self-rating from the rating they received from their supervisor. Negative scores reflected negative feedback. The self-rating item read: "In the self-evaluation, what overall performance evaluation rating did you give yourself?" Supervisor's overall performance ratings were obtained from organizational records and matched to survey responses using employee

[4] This seven item SDO scale was used in Umphress et al. (2008).

identification numbers. Both ratings were made on the organization's PA rating scale (0 = No overall rating given, 1 = Does not meet expectations, 2 = Meets expectations, 3 = Exceeds expectations, and 4 = Outstanding performance). However, only 119 employees granted permission to access organizational records for their overall performance score (102 did not permit access to their organizational records). Therefore, these analyses were limited to a sample of 119. An additional analysis was conducted that included employee's self-reported organizational score (see pp. 36-37).

Control Variables

Positive Feedback. Positive feedback was assessed with the following three items from Steelman et al. (2004): "My supervisor praised my performance," "My supervisor let me know that I did a good job at work," and "I received positive feedback from my supervisor."

Credibility of the Rater. Source credibility was measured with the following three items adapted from McCroskey and Teven (1999): "My supervisor is competent," "My supervisor is trustworthy," and "My supervisor cares about me."

Social Status Discrepancy. Two items were used to assess if the ratee believed that the rater was in a higher social group than the ratee. The instructions read: "There are many people who believe that different individuals enjoy different amounts of social status. You may not believe this for yourself, but if you had to rate yourself and your supervisor how would you do so?" One item asked what social status the participants perceived themselves to be, and the other item asked how they perceived their supervisor's social status. The following response scale was used: 1 = very low status, 2 = low status, 3 = neither low nor high status, 4 = high status, and 5 = very high status. A

difference score was computed between the supervisor and the participant's perceived social status to determine the perceived social status discrepancy between the participants and their supervisors.

Study 1 Analyses

Initially, a confirmatory factor analysis (CFA) was done to examine if all measures were distinct. Then, a series of multiple regressions were conducted to examine the extent to which self-efficacy/GO/SDO altered the relationships between negative feedback (the independent variable) and feedback accuracy (dependent variable) as well as negative feedback (independent variable) and regulation (the dependent variables).

To test each moderated relationship, I centered all moderator and independent variables. When inputting the regulation coefficients, I entered the control variables, followed by the centered independent variable and moderator, and then the product of the centered independent variable and centered moderator.

All data screening methods were conducted in accordance with Tabachnick and Fidell (2007) and Odom and Henson (2002). First, each item was assessed for any outliers, skewness, or kurtosis. At the item level, there were no significant problems with the data with regard to these first three criteria. Next, I screened the data at the scale level, looking for issues with scale reliability (reliabilities can be viewed on the diagonal in Table 1). Reliabilities above 0.70 were considered acceptable, while reliabilities below that marker were considered to have questionable reliability (Nunnally, 1978). All scales had reliabilities exceeding 0.70 except the SDO ($\alpha = .69$),

SDO equality (α = .61), negative feedback (α = .67), external regulation (α = .57), and the identified regulation (α = .51) scales.

Using a correlation matrix of all items, I examined if each item factored onto its respective latent factor using CFA. While the overall model fit was slightly less than optimal (χ^2 [898] = 1917.24, $p < .001$; comparative fit index (CFI) = .85; root mean square error of approximation (RMSEA) = .07; referred to as Model A in Table 2), all items factored significantly onto their respective scales. Modification indices (MI) were also examined to see if each item factored onto its respective scale and no others. While some items showed slightly high modification indices, only one introjected item showed a high modification index for both the external regulation and identified regulation scales (MI > 15). This is to be expected as all four regulations are proposed to be interrelated and reflect a continuum of perceived autonomy (see Figure 1).

Similarly, I also performed a CFA to assess if each scale was distinct from the other by examining a one factor structure. A one factor structure places all items on a single latent factor and examines the model's fit. If all items do not factor properly onto the one-item structure, then it can be assumed that at least some of the scales are distinct. This one-factor CFA resulted in poor fit (χ^2 [989] = 4346.52, $p < .001$; CFI = .24; RMSEA = .15; referred to as Model B in Table 2).

Additionally, I examined theoretically plausible interim models in order to demonstrate that the predicted factor structure demonstrated the best model fit. For example, I combined both the positive and negative feedback scales into one latent factor (referred to as Model C in Table 2) while keeping all other factor structures identical to the expected factor structure. Further, I did the same for all regulation items

(referred to as Model D in Table 2) and the GO items (referred to as Model E in Table 2). As seen in Table 2, Model A (the predetermined model) displayed the best model. Of particular importance, Model A had the lowest RMSEA; it should be noted that a model in which more parameters are estimated will always show better fit by standards of the χ^2 test, and nearly always by standards of the CFI, so the improved fit of these statistics as the number of factors increased is not surprising. However, RMSEA, which includes an explicit penalty for model complexity, also improved for the largest model predicted (i.e., Model A). Thus, I retain the pre-determined factor structure in my analyses.

Finally, I examined how well each item factored strictly onto its respective scale (e.g., to ensure that all extrinsic regulation items best factored onto the extrinsic regulation latent factor and no others). For example, I performed an exploratory factor analysis (EFA) with only the regulation items and examined how fit improved starting with one latent factor and adding on additional latent factors to reach its predetermined structure (i.e., four latent factors). Results from this analysis can be viewed in Table 3. This was also done with GO (see Table 4) and SDO (see Table 5).[5] Both regulation and GO showed the best model fit with the predetermined factor structures. However, the SDO scale, traditionally conceived of as a one factor scale, was better fit by two factors (see Table 5). Jost and Thompson (2000) also found this two-factor structure and suggested that Siddanius et al.'s (1996) SDO scale is multi-faceted. Some items reflected an opposition to equality whereas others reflected promotion of group-based dominance (Jost & Thompson, 2000). The opposition to equality factor is characterized

[5] The regulation scales, GO scales, and SDO scale were the only scales that had a sufficient number of items to examine them in SEM.

by individuals preferring unequal reward disbursements to be distributed to high status members, while the group-based dominance factor is characterized as a promotion for subjugation of lower status members. Thus, I also tested the SDO hypotheses (H13 and H14) separately with the two subscales.

1.3 Study 1 Results

Control Variables

Positive feedback positively predicted identified and integrated regulation (β = .25, $p < .01$; β = .32, $p < .01$ respectively; see Table 6). This suggests that the more autonomous forms of regulation are more strongly determined by the amount of positive feedback received. Thus, as the amount of positive feedback increased, the more autonomous forms of regulation increased, consistent with Deci (1971).

Credibility of the rater and positive feedback both had significant effects on perceived accuracy (β = .39, $p < .01$; β = -.42, $p < .01$ respectively, see Table 8). As expected, the more credible the rater, the more accurate feedback was perceived, while surprisingly, more positive feedback was associated with lower accuracy scores. However, in Table 1, positive feedback had a positive correlation with accuracy (r = .64, $p < .01$); this suggests the presence of a suppressor. In classical suppression, both variables examined have a positive relationship with the dependent variable; however, when predicting the dependent variable using simultaneous regression, one of the two predictors negatively predicts the dependent variable, opposite its correlation (Cohen & Cohen, 1983). Therefore, to avoid the issue of suppression in the accuracy hypotheses (H3, H13), I only use one control variable, in accordance with Cohen and Cohen's (1983) suggestions. Credibility was chosen since it was a more pertinent control in my

analyses given it is a strong determinant of feedback accuracy (Ilgen et al., 1979). If individuals do not believe that their rater is credible, then the feedback will be dismissed (both positive and negative). However, at all levels of positive feedback, it is possible for the feedback to be trusted. Therefore, I only control for credibility in the accuracy analyses.

Similarly, the issue of suppression may have extended to the other dependent variables used; consequently, I examined all analyses with the four regulations while only controlling for credibility in case suppression was present in those other analyses as well. However, results were identical to those found with both credibility and positive feedback in the regression. Therefore, it was retained in all other analyses that did not use accuracy as the dependent variable.

Hypotheses 1 and 2. Hypothesis 1 predicted that as negative feedback increased, (a) external and (b) introjected regulations would increase, and Hypothesis 2 predicted that as negative feedback increased, (a) integrated and (b) identified regulations would decrease. Results for Hypotheses 1 and 2 appear in Table 6. Negative feedback was not significantly related to external, identified, or integrated regulation but did have a significant negative relationship with introjected regulation ($\beta = -.17$, $\Delta R^2 = .03$, $p < .05$). This was in the opposite direction predicted in Hypothesis 1b; therefore, Hypotheses 1 and 2 were not supported.

Hypothesis 3. Hypothesis 3 predicted perceived feedback accuracy would moderate the relationship between negative feedback and all four forms of regulation. However, none of the interactions were significant (see Table 7). Thus, Hypothesis 3 was not supported.

Hypothesis 4. Hypothesis 4 predicted self-efficacy would moderate the negative feedback - perceived accuracy relationship, such that higher levels of self efficacy would result in a weaker relationship. Results for Hypothesis 4 appear in Table 8, and all interactions fail to support Hypothesis 4.

Hypothesis 5. MVGO was predicted to moderate the negative feedback - (a) external and (b) introjected regulation relationships such that higher levels of MVGO would yield stronger positive relationships. Results for Hypothesis 5 appear in Table 9. Results for introjected regulation were significant ($\beta = .09$, $\Delta R^2 = .03$, $p < .05$). As shown in Figure 4, a simple slopes analysis found that individuals with high levels of MVGO (greater than the median [2.33]) had consistent introjected regulation at all levels of negative feedback ($\beta = -.05$ $p > .05$), yet individuals with low levels of MVGO (lower and including the median [2.33]) had lower introjected regulation at higher levels of negative feedback ($\beta = -.28$ $p < .01$) [x]. This suggests that individuals with high levels of MVGO retain their obligated forms of motivation to continue performance. However, Hypothesis 5b was predicated on Hypothesis 1b that predicted a positive main effect on introjected regulation, which was not present. Therefore, results were not supportive of Hypothesis 5b.

Hypothesis 6. PVGO was predicted to moderate the negative feedback - (a) external and (b) introjected regulation relationships such that higher levels of PVGO would yield stronger positive relationships. Results for Hypothesis 6 appear in Table 10. Hypothesis 6a and 6b were not supported as the interactions between negative feedback and PVGO on external or introjected regulations were not significant. Thus, results failed to support Hypotheses 6a and 6b.

Hypothesis 7. MVGO was predicted to moderate the negative feedback - (a) integrated and (b) identified regulation relationships such that higher levels of MVGO would yield weaker relationships. However, Hypothesis 7 did not receive any support; negative feedback and MVGO did not significantly interact on either integrated or identified regulation (see Table 9).

Hypothesis 8. PVGO was predicted to moderate the negative feedback - (a) integrated and (b) identified regulation relationships such that higher levels of PVGO would yield weaker relationships. Results for Hypothesis 8 appear in Table 10. Hypotheses 8a and 8b were not supported as the interactions between negative feedback and PVGO on integrated or identified regulations were not significant.

Hypothesis 9. MPGO was predicted to moderate the negative feedback - (a) integrated and (b) identified regulation relationships such that higher levels of MPGO would yield stronger relationships. Results for Hypothesis 9 appear in Table 11. Neither moderated hypothesis was supported, yet MPGO had a significant main effect on introjected regulation ($\beta = .24$, $p < .01$).

Hypothesis 10. MPGO was predicted to moderate the negative feedback - (a) external and (b) introjected regulation relationships such that higher levels of MPGO would yield stronger positive relationships. Results for Hypothesis 10 appear in Table 11. Neither moderated hypotheses were supported, yet MPGO had a significant main effect on identified and integrated regulations ($\beta = .30$, $p < .01$; $\beta = .21$, $p < .01$ respectively).

Hypothesis 11. PPGO was predicted to moderate the negative feedback - (a) external and (b) introjected regulation relationships such that higher levels of PPGO

would yield stronger positive relationships. Results for Hypothesis 11 appear in Table 12. Hypotheses 11a and 11b were not supported as the interactions between negative feedback and PPGO on external and introjected regulations were not significant.

Hypothesis 12. PPGO was predicted to moderate the negative feedback - (a) integrated and (b) identified regulation relationships such that higher levels of PPGO would yield weaker relationships. Results for identified regulation on the PPGO – negative feedback interaction were significant (β = -.14, ΔR^2 = .02, p = .05; Table 12). As seen in Figure 5, a simple slopes analysis found that at high levels of PPGO (greater than the median [3.00]) negative feedback was negatively but nonsignificantly associated with identified regulation (β = -.16 p > .05), while at low levels of PPGO, negative feedback was positively but nonsignificantly associated with identified regulation (β = .18 p > .05). This interaction does not support Hypothesis 12b because it was predicated on an overall negative effect for negative feedback, which was not present. Therefore, Hypothesis 12b was not supported.

Hypothesis 13. Hypothesis 13 predicted that SDO would moderate the negative feedback-accuracy relationship, such that individuals with high levels of SDO would view higher levels of negative feedback as more accurate, while individuals with low levels of SDO would have no relationship between amount of negative feedback and perceived accuracy. Results from Hypothesis 13 can be seen in Table 13. Neither the moderated nor the direct effects were significant.

Hypothesis 14. Hypothesis 14 predicted that SDO would moderate the negative feedback and introjected regulation relationship, such that higher levels of negative feedback and SDO would lead to higher levels of introjected regulation, while lower

levels of SDO would lead to unchanged levels of introjected regulation. As an additional research question, I also examined the moderated relationships between negative feedback and SDO on the other three regulation types. Results from Hypothesis 14 and the additional research questions can be viewed in Table 14. Results indicated that SDO does not moderate the negative feedback - regulation relationship.

Supplementary Analyses

Additionally, three supplementary analyses were conducted. First, as noted earlier, the CFA revealed that the data from the seven item SDO scale fit a two-factor model best, consistent with the two factors identified by Jost and Thompson (2000): (1) opposition to equality and (2) group domination. The opposition to equality factor refers to an attitude of disapproval for equality within an organization, and group domination reflects a preference to see higher status group members subjugate lower status members. Hypothesis 13 and 14 were tested using the SDO subscales separately. Results for individual factors were non-significant, similar to the results with the seven item SDO scale, so they are not reported in detail.

Second, as mentioned earlier, many authors posit an idiosyncratic definition of negative feedback (Ilgen & Davis, 2000; Kluger & DeNisi, 1996). Therefore, I retested each hypothesis using a difference score between supervisor rating and self rating of overall performance as the independent variable (in place of the negative feedback scale). I referred to this as the feedback discrepancy score. The feedback discrepancy score and the negative feedback three-item composite score, surprisingly, had a non-significant correlation (r = -.02). However, this relationship may be curvilinear because individuals may have expected a large amount of negative feedback and received the

predicted high levels of negative feedback (and vice versa). This is expected because the more extreme scores are likely to be more predictable, and would thus have a lower discrepancy. Therefore, I graphed this relationship in a scatter plot (see Figures 6a and 6b), and found that this relationship did not appear to be curvilinear.

Despite the issues with difference score analyses (e.g., low reliability and incomparable constructs; Edwards 2001; 2002), the alternative, polynomial regression, would be too complicated to perform with additional moderators. Further, analyses with the difference scores are supplementary. Thus, I re-ran all regressions using the difference score between actual and expected feedback. Results were equivalent to the negative feedback scale predictor, with one exception. Using the discrepancy variable, the interaction between negative feedback and MVGO on introjected regulation (Hypothesis 5b) was no longer significant. Excluding this analysis, the results were consistent across the two operationalizations of negative feedback.

Further, approximately half of the participants had organizational records (N = 119) which described their overall feedback score. Therefore, as an additional analysis, I examined the participants' self-reported overall feedback scores (N = 201), increasing the study's power and ability to detect effects, while potentially decreasing the internal validity by relying on the participants self-reported organizational score, as opposed to using their organizationally-provided feedback scores. Using this new independent variable, Hypothesis 8a, which predicted that PVGO would moderate the negative feedback - integrated regulation relationships, was significant in the opposite direction predicted (β = -.22, ΔR^2 = .05, p < .01; see Figure 7). A simple slopes analysis found that at high levels of PVGO, negative feedback was positively associated with

integrated regulation ($\beta = .30$ $p < .05$), while at low levels of PVGO negative feedback was negatively but nonsignificantly associated with integrated regulation ($\beta = -.17$ $p > .05$). Similarly, using these same methods, Research Question 1 (with the full SDO scale) was significant with external regulation ($\beta = .19$, $\Delta R^2 = .02$, $p < .05$; see Figure 8). In this interaction, a simple slopes analysis found that at high levels of SDO (median split above 2.43) negative feedback was negatively but nonsignificantly associated with external regulation ($\beta = -.15$ $p > .05$). However, at low levels of SDO (below and including the median of 2.43) negative feedback was positively but nonsignificantly associated with external regulation ($\beta = .16$ $p > .05$). However, no other hypotheses were found to be supported in these additional discrepancy analyses.

1.4 Study 1 Discussion

In summary, no hypotheses were supported. However, two interactions were consistent with logic presented above. MVGO and negative feedback significantly interacted to predict introjected regulation. This relationship was such that at high levels of MVGO, introjected regulation was consistent at all levels of negative feedback; however, at low levels of MVGO and high levels of negative feedback, introjected regulation was lower. Similarly, PPGO and negative feedback significantly interacted to predict identified regulation such that at high levels of PPGO and negative feedback identified regulation was higher, while at low levels of PPGO and high amounts of negative feedback, identified regulation was higher. This displays the ill effects of negative feedback on individuals with a high level of PPGO.

These results are consistent with my theoretical arguments. For example, MVGO was predicted to moderate the negative feedback – introjected regulation relationship

because individuals would feel more obligated to perform at higher levels of negative feedback due to their avoidant nature. It was found that low levels of MVGO and negative feedback did not affect introjected regulation, while low levels of MVGO and high amounts of negative feedback resulted in lower levels of introjected regulation. Therefore, consistent with my logic, individuals relied more heavily on the controls at higher levels of negative feedback, compared to individuals with low levels of MVGO. Similarly, PPGO was predicted to moderate the negative feedback – identified regulation relationship because negative feedback stands as a direct failure of the high PPGOs goal of succeeding. It was found that at higher levels of negative feedback, introjected regulation was lower for the high PPGO individual, however, the main negative effect of negative feedback on identified regulation was not present. Thus, the logic is still valid in that high PPGO individuals likely viewed the negative feedback as a contradiction to their goal of succeeding.

Other interesting findings also emerged. Positive feedback was positively related to both identified and integrated regulations. Also, individuals with a high level of MPGO tended to have higher levels of introjected, identified, and integrated regulations, regardless of the feedback sign.

Therefore, in Study 1, negative feedback did not positively relate to controlled regulations (Hypothesis 1) or negatively relate to autonomous regulations (Hypothesis 2). Negative feedback and accuracy failed to significantly interact with any regulation (Hypothesis 3). Contrary to self-consistency theory, negative feedback and self-efficacy did not significantly interact to predict perceived accuracy (Hypothesis 4). Negative feedback interacted with MVGO to predict introjected regulation such that higher levels

of MVGO yielded a stronger relationship. Similarly, negative feedback interacted with PPGO to predict identified regulation, such that higher levels of PPGO yielded a weaker relationship. Finally, social structure perspectives (SDO) failed to have any influence on the relationship between negative feedback and either accuracy (Hypothesis 13) or introjected regulation (Hypothesis 14).

Thus, my hypotheses were not supported in Study 1. That said, there were interesting findings that need further explanation. As stated above, positive feedback was positively related to both autonomous forms of regulation, while negative feedback was not significantly related to either regulation. Thus, giving an employee negative feedback does not necessarily diminish that employee's autonomous regulation as predicted; rather, the absence of positive feedback is debilitating to the autonomous regulations.

Similarly, I expected higher levels of negative feedback to yield higher controlled regulations, but negative feedback was only negatively related to introjected regulation. Thus, negative feedback lowered one's obligation-based regulation. Therefore, as negative feedback increases, it is likely that ratees feel less obligated to continue performing. This relationship may have been found because individuals wanted to remove themselves from the task (as predicted); experiencing amotivation for their work, and in fact feeling less tied to their work after receiving their negative feedback. This may be due to the strongly displeasing nature of negative feedback for some. Negative feedback may be so displeasing that individuals may wish to remove themselves from their work and feel less obligated to continue performing.

While all but two predictions regarding GO were not significant, the two significant interactions were interesting findings. As predicted, the strong aversion to failure likely kept individuals with high levels of MVGO from quitting. Thus, the obligation to perform was a strong motivational factor for the individuals with a high level of MVGO. Similarly, as mentioned earlier, individuals with high levels of PPGO set strong performance-based goals and negative feedback stands as a direct failure to that primary goal. Thus, as negative feedback increased, subsequently challenging their primary goal, individuals with high levels of PPGO displayed less identification-based motivation with their work, suggesting that performance goals can diminish one's focus on improvement and development.

It should be noted that because this PA was used for both development and administrative decisions, negative feedback may have been tied to even stronger negatively displeasing associations, because a poor performance rating likely results in negative work consequences (e.g., lack of a raise). However, in a developmental PA, it may be less affectively displeasing, because the focus is on growth and learning.

As mentioned above, the majority of my hypotheses did not receive support. This can be attributed to three main limitations of Study 1. First, the study was designed to detect effects between individuals at one time period; it was not designed to assess a change in regulation within individuals. Therefore, it is possible that the relationships between negative feedback and regulation does exist over time within an individual, but is not demonstrated across individuals. Second, regulation was assessed four months after the participants received their feedback, and the effects of feedback may have diminished over this lengthy break. Efforts were made to prime the feelings participants

had when the actual review was conducted by asking a number of questions about the evaluation before asking participants to rate the variables assessed in this study. However, it is unclear how salient/memorable the review was to participants. Finally, the items used may not have perfectly captured the effects I attempted to assess. For example, self-efficacy was used as a proxy for previous negative feedback; however, as mentioned above, self-efficacy is a function of multiple variables, developing primarily through mastery experiences. Therefore, while flawed, self-efficacy is the most precise way to measure past performance. Similarly, negative feedback was operationalized in two ways, both of which were imperfect. However, the multiple operationalizations of negative feedback may be seen as a strength to this study because I attempted to examine this relationship from all accepted perspectives on defining negative feedback (Ilgen & Davis, 2000; Steelman et al., 2004). Therefore, future work should examine more precise ways of measuring these variables and relationships.

2. STUDY 2

A primary limitation to Study 1 was the inability to assess participants' initial motivation levels; Study 1 only compared motivation between participants, not within participants. Because initial regulation was not measured, it could not be determined if regulation changed. Therefore, Study 2 utilized a longitudinal design which permits an examination of change in regulation and perceived accuracy.

A common finding in the negative feedback literature is that effects of negative feedback become stronger as the amount of negative feedback increases. For example, Nease, Mudgett, and Quiñones (1999) found that initially most individuals were willing to accept negative feedback. However, as the number of negative performance ratings increased over time, individuals with high self-efficacy were less willing to accept the negative feedback, whereas acceptance for individuals with low self-efficacy remained stable. The authors posited that individuals with high self-efficacy most likely perceived their initial negative performance as an aberration from their expected high performance. However, as the amount of negative feedback increased, they became less willing to accept the negative feedback because their performance was too low for it to be considered accurate. Therefore, the ratees viewed their feedback as inaccurate and subsequently dismissed it. This corroborates much of Shrauger's (1975) assumptions. In regards to cognitive evaluations, individuals are more likely to be self-consistent: individuals with a high level of self-efficacy were unwilling to accept repeated negative feedback due to their confidence in their ability to perform the task, whereas individuals with a low level of self-efficacy were willing to accept their negative feedback. Therefore, I make similar predictions with regards to perceptions of accuracy. As in

Hypothesis 4, I predict that self-efficacy will moderate the negative feedback-accuracy relationship such that high levels of self-efficacy will yield a weaker relationship; however, over the course of these two measurements, the second measurement will have a stronger moderated effect.

Hypothesis 15: The moderating effect of self-efficacy on the negative feedback-accuracy relationship will be stronger over time.

Further, Study 2 examines the effects of negative feedback on regulation over time. Shrauger (1975) categorized both motivation and acceptance/accuracy as cognitive evaluations, therefore both are relevant to be examined in the context of negative feedback. Negative feedback has been demonstrated to lead to greater effort (Podsakhoff & Fahr, 1989); however, Nease et al. (1999) demonstrated that the effects of negative feedback tend to diminish over time for individuals who have high self-efficacy. This may not be the case for regulation. For example, in Hypothesis 10, I predicted that individuals with high levels of MPGO receiving a high level of negative feedback will have a higher level of autonomous regulation. When examining this relationship over time, it seems unlikely for this relationship to change because of the feedback recipient's MPGO. High MPGO individuals value learning regardless of the amount of negative feedback they receive.

Similarly, the stability of GO was meta-analytically assessed in Payne, Youngcourt, and Beaubien (2007). Over the course of one to 14 weeks, Payne et al. (2007) found that learning GO had a mean *r* of .66 (*k* = 20), PPGO had a mean *r* of .70 (*k* = 16), and PVGO had a mean *r* of .73 (*k* = 4). These values suggest high stability for trait GO over time. Therefore, across all GO types, the individual's orientation towards

learning remains the same over time regardless of the amount of negative feedback. Thus, I expect their motivational reactions to negative feedback to also remain stable.

Hypothesis 16: The relationship between negative feedback and regulation will be moderated by GO and will remain stable over time.

2.1 Study 2 Method

Participants

Participants were undergraduate students at a large southwestern university (N = 156), recruited from two sections of a required psychology statistics course. This course was chosen due to its wide grade distribution. The average age of the participants was 19.52 and 81% of the participants were female. The majority of participants were in their second year, and 60% of students were White.

Based on a SEM power analysis procedure established by MacCallum, Browne, and Sugawara (1996), a survey of 83 participants was necessary to attain .80 power for an effect size of 0.30 (α = .05). As mentioned above, there were 156 participants in this study, which attains above .99 power for an effect size of 0.30 (α = .05).

Procedure

This study was conducted over three time periods in which participants took two exams. Prior to the first exam (baseline), participants were asked to complete measures of self-efficacy, GO and SDO, regulation, expected grade on the next exam, and perceived credibility of the professor. After participants took their first exam and received their scores (Time 1), participants were asked to complete a survey that assessed their motivation for the next exam, accuracy of the feedback scores, and their

expected grade in the course. The same measures were administered after the second exam (Time 2) as well. A third exam and a cumulative final followed the second exam.

Measures

All measures used a 5-point Likert-scale (1 = strongly disagree, 5 = strongly agree). Coefficient alphas are displayed in the diagonal in Table 15. Correlations among the variables appear below the diagonal of Table 15 while partial correlations controlling for positive feedback, credibility of the rater, and social status are displayed above the diagonal.

Goal Orientation. The four types of GO were assessed using Elliot and Muryama's (2008) measure. This measure has 12 total questions, three for each type of GO. A sample MPGO item read: "I wanted to learn as much as possible from this class." A MVGO item read, "I worried that I may not learn all that I possibly could from this class." A PPGO item read, "It was important for me to do better than other students in this class," while a PVGO item read, "I just wanted to avoid doing poorly in this class."

Motivational Regulation. SDT was measured using the full 17-item scale (Deci, Hodges, Pierson, & Tomasson, 1992). An example of an external regulation item read, "I do my class work so that the professor won't yell at me." An introjected item read, "I do my class work because I want the professor to think that I am a good student." An identified item read, "I do my class work because I want to learn new things," and an integrated item read, "I do my class work because it is fun."

Social Dominance Orientation. The same 7-item SDO measure that was used in Study 1 was used to measure SDO in Study 2.

Perceived Feedback Accuracy. Feedback accuracy was measured using an abbreviated version of Stone, Gueutal, and McIntosh's (1984) four-item feedback accuracy scale, adapted to be relevant to the classroom. An example item read "My grade was an accurate reflection of my performance."

Self-Efficacy. Self-efficacy measured how confident and capable each individual felt in school (Chen & Bliese, 2002). The scale had three items and the instructions asked individuals to answer questions based on their perceived abilities in their psychology statistics course. A sample item read, "I feel confident that my skills and abilities equal or exceed those of my fellow students."

Negative Feedback. Negative feedback was operationalized in two ways. First, a three item scale was borrowed from Steelman, Levy, and Snell (2004). The negative feedback items read: "To what extent did your grade/evaluation: let you know you did not meet your standards," "fell below what you expected to get," and "pointed out mistakes you made." Second, a feedback discrepancy score was calculated by subtracting the respondent's expected grade from their actual grade. Negative scores reflected negative feedback. Expected feedback was assessed with a single item which asked participants "What was your expected grade for this exam (before you took the exam)? Scores were based on a 100 point scale, with lower scores indicating lower performance and higher scores indicating higher performance. Actual feedback was operationalized as participants' *actual* grade for the previous exam. These data came from the course professors and were matched to each participant using student identification numbers.

Control Variables

Positive Feedback. Positive feedback was assessed with the following three items from Steelman et al. (2004): "Thinking of your past test, how much of your overall exam grade: "Praised my performance," "Let me know that I did a good job," and "Was positive."

Credibility of the Rater. Source credibility was measured with three items adapted from McCroskey and Teven (1999). These items read "My professor is competent," "My professor is trustworthy," and "My professor cares about me."

Social Status Discrepancy. Two items were used to assess if the student believed that the professor was in a higher social group than the student, with instructions reading, "There are many people who believe that different individuals enjoy different amounts of social status. You may not believe this for yourself, but if you had to rate yourself and your professor how would you do so?" One item asked what social status the participants perceived themselves to be, and the other item asked of their professor's social status. The following response scale was used: 1 = very low status, 2 = low status, 3 = neither low nor high status, 4 = high status, and 5 = very high status. A difference score was computed between the professor and the student's perceived social status to determine the perceived social status discrepancy between the participants and their professors.

Study 2 Analyses

In Study 2, all hypotheses were evaluated using a parallel process latent growth curve model (see Figure 3), estimated with MPlus 6 software using maximum likelihood estimation. In this model, regulation and accuracy were assessed at three time periods,

while the feedback score was assessed twice. The baseline was an initial survey asking individuals to report GO, SDO, as well as regulation. Time 1 was completed after participants received a grade for the first exam, and Time 2 was collected after participants received a grade for the second exam.

A parallel process growth curve model defines two latent variables for each of the six variables expected to change over time. The first factor represents the intercept, or participants' scores at the baseline measurement. Loadings of the scores at the three time points on this factor are fixed to 1.0. The second factor represents linear growth. Loadings of the scores at the three time points on this factor are fixed to linearly increasing values: 0.0 at baseline, 1.0 at time 1, and 2.0 and time 2. Because the model includes means as well as covariances, the means on these two factors tell the mean initial score and mean linear growth rate for participants on the variable. The variances of these factors tell how much participants' initial scores and linear growth rates vary around the means values. The parallel process part of the model is included by allowing the growth factors for each of the six variables to correlate.

The interaction terms were measured variables, computed from the four GO types, SDO, and negative feedback. Each GO type and SDO was centered at its mean, and then the interaction terms were computed by multiplying the moderator (GO/self-efficacy/SDO) by the feedback score. This was done for each administration which indicates if self-efficacy/GO/SDO moderates the feedback-motivation relationship. In assessing the output, the directional paths from each of the interaction terms to the different motivation types indicate if the interactions are significant at each of the three time-periods.

However, the parallel process growth curve model was only able to assess within-individual effects for the main effects (Hypotheses 1 and 2), while it detected between-individual effects for all moderated analyses. Therefore, in order to assess all moderated effects within-individual, I conducted repeated measures ANOVAs. This was done in accordance with Tabachnik and Fidell (2007). First, negative feedback and all moderated variables were centered at their respective means. They were then entered into a repeated measures model with control variables (i.e., credibility, positive feedback, social status) first, then main effects and moderated effects, and finally the interaction terms. Thus, all moderation hypotheses have two analyses: one analysis determined the between-individual effects from the parallel process growth curve model, and a second analysis determined the within-individual effects for the moderated hypotheses from the repeated measures ANOVA.

Hypotheses 15 and 16 were analyzed as a standard SEM, wherein negative feedback and its interaction with GO types and self-efficacy individually predicted regulation at each of the three assessments. Then, in a second model, the paths from negative feedback and the moderated paths were constrained to be equal for the moderators at Time 1 and Time 2. If the chi-square is significant ($df = 1$; $\chi^2 > 3.84$), then the effects significantly change over time. Then to assess which direction the effects are changing, I compared the path coefficients of these two models (from negative feedback and the GO and self-efficacy interaction to regulation paths) to determine if they were increasing or decreasing over time.

All data screening methods were conducted in accordance with Tabachnick and Fidell (2007) and Odom and Henson (2002). First, each item was assessed for any

outliers, skewness, or kurtosis. At the item level, there were no significant problems with the data with regard to these first three criteria. Next, I screened the data at the scale level, looking for issues with scale reliability (reliabilities can be viewed on the diagonal in Table 15).

A CFA was conducted to examine if each item significantly loaded onto its respective latent factor (i.e., the predetermined factor structure). Whereas the overall model fit for baseline was somewhat poor (χ^2 [764] =1391.90, $p < .001$; CFI = .77; RMSEA = .07; referred to as Model A_b in Table 16), all items significantly factored onto their respective scales. Some items showed slightly high modification indices, but none were large enough to be of concern (all modification indices were less than 15). For Time 1, the overall model fit was also moderately poor (χ^2 [349] =780.14, $p < .001$; CFI = .86; RMSEA = .09; referred to as Model A_1 in Table 17), yet all items significantly factored onto their respective scales. Some items showed slightly high modification indices, but again, none were large enough to be of concern. For Time 2, the overall model fit was also moderately poor (χ^2 [349] =803.07, $p < .001$; CFI = .85; RMSEA = .09; referred to as Model A_2 in Table 18), yet all items significantly factored onto their respective scales. Some items showed slightly high modification indices (modification index values between 15 and 25); however, only a positive feedback item showed a high modification index with the feedback accuracy latent factor. The positive feedback item which asked "To what extent does your professor praise your performance?" was strongly related to how accurate those individuals viewed their feedback. As seen in Table 15, acceptance and positive feedback were highly correlated,

which is consistent with the self-affirmation literature ($r = .73$, $p < .01$; $r = .81$, $p < .01$, at Times 1 and 2, respectively).

Similarly, I also performed a CFA to assess if each scale was distinct from the other by examining a one factor structure for all three time assessments. A one factor structure places all items on a single latent factor and examines model fit; if all items do not factor properly onto the one-item structure, then it can be assumed that some of the scales are distinct. The one-factor CFA for the baseline model resulted in poor fit (referred to as Model B_b in Table 16). Additionally, as was done in Study 1, I examined theoretically plausible interim models in a CFA in order to demonstrate that the predicted factor structure demonstrated the best model fit. For example, I combined all the regulation items into one latent factor (referred to as Model C_b in Table 16) while keeping all other factor structures identical to the predetermined model (as in Model A_b). Further, I did the same thing for all of the GO items (referred to as Model D_b in Table 16).

I performed the same set of analyses for Time 1 as well[6]. First I examined a one-factor structure for all items (referred to as Model B_1 in Table 17. I then combined all positive and negative feedback items onto one latent factor (referred to as Model C_1in Table 17), and did the same for the regulation items (referred to as Model D_1 in Table 17). And finally, I performed the same set of analyses for Time 2 (all items for Time 2 are marked with subscript 2; see Table 18).[7]

[6] The baseline survey contained different scales than Time 1 and 2 surveys. Therefore, the Times 1 and 2 analyses examining scale differentiation are somewhat different than those for baseline.
[7] Time 1 and Time 2 contain identical items. Therefore, the exact same analyses were done and are referred to identically in both tables (e.g., Model G in Table 16 is identical to Model G in Table 17).

As seen in Tables 16, 17, and 18, the models with the predetermined factor structures (i.e., Model A) displayed the best fit compared to the interim models. As mentioned in Study 1, this difference is most important for RMSEA which contains an explicit penalty for model complexity. However, for Time 2, results for Model A_2 were very similar to results for Model C_2. This suggests that at Time 2, combining the positive and negative feedback items into one overall latent factor did not improve model fit. However, theoretically, one would expect positive feedback and negative feedback items to be related. When one receives a high amount of positive feedback, that generally reflects a high level of competency, which should then be coupled with lower levels of negative feedback. Therefore, the fact that these related variables did not improve fit by separating them should not change the predicted factor structure since it is expected for them to be related. Thus, I maintained the predetermined factor structure for Time 2 as well.

Finally, I performed EFAs on each scale to determine if each item properly factored onto its respective latent factor and no others within its same overall scale (e.g., all the external regulation items factored onto the same latent variable and no other regulation latent variables - introjected, identified, or integrated regulation); in these EFAs, all items were of the same scale (i.e., only regulation items were assessed and no other scales). Those results can be seen for each specific scale for each assessment in Tables 19 - 21. Consistent with Study 1, the SDO scale had better fit with a two-factor model (see Table 21); therefore the SDO hypotheses were also tested with each SDO subscale (i.e., opposition to equality and group domination). All other scales were best fit by the pre-determined factors.

2.2 Study 2 Results

As in Study 1, results were first examined using the negative feedback scale as a predictor variable (Model 1), then additional analyses were run on the multiple dimensions of SDO (Models 2 and 3), and the discrepancy of expected versus actual feedback (Model 4). The overall model fit for Model 1 was weak (χ^2 [169] = 454.30, $p <$ .01; CFI = .86; RMSEA = .10). However, fit for parallel process growth curve models are generally poor, especially when using many latent growth variables (Shin, 2006). Thus, this fit is consistent with what is typically seen in parallel process growth curve models. I now discuss the path coefficients as they pertain to the hypotheses in turn for Model 1.

Hypotheses

Hypotheses 1 and 2. Hypothesis 1 predicted that as negative feedback increased, individuals would express greater levels of (a) external regulation and (b) introjected regulation, and Hypothesis 2 predicted that as negative feedback increased (a) identified and (b) integrated regulations would decrease. Results for Hypotheses 1 and 2 appear in Table 22 and showed that negative feedback had non-significant relationships with all four types of regulation, failing to support Hypotheses 1 and 2

Hypothesis 3. Hypothesis 3 predicted a moderated relationship between negative feedback and accuracy on all four forms of regulation. Results for Hypothesis 3 appear in Table 22. Results were non-significant for all moderators. Thus, Hypothesis 3 was not supported.

Within-individual effects were calculated as well (see Tables 23 and 24). Accuracy significantly moderated the relationship between negative feedback and

extrinsic regulation at both Times 1 and 2 (See Figures 9 and 10). This relationship was such that after the students' first exam, all individuals increased in extrinsic regulation as negative feedback increased, however, the students with high perceptions of accuracy increased the most. However, a simple slopes analysis revealed that after their second exam, students with high perceptions of accuracy (one standard deviation above the mean) reported higher extrinsic regulation as negative feedback increased (β =.06 p > .05) similar to individuals with moderate perceptions of accuracy (mean; β =.02 p > .05), while students with a low perceptions of accuracy (one standard deviation below the mean) reported lower extrinsic regulation as negative feedback increased (β = -.05 p > .05).

Hypothesis 4. Self-efficacy was expected to moderate the negative feedback-perceived accuracy relationship, such that higher levels of self efficacy would result in a weaker relationship. Results for Hypothesis 4 appear in Table 25. The interaction of self efficacy and negative feedback after exams 1 and 2 were significant (β = .54, p < .01; β = -.57, p < .01 respectively). These results appear in Figures 11 and 12. A simple slopes analysis found that, after exam 1, students with high self-efficacy (median split above 4.00) who received high levels of negative feedback reported higher accuracy (β =.39 p < .05), while students with low self-efficacy (median split including and below 4.00) reported lower accuracy (β = -.20 p < .05). However, after exam 2, the opposite was true: students with high self-efficacy (median split above 4.00) who received high amounts of negative feedback reported lower perceived accuracy (β = -.18 p > .05), whereas students with low self-efficacy (median split including and below 4.00) reported higher perceived accuracy as the amount of negative feedback increased (β

=.36 $p < .05$). Results from Time 1 are in the opposite direction of what was predicted, whereas results at Time 2 coincide with self-consistency theory, providing partial support for Hypothesis 4.

The within-individual effects can be seen in Table 26. Neither interaction was significant. Therefore, within-individual effects were not the same as the between-individual effects.

Hypothesis 5. MVGO was expected to moderate the negative feedback - (a) external and (b) introjected regulation relationship such that the relationship would get stronger at higher levels of MVGO. Results for Hypothesis 5 appear in Table 22. No support was garnered for Hypotheses 5a or 5b, given by the non significant interactions between negative feedback and MVGO on both external and introjected regulations.

The results for the within-individual effects at Time 1 are in Table 27, and the within-individual effects at Time 2 are in Table 28. No interactions were significant, therefore, Hypothesis 5 failed to garner support when examining both within-individual and between-individual effects.

Hypothesis 6. PVGO was expected to moderate the negative feedback - (a) external and (b) introjected regulation relationship such that the relationship would get stronger at higher levels of PVGO. Results for Hypothesis 6 appear in Table 22. PVGO interacted significantly with negative feedback only at Time 2 to predict introjected regulation ($\beta = -.43$, $p < .01$; see Figure 13). A simple slopes analysis found that at high levels of PVGO (median split above 4.00) the association between negative feedback and introjected regulation was nonsignificant ($\beta = .07$ $p > .05$), while at low levels of PVGO (median split below and including 4.00) the association between negative

feedback and introjected regulation was negative (β = -.20 $p < .05$). However, Hypothesis 6b was not supported, despite significant results. Hypothesis 6 predicted an overall positive slope for negative feedback on the controlled regulations, which was not present. However, it was found that at high levels of PVGO, negative feedback had little effect on introjected regulation, while at low levels of PVGO, higher negative feedback resulted in lowered introjected regulation. This suggests that PVGO has a buffering ability for obligation-based regulation when receiving high levels of negative feedback.

The within-individual effects can be viewed in Tables 29 and 30. No effects were significant. Therefore, these hypotheses were supported only for the between individuals effect for on introjected regulation.

Hypothesis 7. MVGO was expected to moderate the negative feedback - (a) integrated and (b) identified regulation relationships such that it would get weaker at higher levels of MVGO. MVGO displayed a positive relationship with identified regulation (β = .33, $p < .05$; see Table 22), suggesting that individuals with higher levels of MVGO tended to have higher levels of integrated regulation in their statistics course. However, the data did not support the interactions predicted in Hypotheses 7a or 7b.

The results for the within-individual effects at Time 1 are in Table 27, and for Time 2 in Table 28. No interactions were significant. Therefore, Hypothesis 7 was not supported for either within- or between-individuals effects.

Hypothesis 8. PVGO was expected to moderate the negative feedback- (a) integrated and (b) identified regulation such that the relationship would get weaker at higher levels of PVGO. However, neither interaction was significant (see Table 18).

The within-individual effects can be viewed in Tables 29 and 30. No effects were significant. Therefore these hypotheses were not supported either between or within individuals.

Hypothesis 9. MPGO was expected to moderate the negative feedback - (a) integrated and (b) identified regulation such that the relationship would get stronger at higher levels of MPGO. Results from Hypothesis 9 appear in Table 22. MPGO significantly interacted with negative feedback at both Times 1 and 2 on identified regulation ($\beta = .51$, $p < .01$; $\beta = .33$, $p < .01$ respectively). A simple slopes analysis found that, at Time 1, for participants with high levels of MPGO (median split above 4.00), the association between negative feedback and identified regulation was positive ($\beta = .42$ $p < .05$), while for low levels of MPGO (median split below and including 4.00), the association between negative feedback and identified regulation was negative and nonsignificant (see Figure 14; $\beta = -.15$ $p > .05$). The same relationship existed at Time 2, though not as strong (see Figure 15). This supports Hypothesis 9b, in that MPGO significantly interacted with negative feedback at both time periods, while Hypothesis 9a was not supported.

The within-individual effects can be viewed in Tables 31 and 32. Integrated regulation was not significant at either time assessment, but identified regulation was significant at Time 1 (F [2, 100] = 4.39, $p < .01$; see Figure 16). In this interaction, examining the change in regulation from Baseline's assessment, high levels of MPGO (one standard deviation above the mean) demonstrated the strongest increase in identified regulation ($\beta = .13$ $p > .05$), moderate levels of MPGO (at mean) demonstrated a slightly less positive slope ($\beta = .07$ $p > .05$), while low levels of MPGO demonstrated a

slight negative slope as negative feedback increased (β = -.01 $p > .05$). This relationship is comparable to the between effects analysis shown in Figures 14 and 15.

Hypothesis 10. MPGO was expected to moderate the negative feedback - (a) external and (b) introjected regulation relationships such that it would get stronger at higher levels of MPGO. Results for Hypothesis 10 appear in Table 22. MPGO significantly interacted with negative feedback to predict introjected regulation at Time 1 (β = .21, $p < .01$). Consistent with Hypothesis 10b, a simple slopes analysis found that at high levels of MPGO (median split above 4.00) negative feedback was positively associated with introjected regulation (β =.24 $p < .05$), while at low levels of MPGO (median split below and including 4.00) negative feedback was not significantly associated with introjected regulation (see Figure 17; β =.09 $p > .05$). This suggests that individuals with high levels of MPGO have greater perceived obligated-based regulations at higher levels of negative feedback.

The within-individual effects can be viewed in Tables 31 and 32; however, all effects were not significant.

Hypothesis 11. PPGO was expected to moderate the negative feedback - (a) external and (b) introjected regulation relationships such that it would get stronger at higher levels of PPGO. Results for Hypothesis 11 appear in Table 22. Results revealed that PPGO and negative feedback significantly interacted at one time period on external regulation. A simple slopes analysis found that at Time 2, at high levels of PPGO (median split above 3.33), there was a nonsignificant positive association between negative feedback and external regulation (β =.04 $p > .05$), while at low levels of PPGO (median split below and including 3.33), as negative feedback increased, there was a

sharp negative slope in external regulation (β =-.26 $p < .05$; see Figure 18). However, Hypothesis 11a was not supported because Hypothesis 11a was predicated on an overall positive slope for introjected regulation, which was not present.

The within-individual effects can be viewed in Tables 33 and 34; however, results were not significant.

Hypothesis 12. PPGO was expected to moderate the negative feedback - (a) integrated and (b) identified regulation relationships such that it would get weaker at higher levels of PPGO. Results from Hypothesis 12 appear in Table 22. Hypothesis 12b was supported at one time period. The interaction between negative feedback and PPGO on identified regulation was significant at Time 1 (β = -.26, $p < .05$). As seen in Figure 19, a simple slopes analysis found that at high levels of PPGO (median split above 3.33) negative feedback had a nonsignificant association with identified regulation (β = -.01, $p > .05$), while at low levels of PPGO (median split below and including 3.33) negative feedback had a positive association with identified regulation (β =.22 $p < .05$). However, results failed to support Hypothesis 12b since the overall negative effect of negative feedback on identified regulation was not present. Results however did reveal the comparatively negative effects of setting performance based goals.

The within-individual effects can be viewed in Tables 33 and 34; however, results were not significant.

Hypothesis 13. Hypothesis 13 predicted that the relationship between negative feedback accuracy would be moderated by SDO, such that the relationship would get stronger at higher levels of SDO. Results for the interaction between negative feedback and SDO at both times were not significant (see Table 25).

The within-individual effects can be viewed in Table 35; however, results were not significant.

Hypothesis 14. Hypothesis 14 predicted that negative feedback and introjected regulation would be moderated by SDO, such that the relationship would get stronger at higher levels of SDO. However, results were not significant (see Table 22).

The within-individual effects can be viewed in Tables 36 and 37; however, results were not significant.

Research Question 1. The extent to which SDO moderated the effect of negative feedback on each of external, identified, and integrated regulations was examined as well. Results from Research Question 1 appear in Table 22. SDO did not significantly interact with negative feedback at any time period except for integrated regulation at Time 2. The interaction ($\beta = .50$, $p < .01$; see Figure 20) was significant, and a simple slopes analysis indicated that at low levels of SDO (median split below and including 2.43) negative feedback was negatively associated with integrated regulation ($\beta = -.33$ $p < .05$), while at high levels of SDO (median split above 2.43) negative feedback was positively but nonsignificantly associated with integrated regulation ($\beta = .11$ $p > .05$). Thus, there is some evidence that SDO influences the negative feedback-integrated regulation relationship.

The within-individual effects can be viewed in Tables 36 and 37; however, results were not significant.

Hypothesis 15. Hypothesis 15 predicted that, over the two assessments, individuals would respond differently to their feedback based on their self-efficacy. This hypothesis was evaluated in a SEM. Results from the chi-square difference test suggest

that constraining the moderated self-efficacy paths significantly diminish model fit, revealing that self-efficacy's moderated effects change over time (original χ^2 [1] = 454.30; constrained χ^2 = 522.02; difference χ^2 = 67.72; $p < .05$). After examining the path coefficients and Figures 11 and 12, individuals with high self-efficacy showed high levels of perceived accuracy for higher levels of negative feedback at Time 1. However, for Time 2, individuals with high self-efficacy showed diminished perceptions of accuracy as negative feedback increased. Individuals with low self-efficacy had the opposite relationship. They perceived negative feedback at Time 2 as being more accurate than at Time 1. Therefore, as predicted, individuals with a higher level of self-efficacy perceived negative feedback as less accurate over time, while individuals with a lower level of self-efficacy perceived negative feedback as more accurate over time.

Hypothesis 16. I predicted that the moderated relationships between negative feedback, regulation, and GOs would remain consistent over time because one's learning/performance goals remain constant, so too would one's motivational response to negative feedback. Results revealed that MPGO, MVGO, PVGO, and PPGO all had significant chi-square difference values (χ^2 difference > 3.84, $df = 1$; $p < .05$; see Table 38). Similarly, as seen by the interactions which were significant at only one time period, and the interactions that were significant in opposing directions at the two time periods, individuals did change in their motivational response to their negative feedback, based on their goal-orientation. Thus, Hypothesis 16 was not supported, in that individuals did change their motivational responses to negative feedback based on their GO.

Supplemental Analyses

Two sets of supplementary analyses were conducted. First, SDO analyses were conducted separately for each SDO factor: an opposition to equality based factor (Model 2) and a group domination based factor (Model 3). As a comparison, results for Model 1 showed that SDO and negative feedback at Time 2 significantly predicted integrated regulation, as seen in Hypothesis 14 (β = .50, $p < .01$; see Figure 20). This was also demonstrated to be significant, but not in support of Hypothesis 14, for Model 2 (β = -.30, $p < .05$). However, this interaction was significant and supportive for Model 3 at Time 2 (β = .62, $p < .01$).

In Model 1, SDO did not significantly moderate the negative feedback-perceived accuracy relationship. However, in Model 2, SDO did moderate the negative feedback-perceived accuracy relationship at Time 2 (β = .56, $p < .01$; see Table 39 and Figure 21). As predicted, a simple slopes analysis found that individuals with a low level of SDO (median split below and including 2.43) perceived higher levels of negative feedback as being less accurate (β -.21 $p < .05$) [x], whereas individuals with a high level of SDO (median split above 2.43) perceived higher levels of negative feedback as being more accurate (β =.32 $p < .05$) [x]. These results provide some support for Hypothesis 13. However, Model 3 revealed the opposite pattern of results (β = .88, $p < .05$), such that individuals with a low level of SDO perceived negative feedback as more accurate, whereas individuals with a high level of SDO perceived negative feedback as less accurate. All other SDO-based relationships were of similar magnitude and direction as seen with the overall SDO scale.

Second, consistent with Study 1, all hypotheses were retested with the negative feedback discrepancy variable (Model 4). The two operationalizations of negative feedback were surprisingly negatively correlated (r = -.65, p < .01; r = -.57, p < .01, at Times 1 and 2, respectively). This relationship was examined via scatter plot to check for curvilinearity (see Figures 22a, 22b, 23a, and 23b). However, neither time period revealed a strong quadratic relationship.

Results for Model 4 revealed significantly worse model fit (χ^2 [169] = 730.62, p < .01; CFI = .71; RMSEA = .15; χ^2 difference = 276.32; p < .01). None of the direct or moderated results were found to be significant with this operationalization of negative feedback, except for self-efficacy's significant moderation of the negative feedback and accuracy relationship (β = -.72, p < .01), which was in the same direction as depicted in Figure 11 (Hypothesis 3). As mentioned above, difference scores are notoriously unreliable (see Edwards, 2001; 2002), therefore, as noted above, these results must be interpreted cautiously.

2.3 Study 2 Discussion

Taking into account initial motivation and assessing change within-individual did not result in a clearer picture of the effects of negative feedback, yet there was more support for the between-individual effects in Study 2 than in Study 1. Self-efficacy was a significant moderator of the negative feedback – accuracy relationship, revealing that individuals with high levels of self-efficacy were less likely to perceive higher levels of negative feedback as accurate, while individuals with low levels of self-efficacy perceived negative feedback as more accurate. This supports self-consistency theory, in that individuals view consistent feedback as most accurate. However, at Time 1, the

interaction between negative feedback and self-efficacy was in the opposite direction of what was predicted: individuals with high self-efficacy perceived higher levels of negative feedback as more accurate, whereas individuals with low self-efficacy perceived higher levels of negative feedback as less accurate. This seems to support self-affirmation theory, which posits that individuals with lower self-efficacy would be in even greater need of positive feedback, which would subsequently make negative feedback more devastating for them. However, this relationship was displayed only for the short term; over time, it is possible that individuals display more self-consistent processes as they become more accustomed to the task and the situation. Initially, individuals with low self-efficacy may try to set goals in a new class to differentiate their current performance goals from their past performance. But, as they become acclimated and socialized, the individuals with low self-efficacy may fall back into their past tendencies and begin to prefer consistent knowledge.

Correspondingly, the interaction between negative feedback and self-efficacy on perceived accuracy (Hypothesis 15) changed over time. This is most explicitly seen by the complete reversal in direction of the interaction coefficient in Hypothesis 4. Originally, I predicted this interaction to be in the same direction at both times, yet to be stronger at Time 2, as seen in Nease et al. (1999). However, this can be explained by my related discussion above. Initially, individuals with low self-efficacy may treat a new situation (i.e., classroom) as an opportunity to change their past (i.e., low) performance. However, as they become more socialized and accustomed to the situation, they will eventually maintain consistent processes with which they are used to in the past. Thus, self-affirmation theory may best explain initial reactions; however, long term results

may best be understood with self-consistent processes. Future research is needed to examine this proposition.

When examining within-individual effects for Hypothesis 3, analyses revealed that self-efficacy significantly interacted with negative feedback in the prediction of extrinsic regulation. This relationship was such that at both time assessments, high levels of self-efficacy coupled with high levels of negative feedback resulted in greater amounts of extrinsic regulation. Therefore, individuals with high levels of self-efficacy were most externally motivated when negative feedback was at its peak. Self-consistency theory would predict that high levels of self-efficacy, coupled with high levels of negative feedback would result in less motivation since individuals want to maintain consistent information. However, it is possible that motivation is a different process than perceptions of accuracy, and that motivation is not a strongly cognitive based factor as Shrauger (1975) proposed. For example, Thierry (1998) proposed that motivation and satisfaction are highly related, which contradicts Shruager's (1975) proposition of motivation being a more cognitively based construct than satisfaction. If motivation is strongly related to satisfaction, then it would be expected to see self-affirming results, which has been seen in the past (Swann et al., 1987).

For the GO hypotheses, low PVGO was associated with a negative slope for the increase of negative feedback on introjected regulation over time, while the negative feedback-introjected regulation slope for high PVGO people did not change across time (Hypothesis 6b). While I predicted an increase in introjected regulation for individuals with high PVGO, this significant interaction is consistent with my expectation. Individuals with high levels of PVGO seek to avoid failure; when confronted with

failure, it is likely that the strongest motivator for them to continue performing is through obligation-based contingencies. Absent that contingency, the high PVGO individual will cease performing and quit. But, as displayed by their maintained levels of introjected regulation, their obligation to perform kept them in this course and continued to push them to perform.

For both Time 1 and 2, at high levels of MPGO and higher levels of negative feedback there was a positive slope for identified regulation, displaying the positive effects of setting learning goals in achievement situations (Hypothesis 9b). This effect was also found within-individuals as well. When individuals set learning goals, they increased their identified regulation toward the class, which presumably resulted in greater effort. It should be noted that the relationship was weaker, yet still significant, at Time 2 between-individuals. This is most likely because individuals peaked in identification and effort after exam 1; after that increase, it was no longer necessary to stay as involved in order to learn the most from the class because they were already at a higher level of performance due to their increase after exam 1. Thus, over time, it is logical that the interaction between MPGO and negative feedback would get weaker, because the earlier change regulation is no longer necessary, it only needs to be maintained.

At high levels of PPGO, there was a positive slope in external regulation as negative feedback increased, while at low levels of PPGO, there was a negative slope in external regulation (Hypothesis 11a). While the overall positive slope for external regulation did not exist, these results do support the concepts I proposed: negative feedback forces individuals with PPGOs to rely heavily on the external controls of

performance in the face of failure. Similarly, PPGO significantly interacted with negative feedback at Time 1 on identified regulation (Hypothesis 12b). Similar to Study 1's findings, at high levels of PPGO there was a negative slope on identified regulation as negative feedback increased, while at low levels of PPGO, there was a positive slope on identified regulation. This prediction was most likely supported because individuals with high levels of PPGO wanted to remove themselves from performing because the negative feedback directly challenged their primary goal of succeeding; however, as stated in Hypothesis 11a, individuals focused on the external rewards in order to continue performing.

In exploratory analyses, I found that negative feedback and SDO significantly interacted to predict integrated regulation. This relationship was such that individuals with high SDO had the highest integrated regulation at the highest levels of negative feedback, while individuals with low SDO had higher integrated regulations at low levels of negative feedback. I had also predicted that relationship for negative feedback, SDO, and introjected regulation, but it was not found. Thus, individuals were most autonomously motivated to perform when the hierarchy was most salient (i.e., at the highest levels of negative feedback). Therefore, individuals with high SDO may not have perceived the negative feedback as an obligation to overcome. Instead performance was more enjoyable at higher levels of negative feedback, perhaps because the social hierarchy was most salient.

In supplementary analyses, I examined the SDO hypotheses with the two factors of SDO separately. The group-based dominance facet significantly interacted with negative feedback to predict integrated regulation; individuals who set goals to maintain

the social hierarchy and received higher levels of negative feedback experienced more autonomous regulation, because negative feedback maintains the social hierarchy. Individuals who are high in group-dominance are more likely to be concerned with upholding the social hierarchy, because their concern is that the high status members are in control while low status members are subjugated. However, individuals with a high opposition to equality are only concerned with reward disbursements going unequally to high status members (Jost & Thompson, 2000), therefore the social hierarchy is not as salient of a factor for these individuals. Thus, it seems logical that individuals who are most concerned with maintaining the social hierarchy (group dominance) would have the highest autonomous regulations in situations which make the social hierarchy most salient.

Hypothesis 16 proposed that the moderating effect of GO on the effect of negative feedback on each form of regulation would not change over time, but this was not found. The moderating effects of MPGO on the negative feedback - identified regulation relationship (Hypothesis 9b) was the only relationship supported at both time periods. Thus, this effect was fairly consistent. However, all other moderated hypotheses displayed different effects over the two time periods. It is possible that since feedback provides information to the ratee, it could be interpreted in different ways, which could potentially lead to changes in goals. For example, an individual with high levels of MPGO may be greatly interested in learning as much as possible from a course. However, after receiving negative feedback, that same individual could shift his or her goals to be more PPGO focused since it is required. This references the difference between trait-based GO and state-based GO. An individual may generally be strongly

linked to a given GO (trait-based GO), however, when a situation presents itself where adaptation is necessary, the individual shifts his or her goals and meets the necessary expectations (state-based GO). Thus, it is possible that Hypothesis 16 was not supported because of some conflict between the state and trait-based GOs, which would result in changed goals over different assessments.

Finally, using the difference score between expected and actual feedback as a dependent variable had only one significant interaction as a predictor (compared to the negative feedback scale). However, difference scores have questionable reliability and questionable construct-related validity because they are a combination of two distinct scales (Edwards 2001; 2002). Future research should investigate alternative methods for operationalizing positive and negative feedback in a non self-report manner.

3. OVERALL DISCUSSION AND CONCLUSIONS

The purpose of this study was to assess *why* individuals are more or less motivated from negative feedback, as well as examine *which* individuals are most motivated from negative feedback. Over the two studies conducted, results were inconsistent. In Study 1, MVGO and PPGO were shown to be significant moderators of the negative feedback-regulation (introjected and identified regulation, respectively) relationship. In Study 2, self-efficacy, PVGO, MPGO, and PPGO were shown to be significant moderators of the negative feedback-regulation relationship at multiple times. Further, negative feedback had a negative relationship with introjected regulation in Study 1, whereas it was not significantly related to any regulation in Study 2. Similarly, self-efficacy moderated the negative feedback-perceived accuracy relationship only in Study 2. Finally, SDO significantly moderated the negative feedback-integrated regulation relationship in Study 2, and a further breakdown of the SDO scale revealed other significant relationships. Therefore, these effects were highly incongruent.

The only consistent finding between the two studies was that high PPGO individuals had less identified regulation at higher levels of negative feedback, whereas individuals with low levels of PPGO increased their identified regulation (Hypothesis 12b). Thus, the one consistent finding from both studies was the debilitating effects of setting high performance goals with high levels of negative feedback on one's identified regulation. With those goals present, individuals likely feel a direct sense of failure after receiving negative feedback, and subsequently identify less with their work. Therefore, consistent with much of the PA literature, raters should facilitate setting learning goals

throughout the PA process in order for the ratee to perceive negative feedback as constructive, as opposed to derogatory.

There are a number of potential reasons for the inconsistent findings across the two studies. First, the study designs were quite different. In Study 1, regressions were conducted to predict what individuals' perceived regulations were after receiving feedback, with a four month interval in between. Thus, all analyses assessed between individual effects. However, in Study 2, both between and within-individual effects were assessed.

Further, one study took place in a work-setting, while the other took place in a classroom which are vastly different environments. Similarly, the type of feedback was also not entirely corollary. Feedback in the work setting was much more subjective, based on an overall rating given by a manager, while feedback given in the classroom was much more objective with multiple choice items and short answer problems. Additionally, the dependent measure of a test grade is generally used to operationalize academic performance and learning, which may be perceived differently than the feedback given in a work setting which has implications beyond a course grade. These likely contributed to the different effects observed. That said, the difference in settings between these two studies should not be viewed as a weakness of this work, rather, these multiple setting settings allow for a better understanding of the true relationships among the constructs. By assessing variables in a variety of settings, one is able to more completely understand the limits and generalizations of the relationships being examined. Therefore, these multiple settings allow for a more complete understanding of the external validity of these findings.

Finally, the measures used in this study were imprecise gauges of the constructs examined. This was evident by the relatively low reliability for the negative feedback scale, as well some of the regulation scales. This is of particular importance since these scales are the main independent and dependent variables for this work. That said, negative feedback was operationally defined in a variety of ways to attempt to address this issue, and multiple dependent variables were examined to aid in understanding the theoretical constructs discussed. Therefore, while the low reliability of the different scales may have affected the results, I attempted to address all potential reliability issues by examining each construct in multiple ways.

3.1 Theoretical Implications

As discussed in Deci (1971) and Deci et al. (1989), negative feedback is expected to diminish intrinsic motivation and increase extrinsic motivation. This theoretical link was expected because negative feedback challenges one's competency, a global need, and when that need is not being fulfilled, individuals express less enjoyment with a task at hand. However, results from both studies suggest that this is not necessarily true on the full spectrum of extrinsic motivation. Specifically, negative feedback was not a significant predictor of any regulation, aside from introjected regulation in Study 1, which was not supportive of Hypothesis 1. Thus, these results question assertions made by Deci and colleagues that negative feedback has detrimental effects on the more autonomous forms of regulation. That said, positive feedback did significantly predict the more autonomous forms of regulation in Study 1, while in Study 2, positive feedback significantly correlated with identified and integrated regulation at Time 2 only ($r = .18$, $p < .05$; $r = .17$, $p < .05$, respectively). Therefore,

while increasing the amount of negative feedback does not necessarily diminish autonomous regulation, increasing the amount of positive feedback tends to improve those regulations, as Deci (1971) demonstrated. This suggests that negative feedback may not play as critical role in determining competency as once believed; rather, positive feedback, or lack thereof, is a greater determinant of regulation.

Additionally, self-efficacy moderated the relationship between negative feedback and accuracy for both the negative feedback scale and for the difference score in Study 2. Therefore, changes within individual displayed the self-consistent processes predicted (Hypothesis 4). However, initially, the relationship reflected self-affirmation based processes, in that individuals with low self-efficacy perceived higher levels of negative feedback as being less accurate, whereas individuals with high self-efficacy perceived higher levels of negative feedback as more accurate. An examination of the self-consistency and affirmation literature warrants a more broad assessment (i.e., meta-analysis) to examine these effects over time in a variety of situations. As Nease et al. (1999) found, which was corroborated here, individuals were more likely to display self-consistent processes after individuals became situated in their course. It is possible that self-consistent processes occur within individuals over time; however, individuals may be more self-affirming when examined on a more short-term basis.

In regards to GO, Study 2 empirically supported some of Ilgen and Davis' (2000) predictions. MPGO[8] significantly moderated the negative feedback - identified regulation relationship at both time periods both within and between individuals. Thus,

[8] Ilgen and Davis (2000) referred to mastery GO as Learning GO.

setting high MPGO-based goals changes the way an individual responds to negative feedback. By setting learning directed goals, individuals respond to negative feedback as a way to perfect their performance, bringing them closer to fully mastering the task. Therefore, when an individual receives negative feedback and tends to set learning directed goals, they experience more identified regulation towards their work, possibly because negative feedback suggests new ways to increase their knowledge and improve performance. In contrast, setting performance-based goals diminishes identified regulation. When PPGO-based goals are set, individuals concern themselves not with learning or improving but with succeeding, regardless of the amount of knowledge gained. Thus, it is not surprising that high PPGOs felt less identified at higher levels of negative feedback, because it posed a direct threat to their perceived competency and their primary goal of performance. Therefore, these two findings partially support Ilgen and Davis' (2000) theoretical model.

Finally, I turn to the extent to which SDO moderates the negative feedback - regulation/accuracy relationship. This discussion must first be preceded by a discussion on the development of reliable and construct valid measures. Researchers must come to consensus on whether the SDO measure contains one or two factors, as exemplified by variation in results by using these separate factors. However, as mentioned earlier, it seems likely that the group-dominance factor of SDO most closely resembles the desire to set goals that maintain the social hierarchy. In Study 2, group-dominance and the full SDO measure evinced the predicted effects: individuals with high levels of group-dominance SDO had a positive slope on their autonomous regulations at higher levels of negative feedback, presumably because of the saliency of maintaining the social

hierarchy. This relationship demonstrates the strength of SDO. High SDO individuals' desire to maintain the hierarchy is so strong that it minimizes the negative effects of receiving negative feedback, and increases one's identified regulation and subsequently the enjoyment of the task.

3.2 Practical Implications

The major implication of this work is that negative feedback does not appear to diminish the more autonomous forms of regulation. Audia and Locke (2003) proposed that a large reason that negative feedback is so affectively displeasing is that it is so rarely given. Similarly, the rating problem of leniency has been attributed to fear of giving negative feedback (Murphy & Cleveland, 1995). However, a necessary component of improvement is knowledge of what needs to be improved. Therefore, negative feedback is a necessity to lead to improvement; absent constructive criticism, individuals do not know what they lack (Audia & Locke, 2003). Accordingly, this study has shown that giving negative feedback does not necessarily diminish one's enjoyment or identification with work. Thus, there should be less fear about giving constructive criticism, knowing that the ratee's identification with the task and enjoyment is unlikely to change from it.

GO moderated some of the negative feedback and regulation relationships. Individuals who tend to set learning goals were more identified and autonomously motivated with their work, whereas individuals setting performance based goals responded less positively and expressed higher forms of controlled regulation. Therefore, related to the conclusions of Payne et al. (2007) that high MPGO individuals put forth greater effort in a variety of situations, individuals with higher MPGO tended

to display greater autonomous regulation in this study, especially in cases where they have been provided with negative feedback. In contrast, individuals with high PPGO were less likely to put forth autonomous effort in the face of negative feedback. Thus, positions that tend to receive large amounts of negative feedback or where there is a long learning curve (and therefore individuals receive large amount of negative feedback, at least initially) should be filled by high MPGOs because of their willingness to improve from negative feedback. Similarly, GO can be situationally-induced (Dragoni, 2005); thus, encouraging individuals to set learning, as opposed to performance, goals would likely augment autonomously-driven regulations.

Finally, although high SDO is traditionally construed as a negative trait (Siddanius & Pratto, 1999), this study demonstrated that when individuals with high levels of SDO are given high levels of negative feedback, they were more autonomously motivated than when they were given low levels of negative feedback. Therefore, high SDOs appear to respond positively to negative feedback, while negative feedback is traditionally associated with deleterious effects (Ilgen & Davis, 2000). However, it is unclear if individuals with a high level of SDO were motivated to maintain the social hierarchy or to disprove the rater by improving performance.

3.3 Limitations and Future Research

First, the proposed moderating effects of negative feedback on extrinsic motivation (Deci, 1971; Deci et al., 1989) and overall motivation (Podsakhoff & Farh, 1989) should be reassessed in future studies. Negative feedback only displayed debilitating effects on introjected regulation and was not related to the other three regulations. Thus, the direct effects of negative feedback on motivation, as proposed

previously in the literature (Deci, 1971; Deci et al., 1989), should be investigated further. Therefore, negative feedback, in either classroom or in a work setting, is not likely to yield any increases in the different types of extrinsic motivation. However, negative feedback often yields strong negative effects on affective measures (Shrauger, 1975). As mentioned earlier, researchers need to come to consensus on how to best measure negative feedback. Using the self-report measure of negative feedback is yoked with all of the issues associated with self-report measures (dishonesty, good subject response, social desirability, Hawthorne effect, etc.), while difference scores are associated with statistical and theoretical problems (Edwards 2001; 2002).

Additionally, in Study 1, the discrepancy measure of negative feedback was assessed by examining the difference between supervisor and self-ratings of overall performance. However, Ilgen and Davis (2000) and Kluger and DeNisi (1996) define negative feedback as a discrepancy between *expected* feedback and actual feedback. It is possible that expected feedback may be different than the measured self-rating, which may explain why the discrepancy scores did not show strong effects. An individual's expectations may be different than self-ratings because expectations, in this context, would refer to ratings participants predicted their professor/supervisor would give them; self-ratings on the other hand, take into account personal feelings of success or failure. Therefore, the two constructs may not perfectly overlap.

Furthermore, as mentioned above, the feedback given in the classroom setting may have been perceived differently than the feedback given in the work setting. Feedback in the classroom was a more objective assessment of performance while the work setting had a more subjective based assessment of performance. Similarly, the

effects of negative feedback in a course may have different implications than feedback in the work setting, especially feedback tied to monetary rewards and promotions. The difference between these two types of feedback should be assessed in further studies as it may have a strong effect on the industrial/organizational research literature which often uses students as research participants.

The hypotheses assessing self-consistency theory did not find consistent results and should be assessed on a wider participant pool. Further, I failed to assess how much an individual's self-efficacy was internalized. It is possible that individuals may have felt that they did not have a high self-efficacy, but that was not critical to their perceptions of success. Therefore, future studies should add in internalization of self-efficacy as a control to assess self-consistency theory hypotheses.

Finally, the explanations provided for the significant moderated relationships in this study were not directly assessed. For example, it is unclear if individuals with high SDOs wanted to maintain the social hierarchy or wanted to contradict the rater's assessment. Further it was speculated that individuals high in MPGO perceive negative feedback as way to improve their performance, but this was not explicitly tested. Therefore, future research should test the extent to which the reasons explain these relationships.

3.4 Conclusions

The nature of negative feedback is highly capricious. Individuals can respond in a variety of ways based on a variety of factors. As demonstrated in this study, negative feedback had no direct relationship on the autonomous forms of regulation, and had a negative direct effect on introjected regulation in one study. It was also demonstrated

that MPGO, PPGO, and PVGO did moderate the negative feedback-regulation relationship at times.

In summary, this study makes the following two-fold contribution to the feedback literature. First, by using SDT's conceptualization of regulation, I attempted to explain *why* individuals are motivated by feedback (Meyer, Becker, & Vandenberghe, 2004) and found that negative feedback resulted in a decrease in obligated motivation. Second, this study is the first empirical examination of all GO dimensions and SDO as moderators of the negative feedback-regulation relationship, whereby I found MPGO, PPGO, and facets of SDO as significant moderators of the negative feedback-regulation relationship.

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APPENDIX A

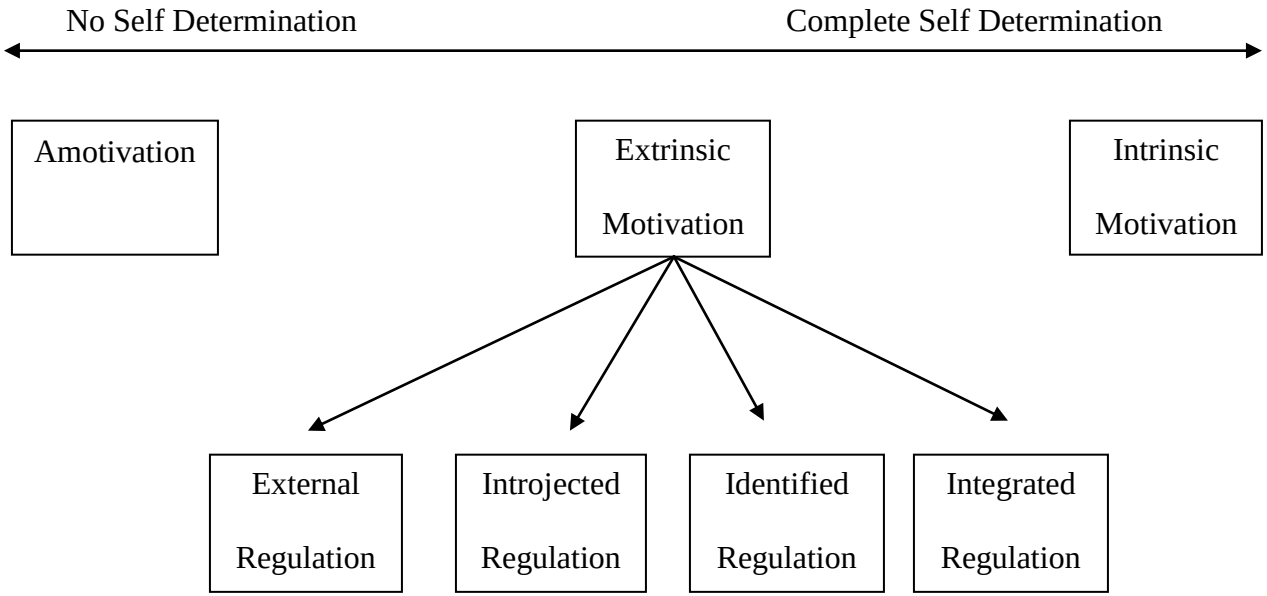

Figure 1. Continuum of self determination.

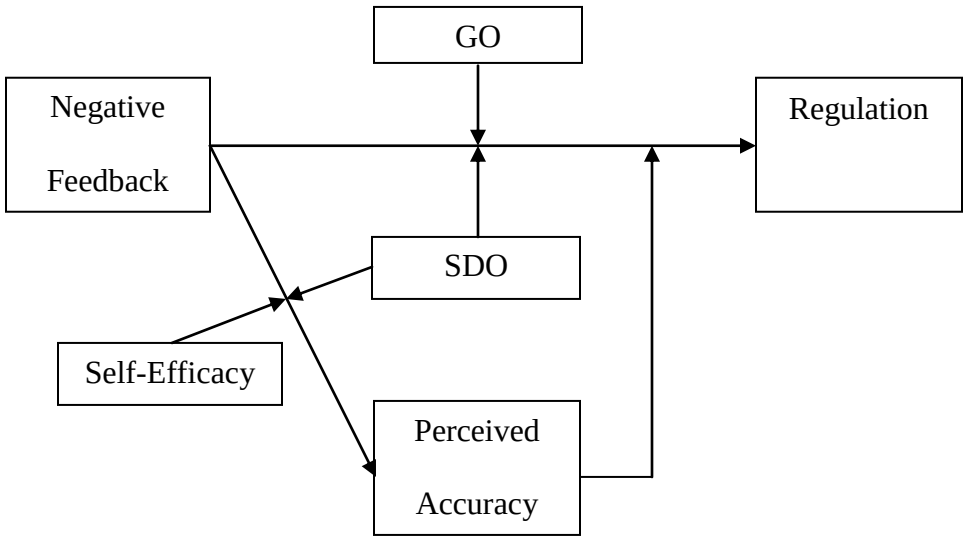

Figure 2. Moderated and direct effects of negative feedback.

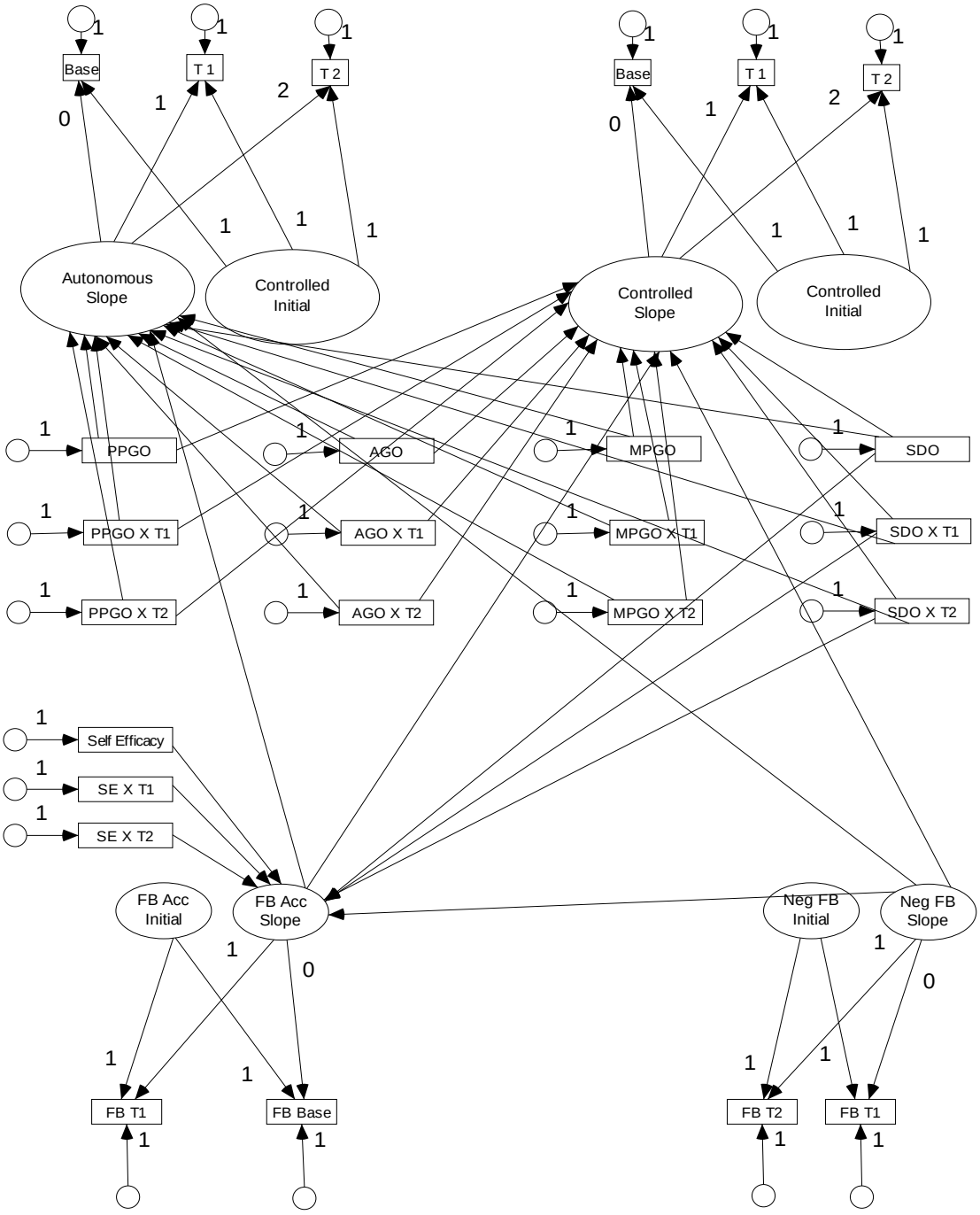

Figure 3. Proposed model for study 2.
Note. FB = Feedback; Neg FB = Negative feedback; FB Acc = Feedback accuracy; SE = self-efficacy; AGO = Avoidant GOs; Base = Baseline; T1 = Time 1; T2 = Time 2.

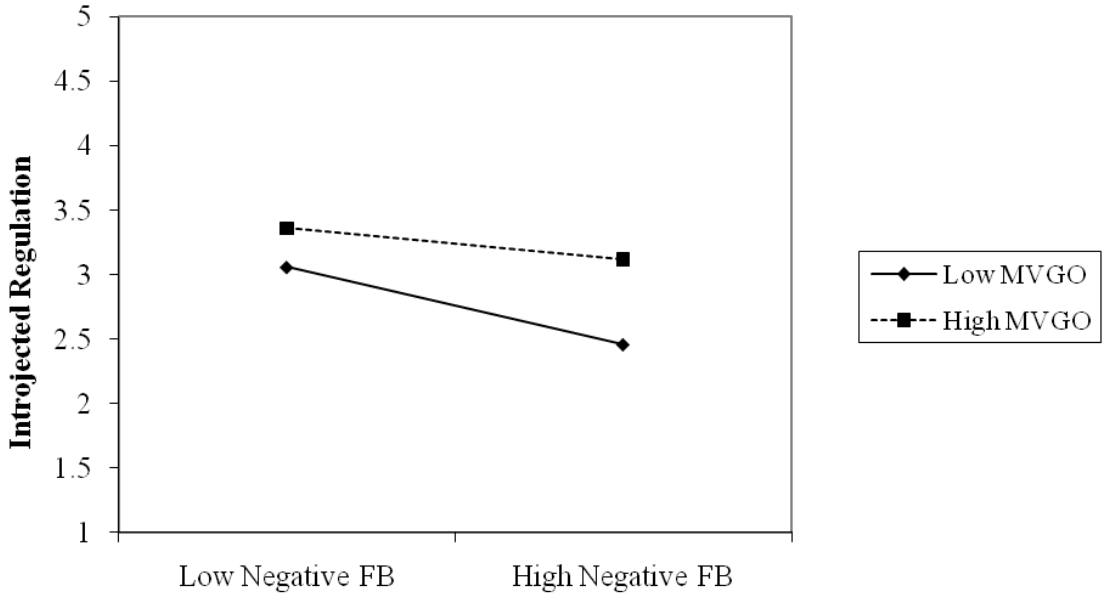

Figure 4.
Performance Appraisal- MVGO Interaction for Negative feedback scale.

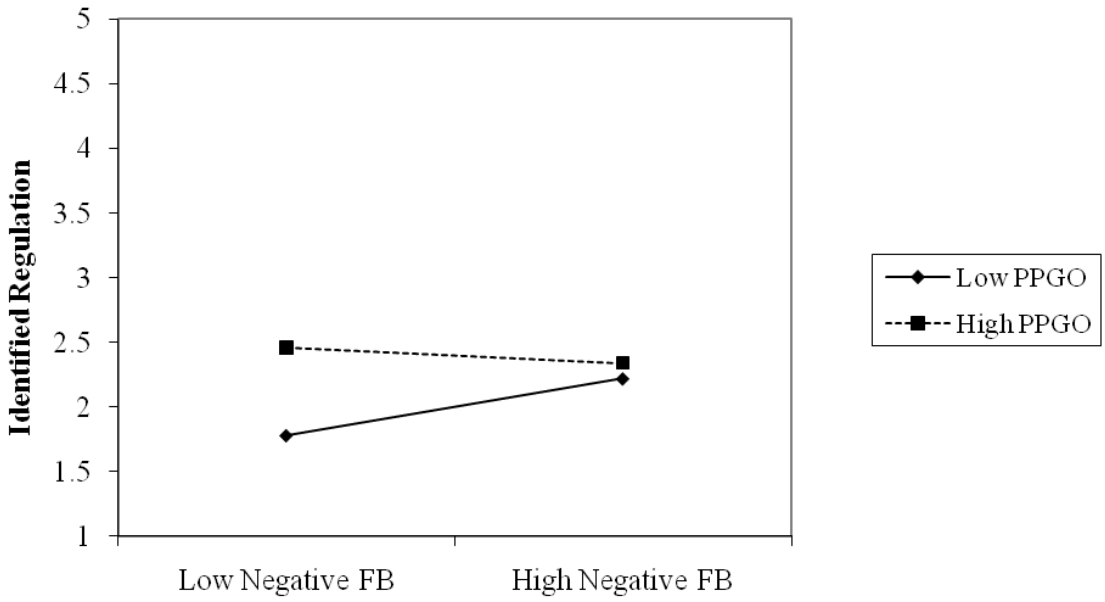

Figure 5.
Study 1: PPGO interaction on identified regulation.

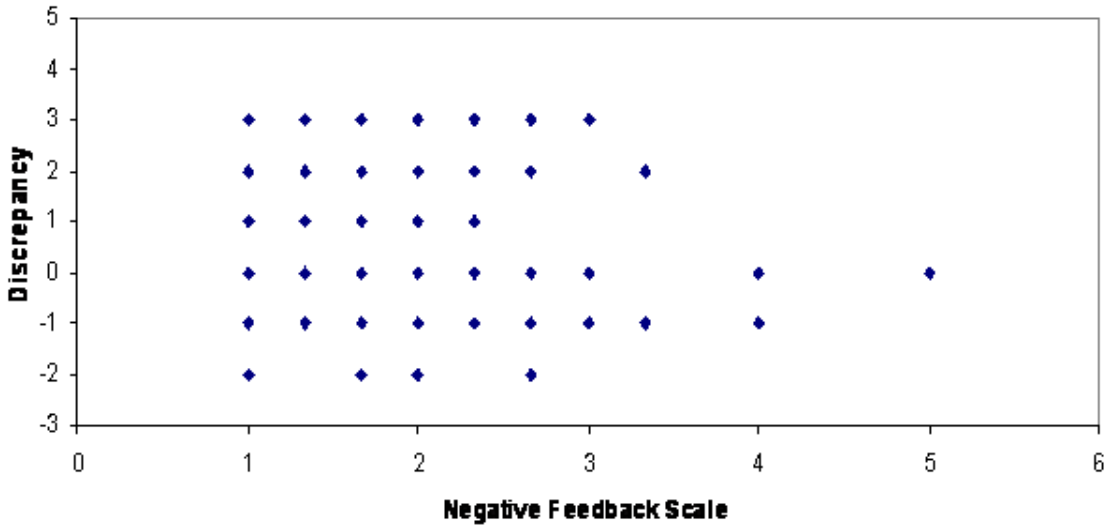

Figure 6a.
Negative feedback scale and discrepancy score plot for Study 1.

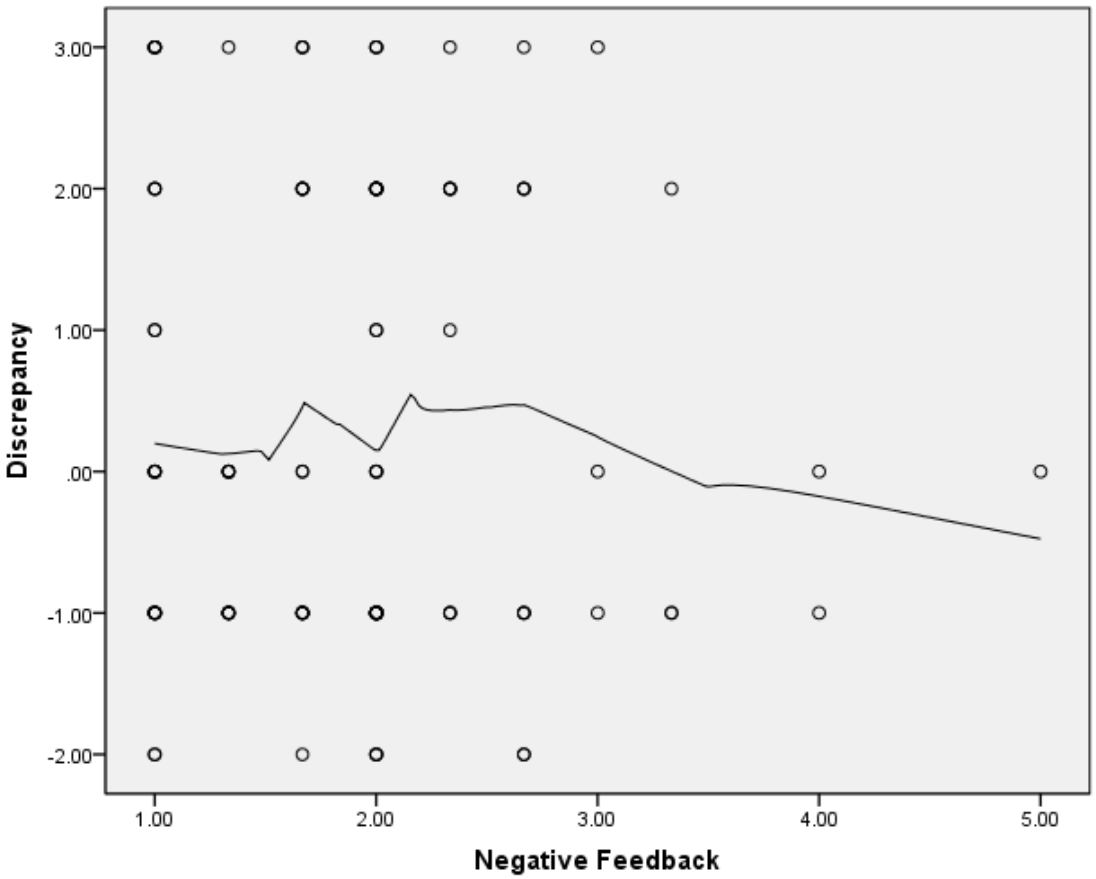

Figure 6b.
Negative feedback scale and discrepancy score plot for Study 1 with Loess line.

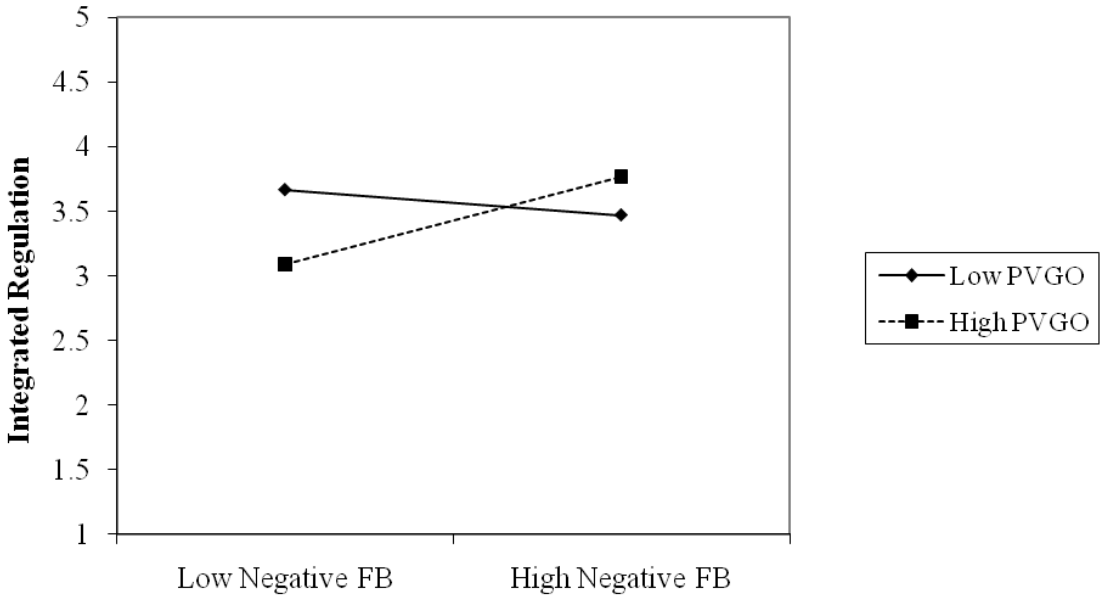

Figure 7
Study 1: Additional analysis of discrepancy and PVGO on integrated regulation.

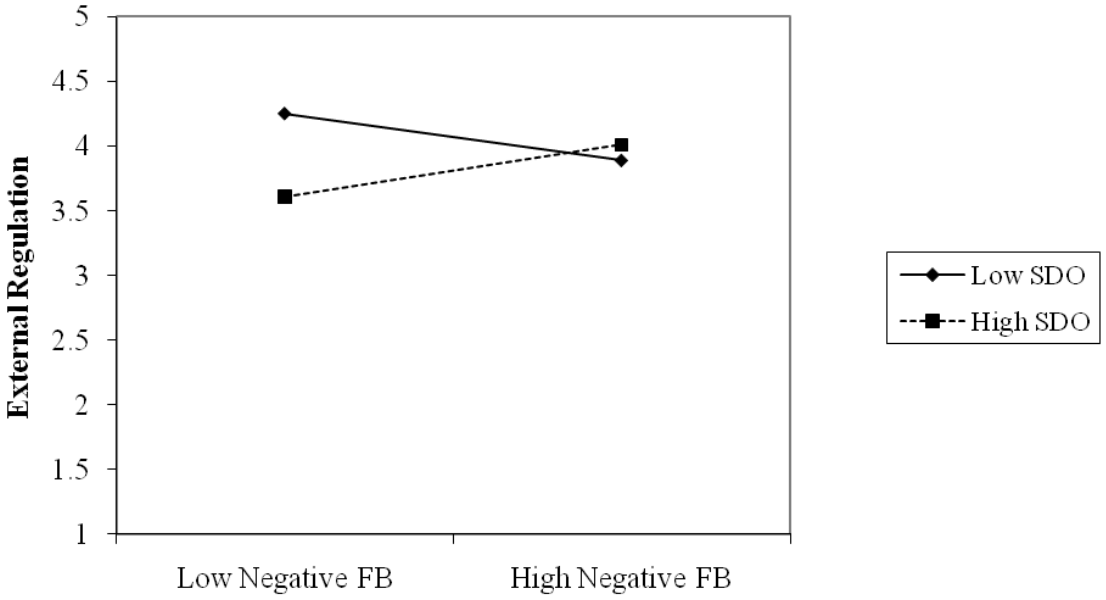

Figure 8
Study 1: Additional analysis of discrepancy and SDO on external regulation.

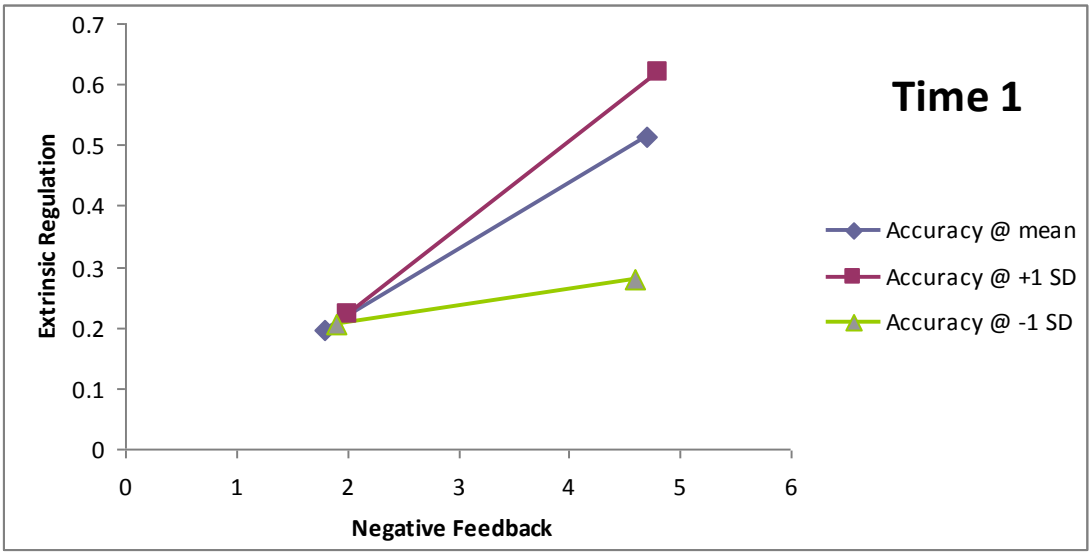

Figure 9
Within-individual effects of negative feedback on extrinsic regulation moderated by Accuracy.

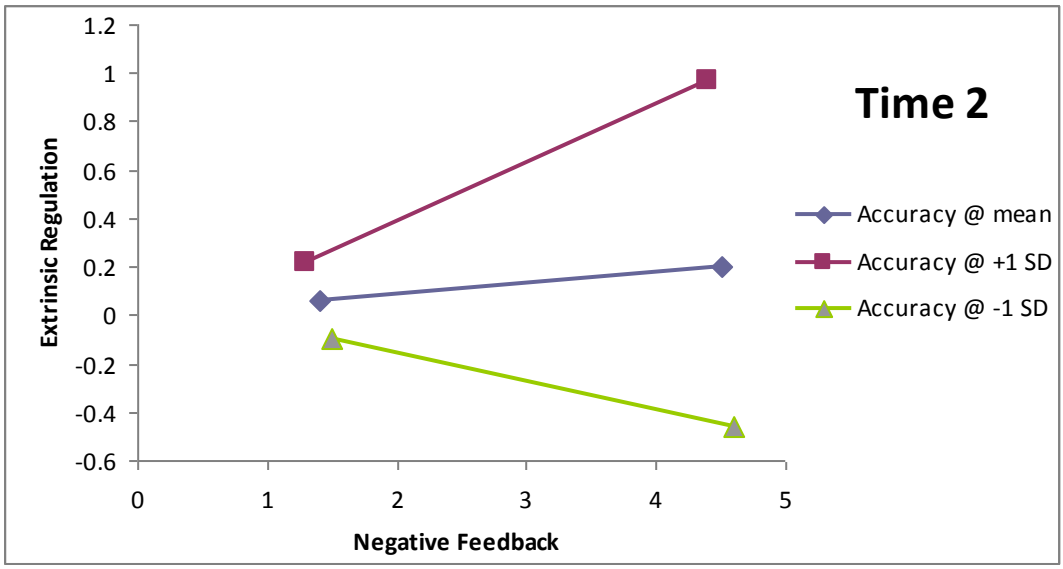

Figure 10
Within-individual effects of negative feedback on extrinsic regulation moderated by Accuracy.

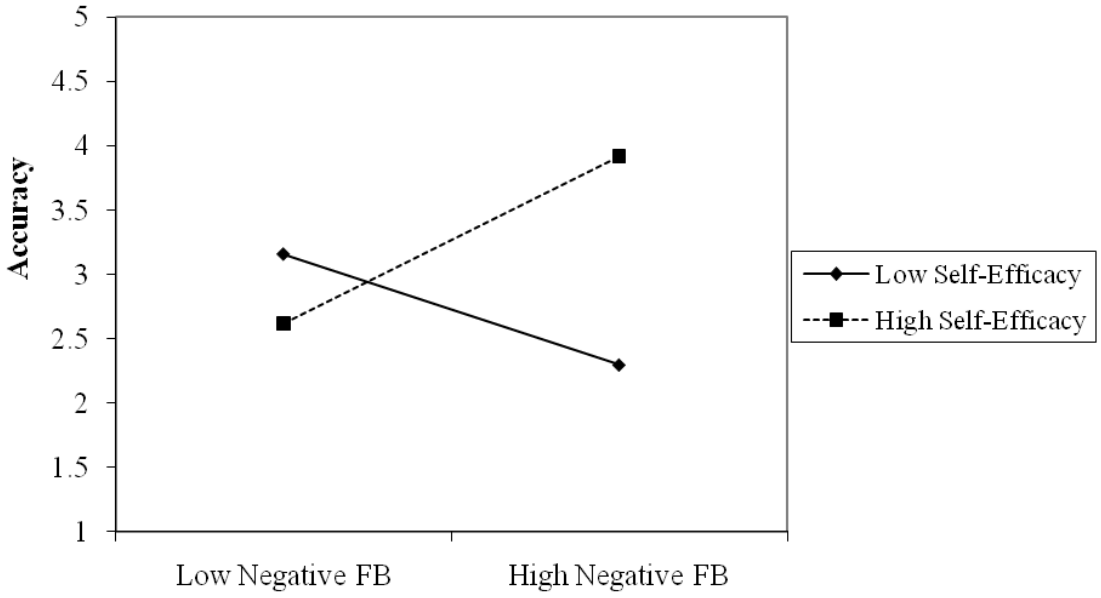

Figure 11
Moderating effect of self-efficacy on the negative feedback-accuracy relationship at Time 1

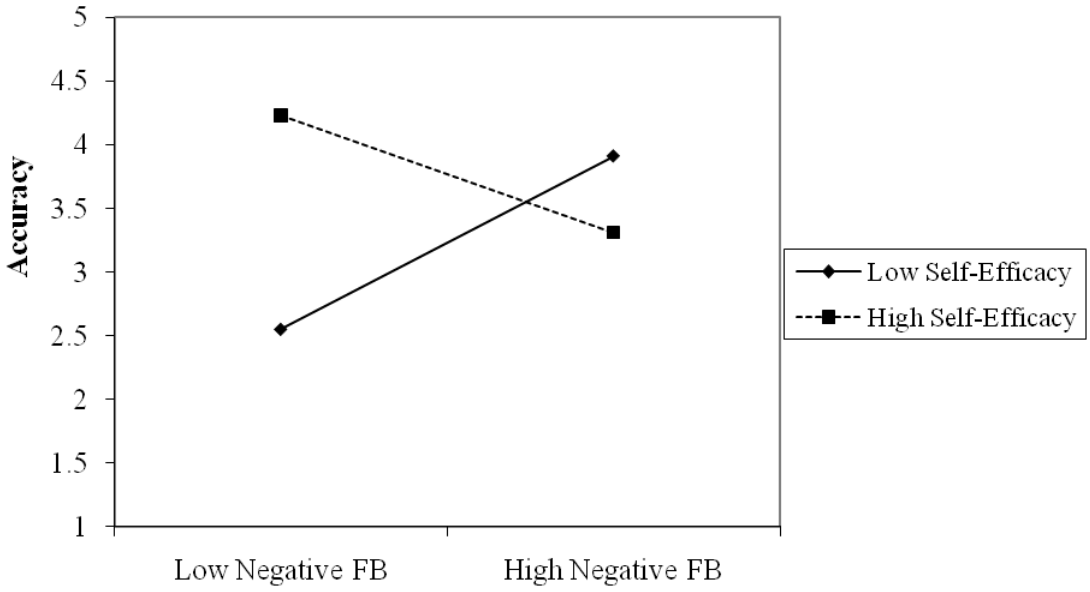

Figure 12
Accuracy and self-efficacy at Time 2

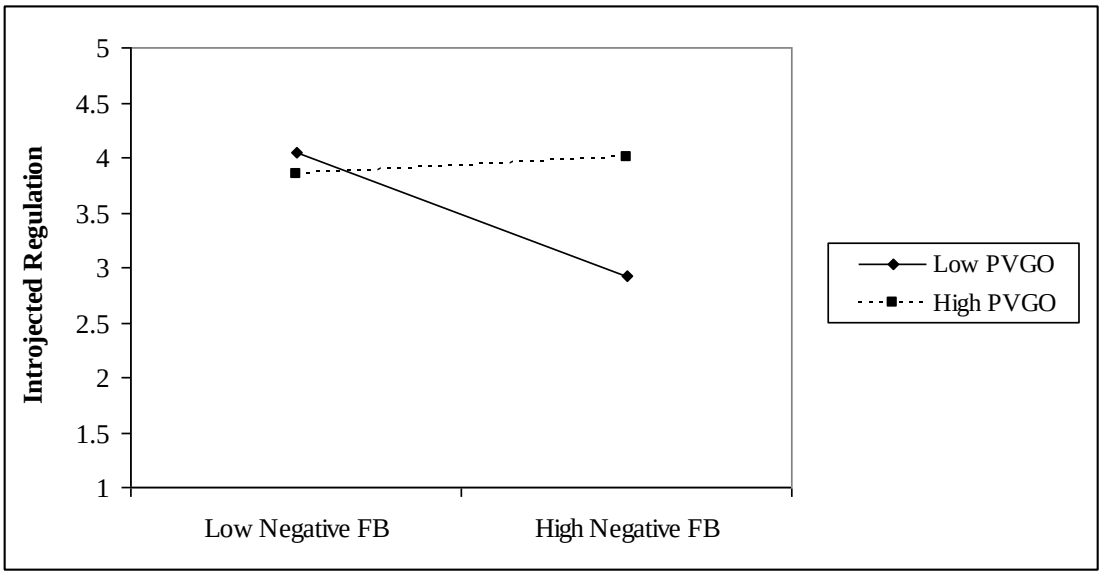

Figure 13
Study 2: PVGO Interaction at Time 2.

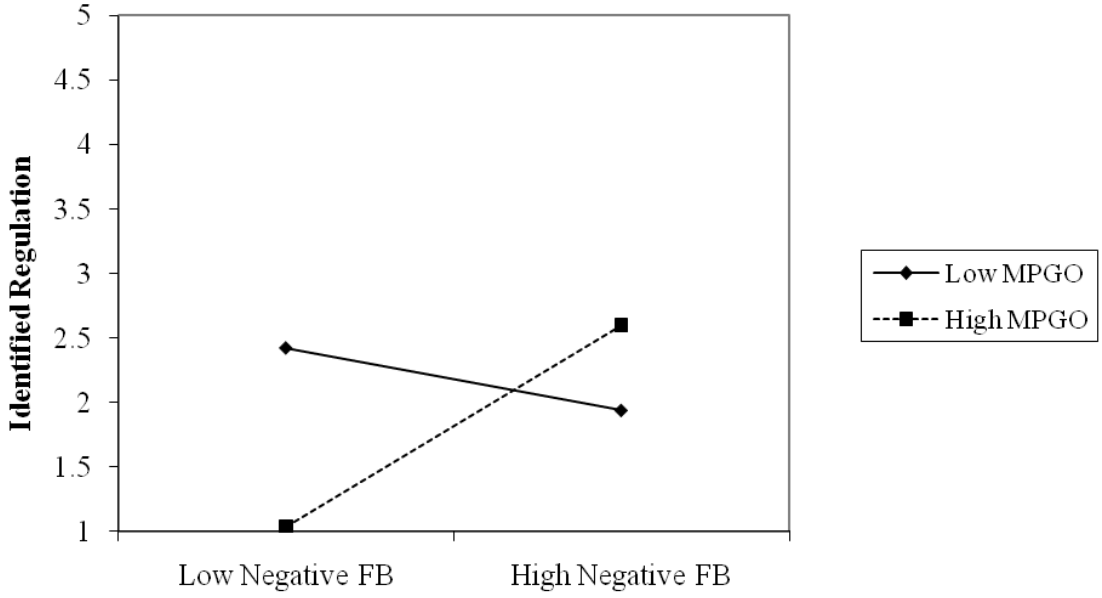

Figure 14
Study 2: Interaction of MPGO on identified regulation at Time 1.

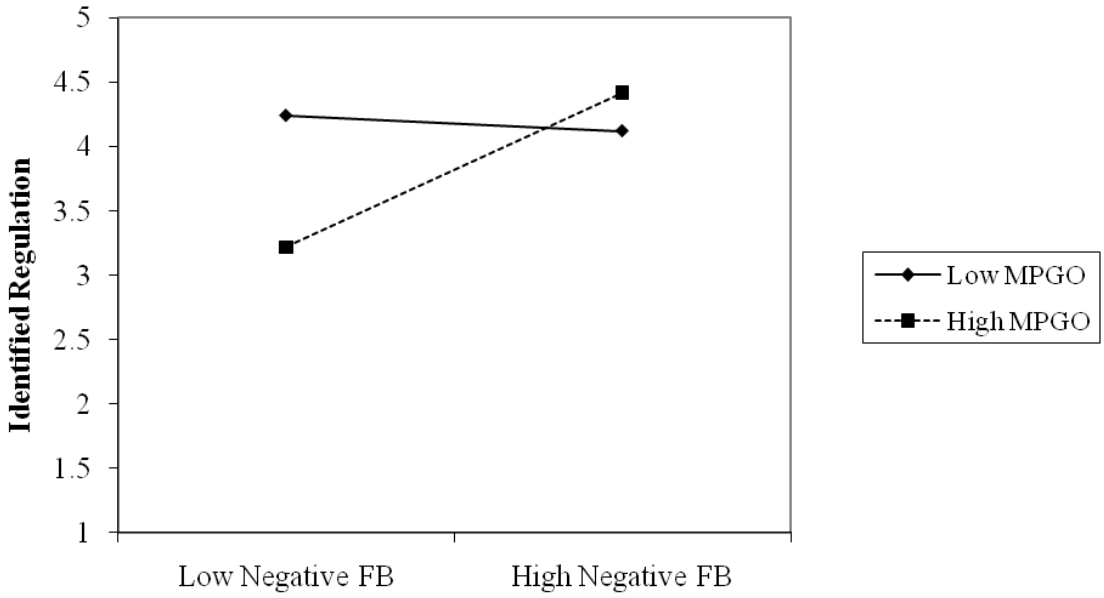

Figure 15
Study 2: Interaction of MPGO on identified regulation at time 2.

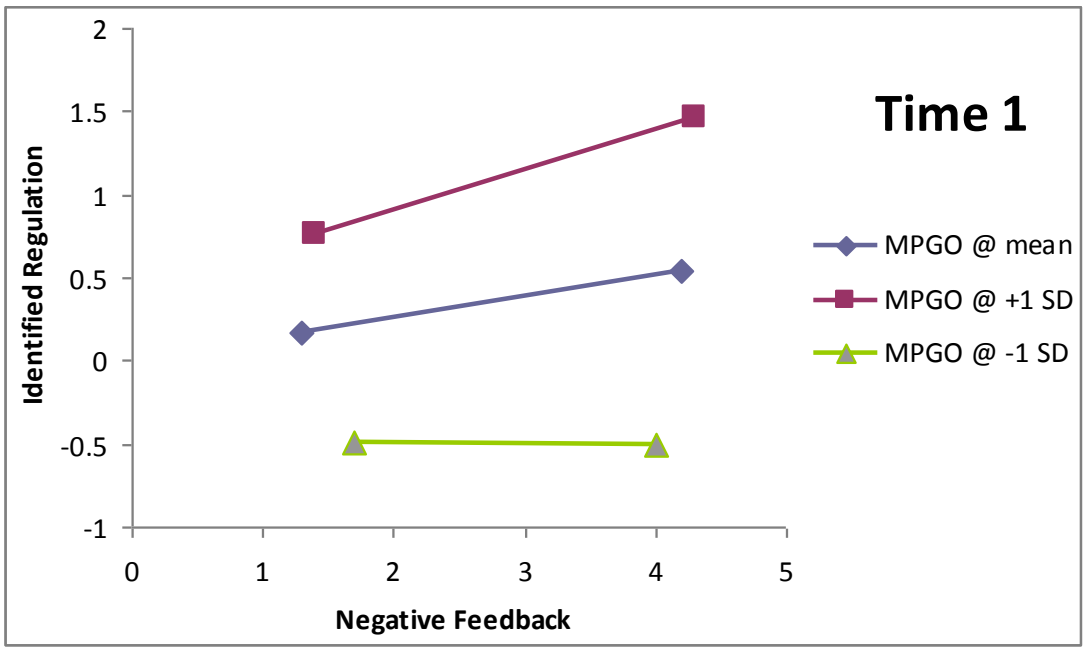

Figure 16
Repeated Measures MPGO on Identified Regulation at Time 1 (after exam 1).

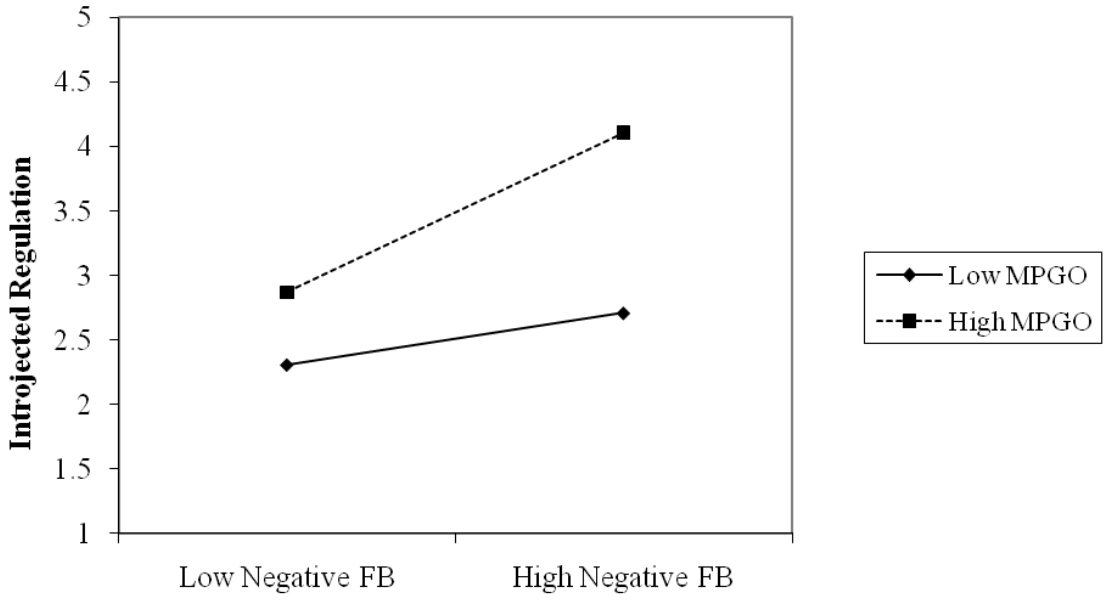

Figure 17
Study 2: Interaction of MPGO on introjected regulation at Time 1.

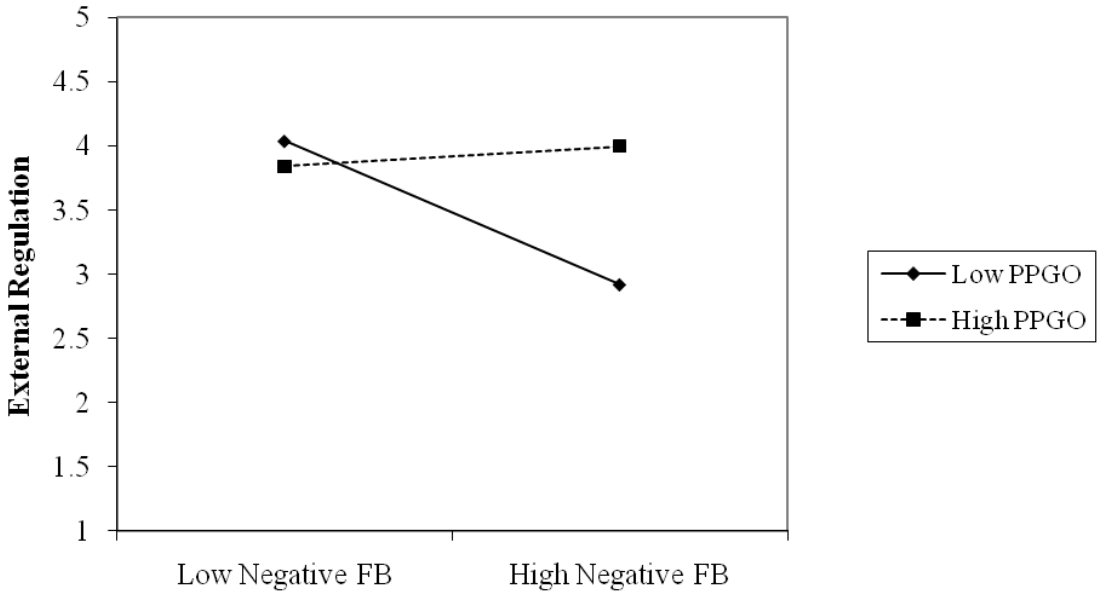

Figure 18
Study 2: PPGO Interaction on external regulation at Time 1.

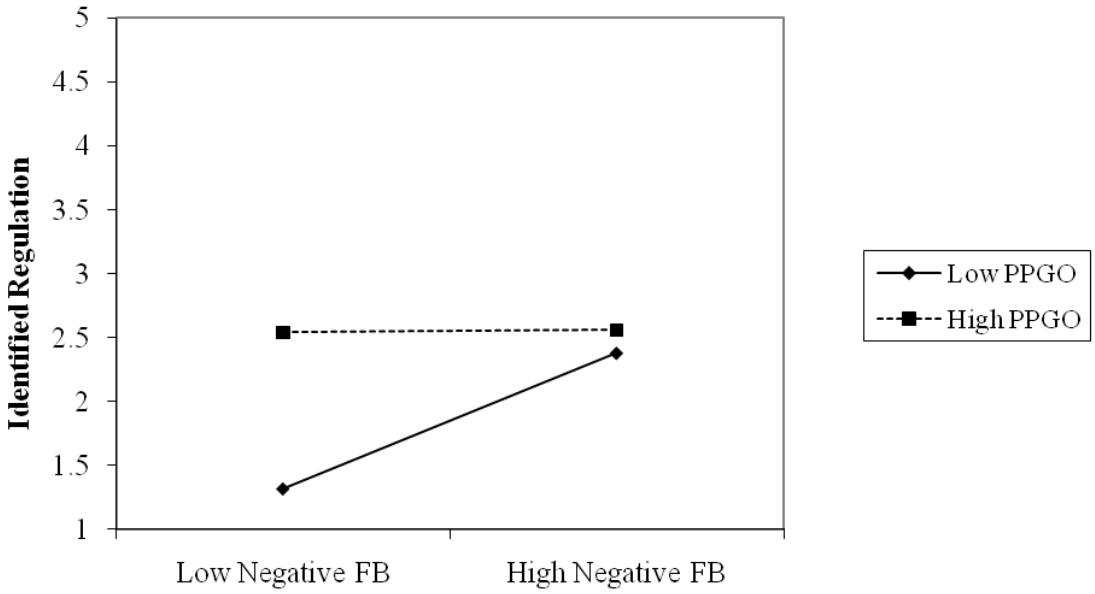

Figure 19
Study 2: PPGO Interaction at Time 1.

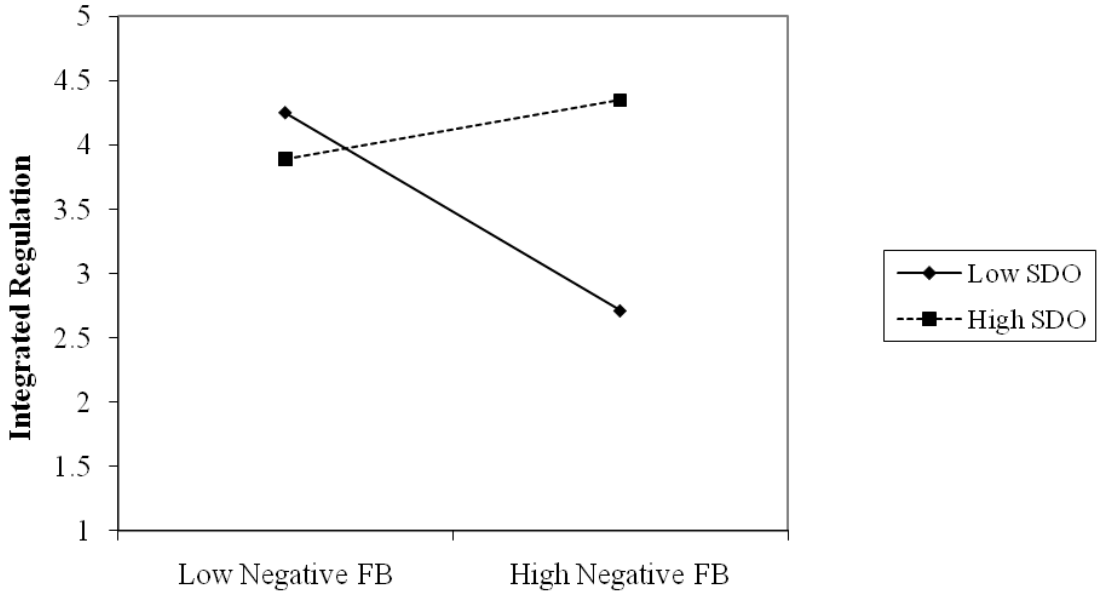

Figure 20
Study 2: Interaction of SDO on integrated regulation at Time 2.

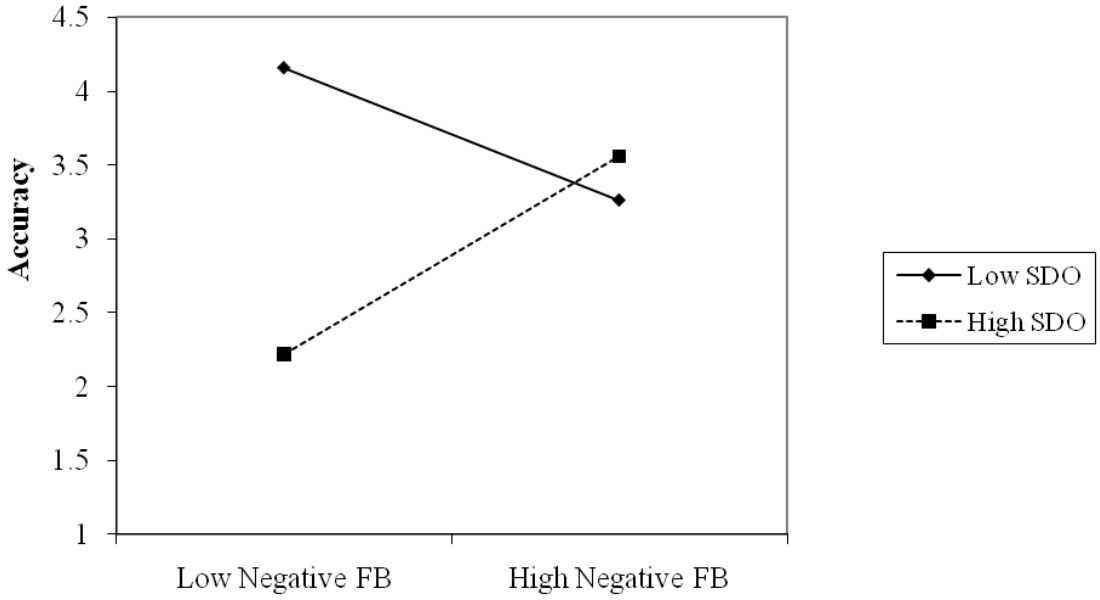

Figure 21
Study 2: Interaction of SDO on accuracy at Time 2.

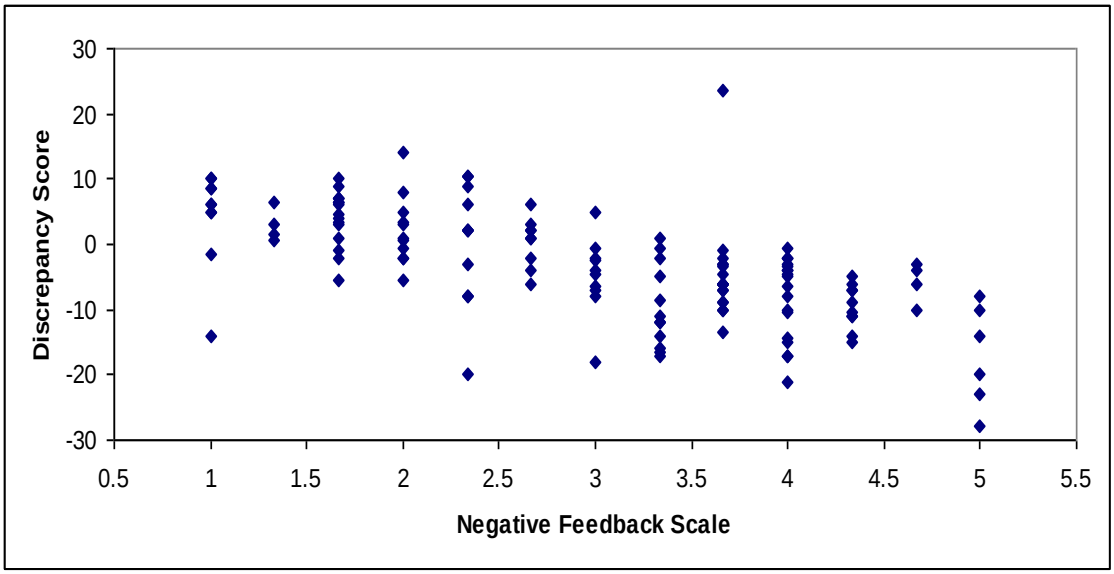

Figure 22a.
Negative feedback scale and Discrepancy Score plot at Time 1

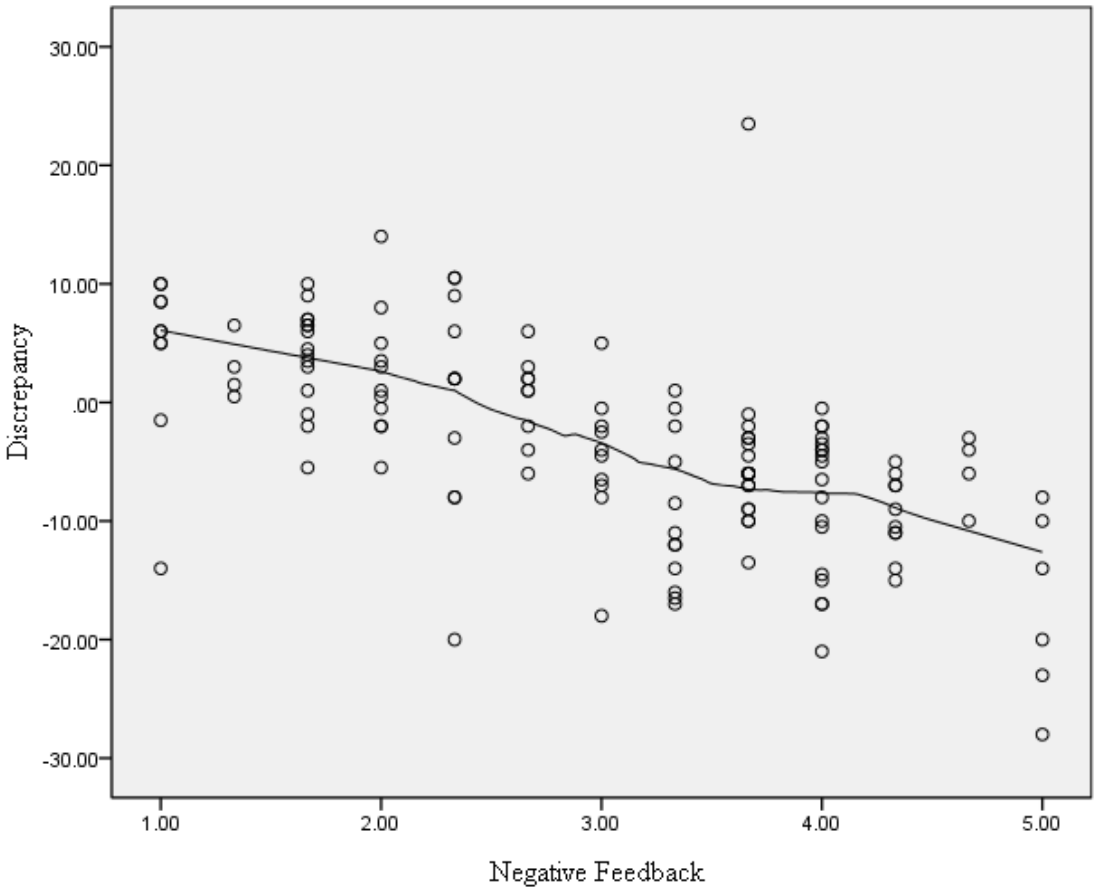

Figure 22b.
Negative feedback scale and Discrepancy Score plot at Time 1 with Loess line.

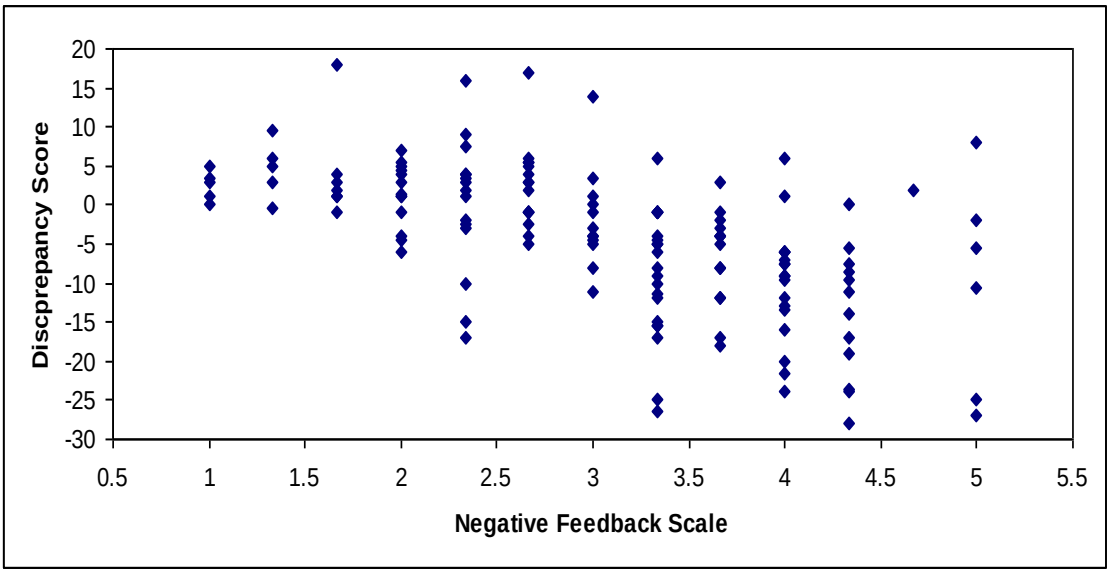

Figure 23a.
Negative feedback scale and Discrepancy Score plot at Time 2

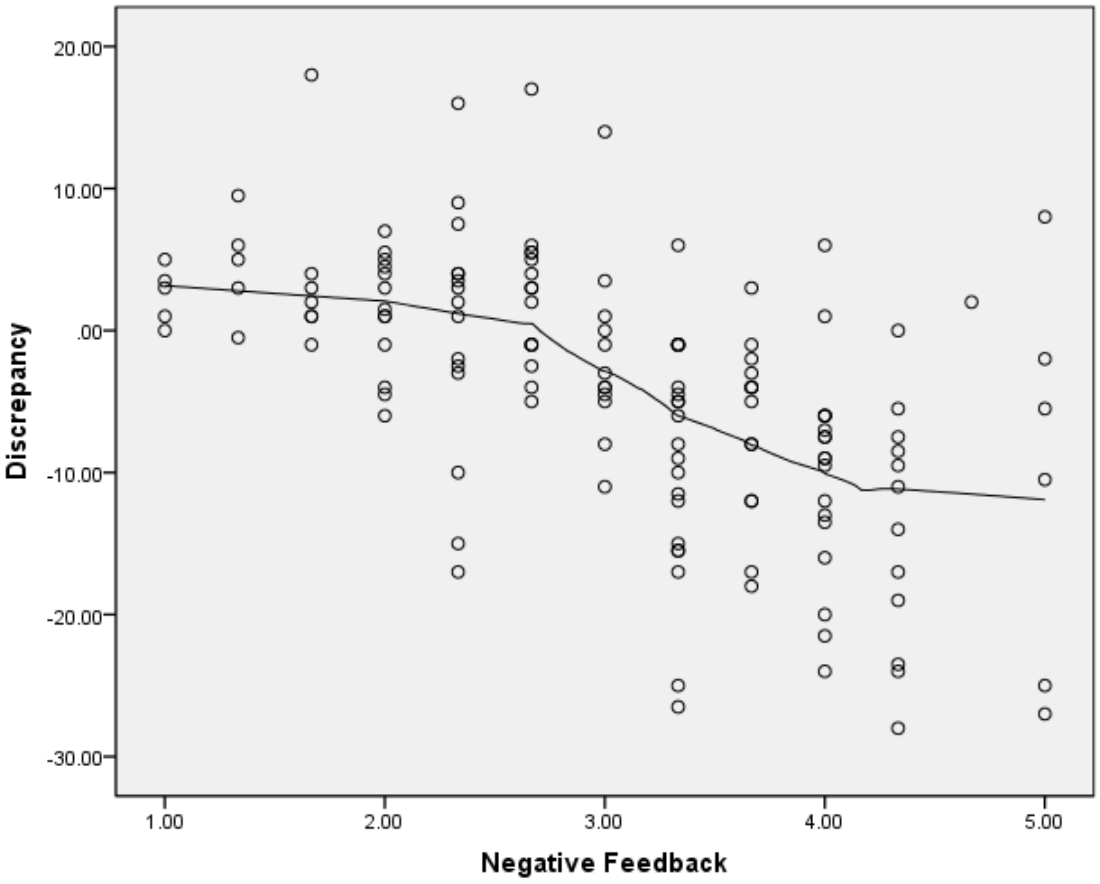

Figure 23b.
Negative feedback scale and Discrepancy Score plot at Time 2 with Loess

APPENDIX B

Table 1.
Study 1 Correlation Matrix

	M	SD	1	2	3	4	5	6	7	8
1. Discrepancy	0.30	1.62	-	.01	-.02	-.02	.07	.05	.10	-.08
2. Negative FB	1.83	0.71	-.02	***.67***	.06	-.02	-.18*	.08	-.03	-.17*
3. Accuracy	3.80	0.90	.09	.00	***.96***	.00	-.03	.05	.22**	.04
4. External	3.37	0.72	.01	-.02	-.05	***.57***	.48**	.49**	.22**	.07
5. Introjected	3.74	0.83	.09	-.16*	-.08	.53**	***.71***	.49**	.27**	.16*
6. Identified	3.92	0.61	.14	.03	.12	.44**	.47**	***.51***	.49**	.18*
7. Integrated	3.97	0.63	.15	-.03	.25**	.14	.18*	.49*	***.71***	.35**
8. Self-efficacy	4.34	0.54	.00	-.17*	.07	.05	.15*	.23**	.37**	***.72***
9. SDO (total)	2.33	0.60	-.05	.10	-.12	-.13	-.06	-.19*	-.19*	-.16*
10. SDO Equality	2.56	0.78	.04	.09	-.04	-.21**	-.10	-.16*	-.08	-.07
11. SDO Grp	2.01	0.71	-.16	.07	-.18*	.05	.03	-.15*	-.26**	-.21**
12. MPGO	4.08	0.68	.03	.04	.20**	.15*	.19*	.34**	.24**	.26**
13. MVGO	2.38	0.92	-.03	.24**	-.45**	.22**	.20**	.18*	-.15*	-.22**
14. PVGO	2.42	0.98	-.14	.00	-.25**	.23**	.18*	.12	-.11	-.18*
15. PPGO	2.85	1.04	-.02	-.07	-.12	.18*	.26**	.19*	-.03	-.01
16. Credibility	4.23	0.85	.13	-.08	.65**	-.04	-.09	.04	.07	-.01
17. Positive FB	4.14	0.82	.26**	-.08	.64**	-.10	-.07	.19*	.25**	.14
18. Status	0.61	1.04	.07	-.11	.10	-.04	.12	.04	.04	-.07
19. Emp Status	3.22	0.81	.07	.07	.24**	.01	-.07	.19*	.18*	.15
20. Sup Status	3.82	0.86	.15	-.07	.34**	-.04	.07	.22*	.19*	.05

Note. Alphas are presented on the diagonal. Values above the diagonal are partial correlations (controlling for credibility, positive feedback, and rater status). Discrepancy = Organizational rating – self rating, FB = feedback, , External = External Regulation, Introjected = Introjected Regulation, Identified = Identified Regulation, Integrated = Integrated Regulation, SDO = Social Dominance Orientation, SDO Equality = SDO equality based scale, SDO Grp = SDO group dominance based scale, MPGO = Master Prove Goal-Orientation, MVGO = Mastery Avoidance Goal-Orientation, PPGO = Performance Prove Goal-Orientation, PVGO = Performance Avoidance Goal-Orientation, Status = supervisor's status –employee's status, Emp Status = employee's status, Sup Status = supervisor's status.
* $p < .05$, ** $p < .01$

Table 1 continued

	9	10	11	12	13	14	15	16[9]	17	18	19	20
1. Discrepancy	-.06	.03	-.16	.02	.06	-.15	-.09					
2. Negative FB	.09	.07	.07	.00	.25**	.01	-.08					
3. Accuracy	-.04	-.04	-.01	.12	-.28**	-.1	.00					
4. External	-.17*	-.23**	.02	.18*	.21*	.21*	.22*					
5. Introjected	-.05	-.09	.03	.21*	.16*	.12	.24**					
6. Identified	-.16*	-.14	-.1	.29**	.23*	.13	.17*					
7. Integrated	-.14	-.06	-.18*	.24**	-.15	-.08	-.08					
8. Self-efficacy	-.19*	-.09	-.24**	.24**	-.22*	-.16*	-.03					
9. SDO (total)	***.69***	.86**	.64**	-.27**	.13	.04	-.05					
10. SDO Equality	.87**	***.61***	.17*	-.23**	-.01	-.14	-.18*					
11. SDO Grp	.68**	.22**	***.73***	-.17*	.26**	.28**	.19*					
12. MPGO	-.31**	-.25**	-.23**	***.86***	.04	-.05	.06					
13. MVGO	.11	-.04	.27**	.05	***.84***	.55**	.40**					
14. PVGO	.03	-.15*	.28**	-.01	.61**	***.84***	.69**					
15. PPGO	-.06	-.19*	.16*	.10	.44**	.68**	***.91***					
16. Credibility	-.09	-.03	-.14	.04	-.37**	-.24**	-.20**	***.91***				
17. Positive FB	-.13	-.05	-.19*	.20**	-.32**	-.23**	-.06	.59**	***.96***			
18. Status	-.13	-.11	-.10	-.03	.03	.11	.06	.18*	.08	-		
19. Emp Status	.14	.13	.06	.05	-.20*	-.26**	-.10	.20*	.17*	-.59**	-	
20. Sup Status	-.03	.00	-.05	.01	-.15*	-.11	-.03	.40**	.25*	.65**	.23*	-

[9] The cells in this column and to the right are blank because these were the variables being partialed out.

Table 2.
Data Screening Model Fit – Study 1

Model	*df*	Chi-Square	CFI	RMSEA
A	898	1917.24*	0.85	0.07
B	989	4346.52*	0.24	0.15
C	911	2151.64*	0.81	0.08
D	934	2234.57*	0.80	0.08
E	915	2681.97*	0.74	0.09

Note. * $p < .01$

Table 3.
Data Screening for Regulation Scale in Study 1

Latent Factors	*df*	Chi-Square	CFI	RMSEA
1	54	352.67*	0.56	0.18
2	43	188.11*	0.79	0.14
3	33	102.89*	0.90	0.11
4	24	39.22	0.98	0.06

Note. * $p < .01$

Table 4.
Data Screening for Goal Orientation Scale in Study 1

Latent Factors	*df*	Chi-Square	CFI	RMSEA
1	54	516.92*	0.61	0.23
2	43	268.53*	0.81	0.18
3	33	76.58*	0.96	0.09
4	24	29.04	0.99	0.04

Note. * $p < .01$

Table 5.
Data Screening for SDO Scale in Study 1

Latent Factors	*df*	Chi-Square	CFI	RMSEA
1	14	92.55*	0.68	0.19
2	8	21.46	0.95	0.10

Note. * $p < .01$

Table 6.
Regulation on Negative Feedback in Study 1.

	Regulation type (outcome variable)											
	External			Introjected			Identified			Integrated		
Predictors	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2
1. Cred	.05	.01		-.05	.01		-.06	.05		-.11	.07	
Pos FB	-.14			-.05			.25**			.32**		
2. Neg FB	-.03	.01	.00	-.17*	.04	.03*	.04	.05	.00	-.01	.07	.00

Note. Cred = credibility, Pos FB = positive feedback, Neg FB = negative feedback.
* $p < .05$; ** $p < .01$

Table 7.
Regulation on Negative Feedback and Accuracy in Study 1.

	Regulation type (outcome variable)											
	External			Introjected			Identified			Integrated		
Predictors	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2
1. Cred	.03	.02		-.04	.01		-.10	.04		-.21*	.08	
Pos FB	-.16			-.10			.21			.21*		
2. Neg FB	-.05			-.16*			.05			-.02		
Acc	.04	.02	.00	.03	.04	.03	.09	.05	.01	.28*	.11	.03*
3. Neg FB X Acc	.07	.02	.00	-.07	.04	.00	-.02	.05	.00	-.06	.12	.01

Note. Cred = credibility, Pos FB = positive feedback, Neg FB = negative feedback, Acc = accuracy. * $p < .05$; ** $p < .01$

Table 8.
Accuracy on Negative Feedback and Self-Efficacy in Study 1.

Step	β	R^2	Δ R^2
1. Cred	.39**	.52	
Pos FB[10]	-.41**		
2. NegFB	.07	.53	.00
SE	.04		
3. NegFB X SE	-.03	.53	.00

Note. Cred = credibility, Pos FB = positive feedback, Neg FB = negative feedback, SE = Self-efficacy. * $p < .05$; ** $p < .01$

[10] Pos FB was removed from the regression due to suppression. The values for all other predictors in the regression are the values with positive feedback not present.

Table 9.

Regulation on Negative Feedback and MVGO in Study 1.

	Regulation type (outcome variable)											
	External			Introjected			Identified			Integrated		
Predictors	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2
1. Cred	.03	.02		-.03	.01		-.04	.04		-.10	.06	
Pos FB	-.16			-.08			.22*			.30**		
2. Neg FB	-.06	.06	.04*	-.21**	.08	.07**	-.01	.10	.06*	.02	.08	.02
MVGO	.23*			.24**			.25**			.13		
3. Neg FB X MVGO	.08	.07	.01	.09*	.11	.03*	.04	.10	.00	.04	.08	.00

Note. Cred = credibility, Pos FB = positive feedback, Neg FB = negative feedback.

* $p < .05$; ** $p < .01$

Table 10.

Regulation on Negative Feedback and PVGO in Study 1.

	Regulation type (outcome variable)											
	External			Introjected			Identified			Integrated		
Predictors	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2
1. Cred	.07	.02		-.03	.01		-.04	.04		-.11	.07	
Pos FB	-.16			-.07			.23*			.31**		
2. Neg FB	-.01	.07	.05*	-.16*	.06	.05*	.05	.08	.04	-.01	.08	.01
PVGO	.24**			.18*			.18*			-.07		
3. Neg FB X PVGO	.05	.07	.00	.07	.08	.01	-.10	.08	.00	.02	.08	.00

Note. Cred = credibility, Pos FB = positive feedback, Neg FB = negative feedback.

* $p < .05$; ** $p < .01$

Table 11.

Regulation on Negative Feedback and MPGO in Study 1.

	Regulation type (outcome variable)											
	External			Introjected			Identified			Integrated		
Predictors	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2
1. Cred	.07	.02		-.03	.01		-.04	.04		-.11	.07	
Pos FB	-.16			-.07			.23*			.31**		
2. Neg FB	.02	.05	.03	-.17*	.09	.08**	.04	.13	.09**	-.01	.11	.04*
MPGO	.19*			.24**			.30**			.21**		
3. Neg FB X MPGO	-.05	.06	.01	-.13	.10	.01	-.05	.14	.00	.02	.11	.00

* $p < .05$; ** $p < .01$

Note. Cred = credibility, Pos FB = positive feedback, Neg FB = negative feedback.

Table 12.

Regulation on Negative Feedback and PPGO in Study 1.

	Regulation type (outcome variable)											
	External			Introjected			Identified			Integrated		
Predictors	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2
1. Cred	.08	.02		-.02	.01		-.03	.05		-.10	.07	
Pos FB	-.16			-.08			.24*			.31**		
2. Neg FB	.01	.06	.04*	-.13	.10	.09**	.08	.09	.04*	-.01	.07	.00
PPGO	.21*			.27**			.20*			-.04		
3. Neg FB X PPGO	-.02	.06	.00	.04	.10	.00	-.14*	.11	.02*	-.03	.07	.00

Note. Cred = credibility, Pos FB = positive feedback, Neg FB = negative feedback.

* $p < .05$; ** $p < .01$

Table 13.

Accuracy on Negative Feedback and SDO in Study 1.

Step	β	R^2	Δ R^2
1. Cred	.43**	.55	
Status	-.02		
2. Neg FB	.04	.55	.00
SDO	-.04		
3. Neg FB X SDO	.04	.55	.00

Note. Cred = credibility, Status = your status – supervisor status, Neg FB = negative feedback.

* $p < .05$; ** $p < .01$

Table 14.
Regulation on Negative Feedback and SDO in Study 1.

	Regulation type (outcome variable)											
	External			Introjected			Identified			Integrated		
Predictors	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2
1. Cred	.10	.03		-.04	.02		-.06	.04		-.13	.09	
Pos FB	-.19			-.08			.23*			.35**		
Status	-.07			.11			.05			.06		
2. Neg FB	-.02	.06	.03	-.18*	.06	.04	.07	.07	.03	-.01	.11	.02
SDO	-.17*			-.04			-.17*			-.14		
3. Neg FB X SDO	-.03	.06	.00	.00	.06	.00	.00	.07	.00	-.06	.11	.00

Note. Cred = credibility, Pos FB = positive feedback, Status = your status – supervisor status, Neg FB = negative feedback.
* $p < .05$; ** $p < .01$

Table 15.
Study 2 Correlation Matrix

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Discrepancy 2	-3.49	8.27	-	.38	-.23	-.02	.11	.13	-.02	-.08	-.13	-.10
2. Discrepancy 3	-4.16	9.12	.35**	-	-.14	-.08	.01	.20	-.13	.14	-.02	-.07
3. Negative FB 2	3.02	1.11	-.65**	-.24	***.80***	.19	-.35**	-.17	.22*	.33**	.10	.24*
4. Negative FB 3	3.08	0.99	-.15	-.57**	.24**	***.65***	-.10	.00	.17	-.04	.16	.26*
5. Accuracy 2	3.40	1.10	.61**	.23**	-.67**	-.18*	***.93***	.30**	-.13	-.11	-.03	-.17
6. Accuracy 3	9.72	3.19	.39**	.67**	-.37**	-.58**	.45**	***.93***	-.17	-.06	.18	-.09
7. External 1	3.21	0.68	.17*	.05	-.01	.04	.07	.03	***.61***	.63**	.19	.19
8. Introjected 1	2.66	0.57	.06	.13	.14	-.01	.00	.01	.60**	***.72***	.33**	.30**
9. Identified 1	4.20	0.49	.02	.08	-.07	-.08	.11	.22**	.17*	.31**	***.25***	.44**
10. Integrated 1	2.69	0.74	-.09	-.02	.12	.07	-.13	.00	.12	.30**	.47**	***.74***
11. Self-efficacy 1	4.11	0.63	-.17*	-.04	-.07	-.08	.02	.11	-.08	-.01	.21*	.24**
12. External 2	3.18	0.67	.08	.05	.03	-.04	.03	.04	.72**	.49**	.09	.08
13. Introjected 2	3.26	0.65	.07	.15	.13	-.02	-.03	.06	.54**	.72**	.21*	.17*
14. Identified 2	3.99	0.56	.12	.08	.05	.00	.10	.16	.27**	.38**	.46**	.41**
15. Introjected 2	2.72	0.82	-.03	.04	.02	.03	-.04	.15	.28**	.33**	.46**	.69**
16. External 3	3.12	0.68	.18*	.08	-.04	.01	.09	.11	.73**	.54**	.20*	.19*
17. Introjected 3	3.21	0.68	.11	.10	.12	.08	-.01	.06	.53**	.70**	.15	.11
18. Identified 3	3.96	0.59	.09	.02	.03	-.07	.06	.16	.26**	.29**	.31**	.31**
19. Integrated 3	2.69	0.85	.07	.06	.04	.06	.03	.21**	.24**	.26**	.42**	.64**
20. MPGO 1	4.00	0.65	.12	-.06	-.15	.13	.18*	.06	.07	.16*	.38**	.19*
21. PVGO 1	3.77	0.77	-.07	-.04	.14	.09	-.01	-.12	.42**	.27**	.03	-.03
22. PPGO 1	3.10	0.93	.00	.07	.06	-.09	-.03	.01	.30**	.51**	.15	.21**
23. MVGO 1	2.92	0.88	.08	-.03	.13	.11	-.08	-.04	.20*	.23**	-.06	-.03
24. SDO 1	2.50	0.68	-.07	-.09	-.06	.10	-.11	-.12	-.04	-.08	-.17*	-.14
25. SDO Equality 1	2.52	0.79	-.06	-.05	-.06	.07	-.06	-.14	-.19*	-.23**	-.22**	-.16
26. SDO Group 1	2.46	0.81	-.05	-.09	-.03	.10	-.14	-.06	.16	.14	-.06	-.07
27. Positive FB 2	3.37	1.28	.75**	.24**	-.75**	-.17	.73**	.42**	.15	.11	.16*	-.02
28. Positive FB 3	3.26	1.28	.27**	.73**	-.25**	-.68**	.30**	.81**	.11	.08	.19*	.07
29. Credibility 1	4.44	0.74	.00	.13	-.05	-.10	.16	.16	-.05	.00	.32**	.08
30. Status	0.26	0.88	.10	.09	.05	.04	.05	.07	.07	.04	.06	.04
31. Student Status	3.37	0.71	-.15	-.08	-.01	-.14	-.01	-.08	.01	.11	.02	-.02
32. Professor Status	3.64	0.74	-.03	.03	.06	-.08	.05	.00	.09	.15*	.09	.02

Note. Alphas are presented on the diagonal. Values above the diagonal are partial correlations (controlling for credibility, positive feedback, and Status). 1 = Time 1, 2 = Time 2, 3 = Time 3,Discrepancy = Organizational rating – self rating, Negative FB = negative feedback, , External = External Regulation, Introjected = Introjected Regulation, Identified = Identified Regulation, Integrated = Integrated Regulation, SDO = Social Dominance Orientation, SDO Equality = SDO equality based scale, SDO Group = SDO group dominance based scale, MPGO = Master Prove Goal-Orientation, MVGO = Mastery Avoidance Goal-Orientation, PPGO = Performance Prove Goal-Orientation, PVGO = Performance Avoidance Goal-Orientation, Positive FB = positive feedback, Status = supervisor's status – respondent's status, Student Status = Respondent's status,.

** $p < .01$, * $p < .05$

Table 15 continued

	11	12	13	14	15	16	17	18	19	20	21
1. Discrepancy 2	-.18*	-.09	-.02	-.13	-.09	.03	-.01	-.04	-.02	.07	-.02
2. Discrepancy 3	-.22*	-.10	.17*	-.07	-.04	-.04	.12	-.09	-.04	-.06	.06
3. Negative FB 2	-.17	.23*	.36**	.35**	.16	.13	.34**	.24*	.21*	-.09	.15
4. Negative FB 3	.05	.03	.00	.16	.28**	.13	.05	.00	.30**	.19	.08
5. Accuracy 2	.08	-.10	-.12	-.11	-.14	-.10	-.15	-.12	-.07	.18	.05
6. Accuracy 3	-.06	-.14	.03	.11	.06	-.01	.05	.05	.07	.05	-.05
7. External 1	-.12	.72**	.57**	.28**	.27**	.73**	.53**	.19	.23*	.10	.48**
8. Introjected 1	-.07	.49**	.76**	.40**	.33**	.54**	.71**	.26**	.32**	.15	.35**
9. Identified 1	.19	.08	.25*	.45**	.45**	.22*	.20*	.26**	.48**	.40**	.06
10. Integrated 1	.25*	.10	.14	.36**	.68**	.27**	.15	.28**	.66**	.20*	.03
11. Self-efficacy 1	***.83***	-.07	-.25*	-.04	.10	-.04	-.17	.04	.16	.31**	-.24*
12. External 2	-.06	***.71***	.66**	.33**	.26**	.76**	.50**	.27**	.22*	.05	.60**
13. Introjected 2	-.23**	.66**	***.76***	.51**	.29**	.66**	.77**	.39**	.30**	.05	.47**
14. Identified 2	-.03	.33**	.45**	***.56***	.47**	.36**	.46**	.65**	.46**	.33**	.19
15. Introjected 2	.15	.25**	.29**	.41**	***.82***	.37**	.18	.35**	.79**	.28**	.12
16. External 3	-.07	.76**	.62**	.40**	.36**	***.71***	.68**	.35**	.39**	.15	.42**
17. Introjected 3	-.17*	.52**	.76**	.43**	.15	.66**	***.75***	.41**	.29**	.15	.30**
18. Identified 3	.08	.27**	.36**	.67**	.33**	.37**	.40**	***.53***	.45**	.27**	.01
19. Integrated 3	.15	.20*	.25**	.45**	.75**	.38**	.26**	.42**	***.81***	.26*	.08
20. MPGO 1	.24**	.09	.07	.34**	.25**	.17*	.19*	.32**	.29**	***.83***	.01
21. PVGO 1	-.17*	.50**	.39**	.10	.11	.34**	.24**	.03	.01	-.04	***.62***
22. PPGO 1	.08	.28**	.35**	.16	.22*	.43**	.41**	.25**	.18*	.14	.20*
23. MVGO 1	-.39**	.22*	.31**	.16	.09	.26**	.33**	.07	.04	-.04	.34**
24. SDO 1	.03	-.08	-.15	-.21*	-.18*	-.08	-.04	-.11	-.07	-.10	.01
25. SDO Equality 1	.03	-.20*	-.27**	-.23*	-.18*	-.19*	-.16*	-.16*	-.11	-.14	-.08
26. SDO Group 1	.02	.11	.06	-.12	-.13	.10	.12	-.02	.01	-.01	.13
27. Positive FB 2	-.04	.13	.09	.20*	.05	.17*	.12	.13	.06	.10	-.06
28. Positive FB 3	.14	.13	.08	.18*	.15	.16*	.05	.18*	.17*	.02	-.10
29. Credibility 1	.00	.05	.03	.08	.12	.00	-.02	.00	.06	.18*	.04
30. Status	-.05	.11	.08	.17*	.03	.06	.07	-.01	-.05	.07	-.08
31. Student Status	.18*	.02	.00	-.05	-.02	-.02	-.02	.06	.04	.07	.13
32. Prof Status	.10	.15*	.09	.15	.01	.05	.07	.04	-.02	.15*	.03

Table 15 Continued

	22	23	24	25	26	27[11]	28	29	30	31	32
1. Discrepancy 2	-.19	.15	.02	.05	-.03						
2. Discrepancy 3	-.01	.17	.07	.06	.04						
3. Negative FB 2	.21*	.16	-.20*	-.23*	-.07						
4. Negative FB 3	-.15	.10	-.07	-.09	-.02						
5. Accuracy 2	-.14	.01	-.05	.03	-.12						
6. Accuracy 3	-.11	.08	-.07	-.10	.00						
7. External 1	.30**	.26*	.06	-.14	.29**						
8. Introjected 1	.51**	.27**	-.02	-.22*	.25*						
9. Identified 1	.22*	.07	-.05	-.13	.08						
10. Integrated 1	.20*	.07	-.15	-.16	-.08						
11. Self-efficacy 1	.02	-.49**	-.07	-.04	-.07						
12. External 2	.31**	.25*	.04	-.14	.26**						
13. Introjected 2	.44**	.38**	-.05	-.22*	.19						
14. Identified 2	.16	.23*	-.14	-.16	-.05						
15. Introjected 2	.16	.14	-.19	-.17	-.13						
16. External 3	.45**	.29**	.01	-.15	.22*						
17. Introjected 3	.47**	.36**	.03	-.12	.21*						
18. Identified 3	.25*	.11	-.05	-.07	-.01						
19. Integrated 3	.14	.17	-.10	-.13	-.02						
20. MPGO 1	.09	-.04	-.01	-.05	.04						
21. PVGO 1	.27**	.42**	.03	-.10	.19						
22. PPGO 1	***.88***	.21*	.04	-.07	.17						
23. MVGO 1	.14	***.81***	.07	-.09	.25*						
24. SDO 1	.03	.12	***.76***	.86**	.74**						
25. SDO Equality 1	-.03	-.01	.88**	***.65***	.30**						
26. SDO Group 1	.10	.24*	.80**	.43**	***.74***						
27. Positive FB 2	.06	-.02	-.05	-.05	-.03	***.97***					
28. Positive FB 3	.11	-.08	-.18*	-.15	-.15	.35**	***.97***				
29. Credibility 1	-.05	-.23*	-.20*	-.17*	-.18*	.06	.15	**.92**			
30. Status	-.03	.07	-.22*	-.15	-.22*	.00	.07	.08	-		
31. Student Status	.12	-.17*	.07	-.04	-.16*	-.03	-.02	.11	-.58**	-	
32. Prof Status	.08	-.09	-.19*	-.20*	.10	-.03	.06	.21*	.63**	.26**	-

[11] The cells in this column and to the right are blank because these were the variables being partialed out.

Table 16.
Data Screening Assessing Overall Model Fit – Study 2 Baseline

Model	*df*	Chi-Square	CFI	RMSEA
A_b	*764*	1391.90*	0.77	0.07
B_b	819	2717.56*	0.21	0.13
C_b	791	1626.04*	0.69	0.08
D_b	791	1738.35*	0.57	0.10

Note. * $p < .01$

Table 17.
Data Screening Overall Model Fit – Study 2 Time 1

Model	*df*	Chi-Square	CFI	RMSEA
A_1	349	780.14*	0.86	0.09
B_1	377	1844.24*	0.41	0.17
C_1	356	871.87*	0.83	0.10
D_1	367	1054.27*	0.77	0.11

Note. * $p < .01$

Table 18.
Data Screening Overall Model Fit – Study 2 Time 1

Model	*df*	Chi-Square	CFI	RMSEA
A_2	349	803.07*	0.85	0.09
B_2	377	1873.01*	0.43	0.17
C_2	356	835.10*	0.85	0.09
D_2	367	1071.81*	0.77	0.11

Note. * $p < .01$

Table 19.
Exploratory Factor Analysis for Regulation Items in Study 2

Baseline					Time 1					Time 2				
Latent Factors	*df*	Chi-Square	CFI	RMSEA	Latent Factors	*df*	Chi-Square	CFI	RMSEA	Latent Factors	*df*	Chi-Square	CFI	RMSEA
1	119	559.08*	0.41	0.16	1	119	565.46*	0.48	0.16	1	119	592.99*	0.50	0.17
2	103	376.15*	0.64	0.13	2	103	334.58*	0.73	0.13	2	103	352.65*	0.74	0.13
3	88	244.98*	0.79	0.11	3	88	243.24*	0.82	0.11	3	88	232.85*	0.85	0.11
4	74	174.23*	0.87	0.10	4	74	168.38*	0.89	0.10	4	74	164.06*	0.91	0.09

Note. * $p < .01$

Table 20.
Data Screening for Goal Orientation Scale in Study 2

Latent Factors	*df*	Chi-Square	CFI	RMSEA
1	54	531.29*	0.38	0.24
2	43	303.31*	0.66	0.20
3	33	124.51*	0.88	0.14
4	24	41.81*	0.98	0.07

Note. * $p < .01$

Table 21.
Data Screening for SDO Scale in Study 2

Latent Factors	*df*	Chi-Square	CFI	RMSEA
1	14	55.56*	0.83	0.14
2	8	5.95	0.99	0.01

Note. * $p < .01$

Table 22.
Predictors of Regulation Growth Rate in Growth Curve Model (Study 2).

Path	External Coeff.	Introjected Coeff.	Identified Coeff.	Integrated Coeff.
Neg FB	-.24	.41	.27	-.27
Acc	.30	-.19	.02	.02
Acc X Neg FB1	.01	-.06	-.02	.05
Acc X Neg FB2	-.13	-.10	-.11	-.08
SDO	.10	-.24	-.06	.32
SDO X Neg FB 1	.00	.28	-.01	-.22
SDO X Neg FB 2	-.29	.07	.06	.50*
MPGO	.11	.49	-.18	.26
MPGO X Neg FB 1	-.02	.21**	.51**	.14
MPGO X Neg FB 2	-.01	.39	.33**	-.18
MVGO	.21	-.22	.07	.33*
MVGO X Neg FB 1	.16	-.22	.15	.26
MVGO X Neg FB 2	-.03	-.25	-.07	.03
PVGO	-.40**	-.20	-.13	.13
PVGO X Neg FB 1	-.14	.31	-.01	.08
PVGO X Neg FB 2	.19	-.43**	.22	-.05
PPGO	.22	.01	.35*	-.55**
PPGO X Neg FB 1	.32	-.18	-.26*	-.10
PPGO X Neg FB 2	-.23*	-.23	-.07	-.08

Note. 1 = Time 1, 2 = Time 2, Neg FB = Negative feedback, Acc = Accuracy Coeff. = Coefficient
* $p < .05$, ** $p < .01$

Table 23.

Interaction Effects of Accuracy with Negative Feedback in Predicting Different Types of Regulation at Time 1.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.94	2, 97	0.47	3.97*
Introjected	0.12	2, 97	0.06	0.52
Identified	0.31	2, 101	0.16	1.05
Integrated	0.83	2, 100	0.41	2.30

Note. SS = Sum of squares, MS = Mean square.

* $p < .05$

Table 24.

Interaction Effects of Accuracy with Negative Feedback in Predicting Different Types of Regulation at Time 2.

Regulation	Type III SS	*df*	MS	*F*
Extrinsic	0.90	2, 97	0.45	3.81*
Introjected	0.08	2, 97	0.04	0.34
Identified	0.09	2, 101	0.04	0.30
Integrated	0.24	2, 100	0.12	0.65

Note. SS = Sum of squares, MS = Mean square.

* $p < .05$

Table 25.

The Main Effects of Negative Feedback on Accuracy (Study 2).

Path	Coefficient
Neg FB	.11
SDO	-.30
SDO X Neg FB 1	.69
SDO X Neg FB 2	.75
SE	.27
SE X Neg FB 1	.54**
SE X Neg FB 2	-.57**

Note. 1 = Time 1, 2 = Time 2, Neg FB = Negative feedback, SE = Self-efficacy.

* $p < .05$, ** $p < .01$

Table 26.
Interaction Effects of Self-Efficacy with Negative Feedback in Predicting Accuracy.

Time	SS	*df*	MS	*F*
1	0.48	1, 114	0.48	0.26
2	3.85	1, 114	3.85	2.07

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 27.
Interaction effects of MVGO with Negative Feedback in Predicting Different Types of Regulation at Time 1.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.37	2, 97	0.19	1.59
Introjected	0.15	2, 97	0.07	0.59
Identified	0.46	2, 101	0.23	1.60
Integrated	0.04	2, 100	0.02	0.11

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 28.
Interaction Effects of MVGO with Negative Feedback in Predicting Different Types of Regulation at Time 2.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.47	2, 97	0.24	2.02
Introjected	0.00	2, 97	0.00	0.00
Identified	0.07	2, 101	0.04	0.25
Integrated	0.07	2, 100	0.04	0.19

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 29.
Interaction Effects of PVGO with Negative Feedback in Predicting Different Types of Regulation at Time 1.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.00	2, 97	0.00	0.02
Introjected	0.06	2, 97	0.03	0.22
Identified	0.21	2, 101	0.10	0.71
Integrated	0.03	2, 100	0.02	0.09

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 30.
Interaction Effects of PVGO with Negative Feedback in Predicting Different Types of Regulation at Time 2.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.33	2, 97	0.16	1.40
Introjected	0.19	2, 97	0.09	0.77
Identified	0.28	2, 101	0.14	0.95
Integrated	0.10	2, 100	0.05	0.26

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 31.
Interaction Effects of MPGO with Negative Feedback in Predicting Different Types of Regulation at Time 1.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.13	2, 97	0.06	0.55
Introjected	0.09	2, 97	0.04	0.35
Identified	1.28	2, 101	0.64	4.39*
Integrated	0.41	2, 100	0.21	1.05

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 32.
Interaction Effects of MPGO with Negative Feedback in Predicting Different Types of Regulation at Time 2.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.20	2, 97	0.10	0.86
Introjected	0.21	2, 97	0.10	0.85
Identified	0.42	2, 101	0.21	1.45
Integrated	0.77	2, 100	0.39	1.98

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 33.
Interaction Effects of PPGO with Negative Feedback in Predicting Different Types of Regulation at Time 1.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.16	2, 97	0.08	0.69
Introjected	0.01	2, 97	0.01	0.05
Identified	0.87	2, 101	0.44	3.00
Integrated	0.60	2, 100	0.30	1.53

Note. SS = Sum of squares, MS = Mean square.

* $p < .05$

Table 34.
Interaction Effects of PPGO with Negative Feedback in Predicting Different Types of Regulation at Time 2.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.61	2, 97	0.30	2.60
Introjected	0.34	2, 97	0.17	1.38
Identified	0.61	2, 101	0.31	2.10
Integrated	0.01	2, 100	0.01	0.03

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 35.
Interaction Effects of SDO with Negative Feedback in Predicting Accuracy.

Time	SS	*df*	MS	*F*
1	0.89	1, 114	0.89	0.48
2	1.46	1, 114	1.46	0.78

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 36.
Interaction Effects of SDO with Negative Feedback in Predicting Different Types of Regulation at Time 1.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.11	2, 97	0.06	0.48
Introjected	0.06	2, 97	0.03	0.26
Identified	0.44	2, 101	0.22	1.51
Integrated	0.23	2, 100	0.12	0.60

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 37
Interaction Effects of SDO with Negative Feedback in Predicting Different Types of Regulation at Time 1.

Regulation	SS	*df*	MS	*F*
Extrinsic	0.01	2, 97	0.00	0.03
Introjected	0.03	2, 97	0.01	0.11
Identified	0.30	2, 101	0.15	1.04
Integrated	0.75	2, 100	0.38	1.93

Note. SS = Sum of squares, MS = Mean square.
* $p < .05$

Table 38.
Assessment of Model Fit Over Two Time Assessments.

GO	original χ^2	constrained χ^2	difference χ^2	*df*
MPGO	454.30	482.55	28.25*	1
MVGO	454.30	463.63	9.33*	1
PVGO	454.30	498.21	43.91*	1
PPGO	454.30	467.62	13.32*	1

* $p < .05$

Table 39.
SDO Equality Scale Main Effects on Accuracy (Study 2).

Path	Coefficient
Neg FB	.11
SDO	-.41*
SDO X Neg FB 1	.13
SDO X Neg FB 2	.56**

Note. 1 = Time 1, 2 = Time 2, Neg FB = Negative feedback
* $p < .05$, ** $p < .01$

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