2015

Examining Implicit Person Theory and Feedback Environment in Undergraduate Research Relationships

Ian Katz
Butler University

NON-EXCLUSIVE LICENSE FOR USE OF MATERIALS
in the DigitalCommons@Butler University

This non-exclusive License defines the terms for the deposit of Materials in all formats into the digital repository of Materials collected, preserved, and made available through the DigitalCommons@Butler University.

The Contributor hereby grants to Butler University a royalty-free, non-exclusive worldwide License to use, re-use, display, distribute, transmit, publish, republish or copy the Materials, either digitally or in print, or in any other medium, now or hereafter known, for the purpose of including the Materials in the DigitalCommons@Butler University. Butler University will not make any alteration, other than as allowed by this License, to your submission.

Copyright and any other intellectual property right in or to the Materials shall not be transferred by this agreement and shall remain with the Contributor or the Copyright holder if different from the Contributor. Other than this limited License, the Contributor or copyright holder retains all rights, title, copyright and other interest in the Materials licensed.

If the submission contains material for which the Contributor does not hold copyright, the Contributor represents that s/he has obtained the permission of the copyright owner to grant Butler University the rights required by this License, and that such third-party owned material is clearly identified and acknowledged within the text or content of the submission.

If the submission is based upon work that has been sponsored or supported by an agency or organization other than Butler University, the Contributor represents that s/he has fulfilled any right of review or other obligations required by such contract or agreement.

This License shall not authorize the commercial use of the Materials by Butler University or any other person or organization. Butler University will make a good faith effort to ensure that submitted items are used for educational purposes only. All requests for commercial use of submitted materials shall be referred back to the author.

Students making submissions to the DigitalCommons@Butler.edu agree to share their work and waive any privacy rights granted by FERPA or any other law, policy or regulation, with respect to this work, for the purpose of publication.

This agreement embodies the entire agreement of the parties. No modification of this agreement shall be of any effect unless it is made in writing and signed by all of the parties to the agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their authorized agents as of the date stated.

TITLE OF WORK: Examining Implicit Person Theory and Feedback Environment in Undergraduate Research Relationships

CONTRIBUTOR/ADD MY WORK:

[signature] 4/22/15

Signature **Date**

Ian Katz

Printed Name

BUTLER UNIVERSITY:

Signature **Date**

Please sign below if you do not want your work added to the DigitalCommons@Butler.edu.

DO NOT ADD MY WORK:

Signature Date

Printed Name

BUTLER UNIVERSITY HONORS PROGRAM

Honors Thesis Certification

Please type all information in this section:

Applicant Ian Katz
(Name as it is to appear on diploma)

Thesis title Examining Implicit Person Theory and Feedback Environment in Undergraduate Research Relationships

Intended date of commencement
May 9th 2015

Read, approved, and signed by:

Thesis adviser(s) Alison O'Malley 3/18/15
Date

Date

Reader(s) 3/31/15
Date

Judith Harper Morrell 3/18/15
Date

Certified by Director, Honors Program Date

For Honors Program use:

Level of Honors conferred: University

Departmental

Examining Implicit Person Theory and Feedback Environment in Undergraduate Research Relationships

A Thesis

Presented to the Department of Psychology

College of Liberal Arts and Sciences

of

Butler University

In Partial Fulfillment

of the Requirements for Departmental Honors

Ian Katz

March 18, 2015

Table of Contents

Abstract

This study examined the relationship between implicit person theory, our thoughts about malleability of human traits, and the trust students have for their faculty research advisor. There was no relationship between implicit person theory and trust. The faculty feedback environment was also captured to understand the day-to-day interactions of the student and their faculty research advisor. There was a significant relationship between a positive feedback environment and students' intention to continue collaboration with the faculty member.

Examining Implicit Theory and Feedback Environment in Undergraduate Research Relationships

In a perfect world, individuals aspire to perform at their highest possible level while at school or at work. Unfortunately, there are instances in which people do not live up to their own standards or the standards of their evaluator. Despite what we may believe about our own performance, an evaluator may have different feelings about our quality of work. For example, one may have a positive self-assessment of one's own performance while another has a negative assessment of our performance. When these negative views are shared, the individual receiving the feedback often interprets the feedback as a threat to one's ego, resulting in the feedback losing its value (O'Malley & Gregory, 2011). The current research sought to understand how individuals perceive feedback and how it impacts their close working relationships. Previous research has investigated feedback perceptions between a supervisor and a subordinate. However, there is a gap in the research attempting to understand these relationships in an intimate academic environment. The relationship between students and their faculty research mentors was examined through the lens of implicit theory and feedback environment.

Implicit Person Theory & Feedback

Dweck's work on adaptive and maladaptive motivational patterns identified two fundamentally different ways of conceptualizing intelligence. Although these patterns do not reflect differences in actual intellectual ability, they do have powerful implications for achievement behavior (Dweck, 1986). The first pattern is *incremental* theory; a person who is an incremental theorist believes that

individual's performance can change over time. The other pattern is *entity* theory. This pattern suggests that individuals believe that the performance of another individual is not subject to change and that performance level remains constant over time (Dweck & Leggett, 1988). Although an individual may be identified as being either incremental or entity, implicit person theory is a continuous variable such that individuals may lean towards one end of the spectrum, as opposed to being positioned at one pole of the theory (Levy, Stroessner, & Dweck, 1998).

The current research sought to understand how implicit person theory (IPT) is related to the feedback environment between students and their faculty research advisor. Previous research has shown that there is a positive correlation between feedback seeking behaviors and learning goal orientation. Dweck (1986) discusses that incremental theorists are prone to having learning goal orientation. This suggests that incremental theorists, rather than entity theorists are likely to engage in feedback seeking behaviors.

Implicit person theory has been applied to non-work scenarios. In a series of studies, Levy et. al. (1998) found that entity theorists were more likely than incremental theorists to agree with stereotypes about African Americans. This suggests that entity theorists, more than incremental theorists, will allow preconceived notions about individuals to affect interactions with that individual. It is also more likely that entity theorists would have a harder time than incremental theorists to revise these perceptions and accept change. Implicit person theory does not dictate how individuals feel about all human traits; irrelevant traits were rated

the same among both incremental and entity participants (Levy, Stroessner, & Dweck, 1998).

Implicit person theory has been applied to organizational situations, as well. Heslin, Latham, and VandeWalle (2005) carried out a longitudinal study in which managers' natural implicit person theories were related to the manner in which they acknowledged change in their subordinates throughout the performance appraisal process. The results of this study confirmed that the implicit theory held by the feedback giver had an effect on the perceived performance of the employee over time. They found that incrementalists were more likely to seek out change in others whereas entity theorists were reluctant to change their initial judgments of employee performance. In line with these findings, there are detrimental effects for employees with an entity theorist supervisor. Despite usual positive performance, a supervisor could label a worker as lazy or incompetent, given one instance of poor performance; this label will continue to resonate with an entity supervisor and would hinder future performance and perceptions. In the spirit of incremental mindsets, Heslin et al. (2005) concluded that through self-persuasion, individuals could harness a sustainable incremental mindset. In another study, Aronson, Fried, and Good (2002) found that African American students who participated in sessions about malleability of intelligence created lasting beneficial change in their perceptions of their own intelligence. These students also reported more enjoyment from academics and earned higher grades than the control group, displaying the long-term positive effects of harnessing an incremental mindset.

Haselhuhn, Schweitzer, and Wood (2010) found that participants, when primed to have an incremental mindset, were significantly more likely to trust a perceived human partner. In an online game, participants had a chance to double their money if they passed to their partner; the partner could then either keep the money or pass half back to the participant. As a test of trust for their partner, multiple trials were completed so that the partner could betray the participant at least once. After a few trials, the participant received a message from their partner saying that they were sorry and could be trusted in the future. Incremental participants were able to move past the breach of trust and trust the partner again after the apology, as opposed to entity participants who were less likely to trust the partner after the breach of trust. The current research examined how much trust students place in their faculty research advisors. These findings suggest that incremental participants might be more likely to trust their faculty research advisor, despite instances of mistrust.

Preferably, after receiving feedback, employees will put forth more effort in order to increase the quality of work and avoid another negative feedback interaction. The problem that arises for supervisors who have entity theorist employees is that entity theorists may see the negative feedback as a threat, resulting in decreased effort (Snyder, Malin, Dent, & Linnenbrink-Garcia, 2013). In line with these findings, it could be speculated that an entity feedback giver may be less effective during negative feedback sessions or may avoid them entirely because they do not see the capacity for change in their subordinates (Heslin et al., 2005); therefore, they may put less effort into providing empathy and constructive

comments during negative feedback sessions in the future. This implicates the current research such that incremental faculty research advisors could foster perceptions of a more positive feedback environment if they are more willing to engage in regular feedback sessions.

In a school setting, implicit theory was applied to individual's perceptions of math intelligence in a series of five studies (Rattan, Good, & Dweck, 2011). Participants were asked about their own math intelligence, and whether that ability is fixed. Next, participants were asked to imagine themselves as a seventh grade math teacher. Rattan et al. (2011) found that participants who rated their math ability as fixed criticized students' math intelligence rather than their effort. In the second study, it was found that entity participants were more likely to use comforting techniques when compared to incremental participants. Comforting techniques included telling the participant that the teacher knows that they are not good at math; thus, the teacher will go easy on the participant during math class by asking easier questions and avoid calling on the participant. This suggests that entity participants did not acknowledge that the student's performance could improve in the future, but rather helping students come to terms with poor performance is the best response. This study is further evidence of implicit person theory being applied to academic situations.

Feedback Environment

Ideally, feedback is an ongoing process between individuals in the workplace. While there are typically formal performance evaluations set to take place at specific times, feedback should be occurring on a more frequent, informal

basis. The feedback environment construct differs from traditional evaluation of performance appraisal in that it deals with the day-to-day interactions between the individuals giving and receiving feedback. Steelman, Levy, and Snell (2004) developed the feedback environment scale. The scale was intended to capture the context and situations of the feedback process. Steelman et al. (2004) found that feedback-seeking behavior was strongly correlated with a positive feedback environment. This suggests that individuals will be more likely to seek feedback from their supervisor if the supervisor promotes feedback-seeking behaviors. While some research on feedback environment investigates the perceptions of feedback environment from both the supervisor and the subordinate, the current research only captured the perceptions of the student, not the faculty research advisor.

To better understand feedback environment and its effects on intimate research relationships, the current research measured perceived supervisor leader-member exchange (LMX). LMX is used to measure how well each member of the supervisor-employee relationship assumes the appropriate role (Ritchie 2009). Ritchie (2009) included dependent measures such as trust, LMX, ease of interaction, and the other relationship quality variables that are used in this study. It has been shown that high levels of LMX are positively correlated with feedback environment (Anseel & Lievens, 2007). Anseel and Lievens (2007) also found that there is a positive correlation between a positive feedback environment and job satisfaction. This supports the current research hypothesis that students with a positive feedback environment will be more likely to intend to continue working with their faculty research advisor. High levels of satisfaction should elicit intent to continue

collaboration with the same faculty research advisor. It should also be noted that Anseel and Lievens' (2007) work with feedback environment increased the external validity of the construct; the research was conducted in Belgium and found similar results to studies conducted within the United States.

Feedback environment has been found to be negatively correlated with feelings of hopelessness in the workplace (Sparr & Sonnentag, 2008). This suggests that an open and free feedback environment decreases employee's feelings of hopelessness. They also found that participants who perceived a positive feedback environment were unlikely to have intentions of quitting their current jobs. This enhances support for the prediction that there is a positive relationship between feedback environment and intent to continue the working relationship with a faculty research advisor. The literature shows support for the relationships between feedback environment and positive outcomes. There is a positive relationship between feedback environment and feelings of empowerment (Gabriel, Frantz, Levy, & Hilliard, 2014). Gabriel et al. (2014) found that feedback orientation moderated the relationship, such that individuals with high feedback orientation and a positive perceived supervisor feedback environment were most likely to be psychologically empowered. The current research will seek to understand how feedback environment impacts one's intent to continue collaboration with their faculty research advisor. Given the findings in Gabriel et al. (2014), I can infer that participants with a positive perceived feedback environment are likely to feel empowerment. This can lead them to high intentions of continuing collaboration with their advisor.

Hypothesis 1: Participants with an incremental mindset and thus see their attributes as malleable will report high levels of trust for their faculty research advisor.

Hypothesis 2: Participants who perceive a more positive feedback environment will intend to continue collaboration with their research mentor.

Method

Participants and Procedure

The participants in this study were any student enrolled at Butler University who has recently or is currently conducting research with a faculty research advisor. Ninety-four students, 69 women (73.4%) and 24 men (25.5%) completed the survey while 115 answered part of the survey. One participant did not indicate a gender (1.1%). Respondents were 87.2% white and had an average age of 21.65. Participants were participating in research in social sciences, humanities, pharmacy, and natural sciences. The 21 participants who did not complete the survey were removed from the data set. Participants were informed that the study was intended to measure whether or not people change and experiences as an undergraduate researcher at Butler University. Once giving consent to participate, participants completed a short online survey containing a variety of scales intended to measure IPT, feedback environment, and perceptions of feedback. All measures are listed in full in the appendices.

Measures

Chronic implicit person theory. Participants completed a three-item measure to capture their chronic implicit person theory (Levy, Stroessner, & Dweck, 1998). Participants indicated how much they agreed (1 = *strongly agree*, 6 = *strongly disagree*) with statements about the malleability of individuals. An example item is: "the kind of person someone is, is something basic about them, and it can't be changed very much." Consistent with Levy et. al. (1998), participants answering a 1 to this question would be associated with an entity mindset and participants answering a 6 to this item would be associated with an incremental mindset (α = .89).

Ease of interaction. To measure the ease of the interactions between participants and their faculty research mentor, I used a three-item measure (Ritchie, 2009). An example item of this measure is: "it is easy to talk with my faculty research advisor" (α = .89). Participants responded how much they agreed with the item (1 = *strongly disagree*; 5 = *strongly agree*).

Enjoyment. The next scale intended to measure the participant's enjoyment from interacting with their faculty research advisor (Freitas & Higgins, 2002). Participants responded with how much they agreed to each of the three items in this measure (1 = *strongly disagree*; 5 = *strongly agree*). An example item from this scale is: "it is enjoyable to interact with my faculty research advisor" (α = .91)

Comfort. Participants marked their level of agreement (1 = *strongly disagree*; 5 = *strongly agree*) with three statements about the comfort of the interactions with their faculty research advisor (Butcher, Sparks, & O'Callaghan,

2001). An example item from this scale is: "I tend to relax easily with my faculty research advisor" (α = .93)

Natural non-verbal display. This next three-item scale intended to measure how natural the interactions feel between student and faculty research advisor (Sassenberg et al., 2007). Participants indicated how much they agree with each statement (1 = *strongly disagree*; 5 = *strongly agree*). An example item is: "I am able to express my natural feelings when interacting with my faculty research advisor" (α = .91)

Value. Participants responded to a four-item measure intended to capture the perceived value of the interactions between a student and their faculty research advisor (Sassenberg et al., 2007). Participants indicated how much they agree with each statement (1 = *strongly disagree*; 5 = *strongly agree*). An example item measuring the value of the interaction is: "I value having my faculty research advisor as my faculty research advisor" (α = .91).

Liking. Participants responded to Wayne and Ferris' (1990) four-item scale to indicate their liking for their faculty research advisor (α = .93). An example item measuring the liking of one's faculty research advisor is: "I think my faculty research advisor would make a good friend." Participants responded with how much they agreed with the statements (1 = *strongly disagree*; 5 = *strongly agree*).

Leader member exchange (LMX). Participants responded to Turban, Jones, and Rozelle's (1990) measure of how well the faculty research advisor complies with the unspoken rules of the exchanges between the advisor and student (α = .91). Each participant responded with the level to which they agree with the four items (1

= *strongly disagree*; 5 = *strongly agree*). An example item to measure LMX is: "my faculty research advisor would definitely understand my problems and needs."

Trust. Mayer and Gavin's (2005) scale to measure trust was implemented (α = .54). An example item from this scale is: "if someone questioned my faculty research advisor's motives, I would give him/her the benefit of the doubt." Participants responded on a five-point scale (1 = *strongly disagree*; 5 = *strongly agree*).

Feedback environment. All feedback environment measures are taken from Steelman, Levy and Snell (2004). Each subscale is intended to measure a different facet of the feedback environment between a student and their faculty research advisor.

Feedback environment: source credibility. Participants responded to three items addressing the source credibility of their faculty research advisor (α = .92). Participants responded to each item with how much they agree (1 = *strongly disagree*; 5 = *strongly disagree*). An example of an item measuring the source credibility is: "my faculty research advisor is generally familiar with my performance."

Feedback Environment: faculty research advisor feedback quality. This three-item measure is intended to understand the quality of the feedback received from each participant's faculty research advisor (α = .91). Participants responded to each item with how much they agree (1 = *strongly disagree*; 5 = *strongly agree*). An example of an item measuring feedback quality is: "my faculty research advisor gives me useful feedback about my performance."

Feedback environment: faculty research advisor feedback delivery. This three-item measure captures perceptions of the faculty research advisor's feedback to the participant (α = .89). An example of an item intended to capture perceptions of the feedback delivery is: "my faculty research advisor is supportive when giving feedback about my performance." Participants responded to each item on a five-point scale (1 = *strongly disagree*; 5 = *strongly agree*).

Feedback environment: faculty research advisor favorable feedback. This two-item measure captures how the faculty research advisor reacts to the participant's positive performance (α = .91). Participants responded to how much they agree with each item (1 = *strongly disagree*; 5 = *strongly disagree*). An example of an item from this scale is: "when I do a good job on my work, my faculty research advisor praises my performance."

Feedback environment: faculty research advisor unfavorable feedback. This three-item measure seeks to understand how each faculty research advisor responds to poor performance from the participant (α = .80). Participants responded to how much they agree with each item (1 = *strongly disagree*; 5 = *strongly agree*). An example of an item to capture these perceptions is: "on those occasions when I make a mistake, my faculty research advisor tells me."

Feedback environment: faculty research advisor feedback availability. This three-item measure captures how often participants are able to receive feedback from their faculty research advisor (α = .79). Participants responded to how much they agree with each item (1 = *strongly disagree*; 5 = *strongly agree*). An

example item trying to capture feedback availability is: "I interact with my faculty research advisor on a daily basis."

Intent. Participants were asked to indicate, on a seven-point scale (1 = *strongly agree*; 7 = *strongly disagree*), their level of intent to continue collaboration with their faculty research advisor. Participants who marked "strongly agree" intend to continue collaboration with their faculty research advisor and participants who marked "strongly disagree" intend to leave their faculty research advisor.

Results

Table 1 shows the means, standard deviations, and correlations among the variables. The implicit person theory measure captures where participants fall on a continuous scale in regards to their chronic IPT. Scores on the three-item measure were averaged to achieve a combined IPT score. If a participant scores between a 1-3, they are entity. If a participant falls between 4-6, they are incremental. If a participant's score falls between 3-4, they are considered to be neither entity or incremental (Levy et al., 1998). The average participant was considered neither incremental or entity ($M = 3.52$, $SD = 1.06$). Thirty-eight participants (33.6%) scored between 4-6, indicating an incremental mindset. Fifty-nine participants (52.2%) scored between 3-4, indicating no distinct chronic implicit theory. Twenty-seven participants (23.9%) scored between 1-3, indicating an entity mindset. Scoring is consistent with Levy et al. (1998).

No significant direct effects were observed for implicit person theory and the level of trust for the participant's faculty research mentor. Hypothesis 1 was not supported; participants with an incremental mindset did not significantly report

higher levels of trust than those with an entity mindset $F(1, 92)=.77$, $R^2=.01$, $p > .05$).

Feedback environment significantly predicts intent to continue collaboration with their advisor $F(1, 90)=38.52$, $R^2=.30$, $p < .001$. This confirms Hypothesis 2 that participants who perceive a positive feedback environment are more likely than participants with a perceived negative feedback environment to continue collaboration with their faculty research mentor.

Exploratory Analyses

An additional 5.1% of the variance in intent to continue collaboration was accounted for when testing for an interaction between feedback environment and implicit theory on intent to continue collaboration $F(3, 88)=15.88$, $R^2=.35$, $p < .02$. Table 2 shows the regression analysis. Feedback environment also significantly predicted the amount of trust in the research advisor $F(1, 92)=72.00$, $R^2=.44$, $p < .001$. Additional variance in trust is explained when testing for an interaction between feedback environment and implicit theory on trust $F(3, 90)=4.45$, $R^2=.47$, $p < .04$. Table 3 displays the regression analysis for the interaction. Figure 1 displays the interaction between implicit person theory and feedback environment when intent to continue collaboration is the dependent variable. This interaction shows that participants with an entity mindset were more sensitive to changes in the feedback environment in terms of their intent to continue collaboration. Entity participants benefit more than incremental participants from a positive feedback environment. Figure 2 shows the interaction between implicit person theory and feedback environment when trust is the dependent variable. This interaction

should be viewed with caution due to the low reliability of the trust scale ($\alpha = .54$). Unlike the previous interaction, incremental participants' level of trust was more sensitive to changes in feedback environment than entity participants.

Discussion

The current study sought to capture students' perceptions of the feedback received from their faculty research mentor. I sought to better understand student's perceptions, particularly trustworthiness, of their faculty research advisor, and the relationship between feedback environment and students' intent to continue collaboration with their faculty research mentor. I hypothesized that the student's chronic implicit person theory would impact the intimate academic relationship. Also, I thought that a positive feedback environment would impact the student's intentions of continued collaboration with their faculty research advisor. If students perceived their faculty research advisor to be familiar with their work, available to give feedback, and respectful in their delivery, this indicates a positive feedback environment (Steelman, Levy, & Snell, 2004).

My results indicate that there is no direct effect of implicit person theory on perceptions of one's faculty research advisor. This means that regardless of whether a participant is chronically incremental, entity, or unclassified, their beliefs about malleability of traits was not related to their perceptions of their advisor. These results were surprising, as Katz (2014) found that incremental mindsets were significantly positively correlated with high levels of trust during informal feedback scenarios. On the other hand, feedback environment significantly predicted one's intent to continue working with their faculty research advisor. Consistent with

Dahling, Chau, & O'Malley's (2012) findings that individuals will consistently seek feedback from a perceived positive and open feedback environment, the current research takes this further indicating that the open feedback environment will encourage continued collaboration. It can be speculated that since there is continuous feedback, students are able to improve their work at a continuous pace, as opposed to waiting for formal feedback scenarios. Contrary to Hartmann and Slapnicar's (2009) finding that formal performance evaluation is linked to perceptions of trust, a positive feedback environment can also lead to perceptions of trust. Similar to these findings, Hartman and Slapnicar (2009) speculate that formality leads to perceptions of higher quality feedback. Although it may be true that the quality of the feedback may influence perceptions of trust, the informal nature of the positive feedback environment contributes greatly to perceptions of trust.

My research contributes to the feedback environment literature in that it adds empirical support for the importance of the suggestions made by Dahling and O'Malley (2011). The authors suggested that having senior leaders openly seek feedback and serving as role models is important for a positive feedback environment. This study has direct implications for that suggestion in an undergraduate research setting. Given that participants with a perceived positive feedback environment have indicated that they intend to continue collaboration, providing that positive feedback environment publicly is important. I suggest that a lab structure in which senior members of the lab are encouraged to seek feedback in

a public manner would be beneficial for the first and second year members in that it gives off a clear perception of a positive feedback environment.

Limitations

Although the participants in this study were completing research in a variety of fields, they all attend Butler University. Butler puts great effort into undergraduate research. For that reason, the external validity of the findings that a positive feedback environment will predict intentions for continued collaboration needs evaluation. At an institution in which there is less emphasis put on the importance of undergraduate research, students may be motivated by different individual differences to continue collaboration. For example, at institutions with a graduate psychology program, professors may put most of their effort into producing publications and other work. On the other hand, professors at Butler are motivated to allow undergraduates to play a pivotal role in the research process. Because of this, it is possible that they spend more time focusing on feedback and fostering the academic development and growth of their students. It should also be noted that I only captured perceptions of feedback environment in the unique undergraduate research relationship.

To get a better understanding of the real interaction between a student and their faculty research mentor, it would be beneficial to record the perceptions of the faculty research advisor. I was unable to survey the faculty research advisor that each participant is collaborating with. Because of this limitation, it is unclear whether or not the perceptions of the students are accurate. Also, I am unable to discover other reasons for ratings given by participants. For example, it is possible

that if a participant receives frequent negative feedback from their advisor that they would rate the feedback environment negatively on the survey. However, it is possible to have a positive feedback environment that incorporates consistent negative feedback. The participant in this example may report a negative feedback environment, when in reality it is a positive feedback environment. Many of the responses averaged to the mean of the each scale. Although it could be presumed that this is because participants did not have enough information to respond accurately to the scales, this captures the feedback environment as is.

Future Research

Given the limitation that no data was collected from the faculty research advisor, the next step in this line of research should inquire more about the faculty research advisor. Past researchers have asked participants to rate the implicit person theory of their supervisor (Kam et al., 2012; Jennssen, 2014). Kam, Risavy, Perunovic, and Plant (2014) operationalized the perception of someone else's implicit theory as whether or not the supervisor would notice performance change. They found that an employee's implicit theory had no correlation with their supervisors' perceived implicit theory. My research only captured the participant's chronic IPT; it should be noted that the IPT of the faculty research advisor should not be inferred from any of the findings in this study. Kam et al. (2012) found that participants who perceived their supervisor to have an incremental implicit person theory were unlikely to indicate turnover intention. In an academic context, this is similar to measuring the student's intentions to continue collaboration. Similar to the findings in this study, Kam et al. (2012) found no correlation between the

employees chronic implicit person theory and turnover intentions. In an academic environment, it could be beneficial to capture perceived IPT of the faculty research advisor to see if there is a similar effect. It should be noted that the external validity of Kam et al.'s (2012) finding that participants who perceive their supervisor to have an incremental mindset show low intentions of turnover. Jennssen (2014) found no correlation between perceived supervisor IPT and turnover intentions. That study used food service employees as participants while Kam et al. (2012) used engineering employees as participants. I would be interested to see how these scenarios would play out in academia in a faculty-student relationship.

Kam et al. (2012) introduces the relationship between IPT and transformational leadership. Their findings suggest that transformational leaders, individuals who are successful in increasing goal awareness and elevating employee interest (Bass, 1991), tend to have an incremental IPT. Future research should incorporate the findings in my study to better understand the relationship between feedback environment, transformational leadership, IPT and their effects on intentions for continued collaboration. Since transformational leaders try to elevate interest, it could be speculated that more interested employees would engage in feedback seeking more than uninterested employees. Incorporating feedback seeking behaviors into a future study could capture a glimpse into what is at play for employees working under a transformational leader.

Another construct that should be introduced to better understand intimate research relationships is procedural justice. Procedural justice is the level of perceived fairness in the process of decision-making. Heslin and VandeWalle

(2009) found that an individual's IPT had an effect on perceived procedural justice from their decision makers such that incremental participants experienced more positive procedural justice. It would be beneficial to understand the role feedback environment would play in perceptions of procedural justice. Since Heslin and VandeWalle (2009) focused on procedural justice in formal performance evaluation scenarios, perceptions could differ based on one's feedback environment. Since feedback environment involves constant and open feedback, participants would have more instances to help form impressions of procedural justice.

Conclusion

Most research regarding feedback and IPT has taken place in a variety of organizational settings; however, little research has been done to understand feedback in an intimate academic setting. Although implicit person theory had no effect on perceptions of trust or intentions to continue collaboration with a faculty research advisor, feedback environment plays a pivotal role in these relationships. In light of these results, I believe that fostering a positive feedback environment is instrumental in ensuring continued collaboration and a good working relationship.

References

Anseel, F., & Lievens, F. (2007). The long-term impact of the feedback environment on job satisfaction: a field study in a Belgian context. *Applied Psychology, 56*(2), 254-266.

Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology, 38*(2), 113-125.

Bass, B. M. (1991). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics, 18*(3), 19-31.

Butcher, K., Sparks, B., & O'Callaghan, F. (2001). Evaluative and relational influences on service loyalty. *International Journal of Service Industry Management, 12*(4), 310-327.

Dahling, J. J., Chau, S. L., & O'Malley, A. (2012). Correlates and consequences of feedback orientation in organizations. *Journal of Management, 38*(2), 531-546.

Dahling, J. J., & O'Malley, A. L. (2011). Supportive feedback environments can mend broken performance management systems. *Industrial and Organizational Psychology, 4*(02), 201-203.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*(10), 1040-1048. doi:10.1037/0003-066X.41.10.1040

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*(2), 256-273. doi:10.1037/0033-295X.95.2.256

Freitas, A. L., & Higgins, E. T. (2002). Enjoying goal-directed action: The role of regulatory fit. *Psychological Science, 13*(1), 1-6.

Gabriel, A. S., Frantz, N. B., Levy, P. E., & Hilliard, A. W. (2014). The supervisor feedback environment is empowering, but not all the time: Feedback orientation as a critical moderator. *Journal of Occupational and Organizational Psychology, 87*(3), 487-506.

Hartmann, F., & Slapničar, S. (2009). How formal performance evaluation affects trust between superior and subordinate managers. *Accounting, Organizations and Society, 34*(6), 722-737.

Haselhuhn, M. P., Schweitzer, M. E., & Wood, A. M. (2010). How implicit beliefs influence trust recovery. *Psychological Science, 21*(5), 645-648.

Heslin, P. A., Latham, G. P., & VandeWalle, D. (2005). The effect of implicit person theory on performance appraisals. *Journal of Applied Psychology, 90*(5), 842-856. doi:10.1037/0021-9010.90.5.842

Heslin, P. A., & VandeWalle, D. (2009). Performance appraisal procedural justice: The role of a manager's implicit person theory. *Journal of Management.*

Jenssen, K. B. (2014). The effect of perceived supervisor IPT beliefs on turnover intention in the food service industry. *quality (*Unpublished doctoral dissertation or master's thesis). University of Stavanger. Stavanger, Norway.

Kam, C., Risavy, S. D., Perunovic, E., & Plant, L. (2014). Do subordinates formulate an Impression of their manager's implicit person theory?. *Applied Psychology, 63*(2), 267-299.

Katz, I. M. (2014, July). *Believing in the Change We Seek: Implicit Theories and Negative Feedback.* Presented at the Butler Summer Institute Showcase, Indianapolis, IN.

Lam, W., Huang, X., & Snape, E. D. (2007). Feedback-seeking behavior and leader-member exchange: Do supervisor-attributed motives matter?. *Academy of Management Journal, 50*(2), 348-363.

Levy, S. R., Stroessner, S. J., & Dweck, C. S. (1998). Stereotype formation and endorsement: The role of implicit theories. *Journal of Personality and Social Psychology, 74*(6), 1421.

Mayer, R. C., & Gavin, M. B. (2005). Trust in management and performance: who minds the shop while the employees watch the boss?. *Academy of Management Journal, 48*(5), 874-888.

O'Malley, A. L., & Gregory, J. B. (2011). Don't be such a downer: using positive psychology to enhance the value of negative feedback. *The Psychologist-Manager Journal, 14*, 247-264.

Paswan, A. K., Pelton, L. E., & True, S. L. (2005). Perceived managerial sincerity, feedback-seeking orientation and motivation among front-line employees of a service organization. *Journal of Services Marketing, 19*(1), 3-12.

Rattan, A., Good, C., & Dweck, C. S. (2012). "It's ok—Not everyone can be good at math": Instructors with an entity theory comfort (and demotivate) students. *Journal of Experimental Social Psychology, 48*(3), 731-737.

Ritchie, S. A. (2009). *The impact of leader-follower regulatory focus congruence on regulatory fit and relationship quality (*Unpublished doctoral dissertation or master's thesis). The University of Akron. Akron, Ohio.

Sassenberg, K., Jonas, K. J., Shah, J. Y., & Brazy, P. C. (2007). Why some groups just feel better: The regulatory fit of group power. *Journal of Personality and Social Psychology, 92*(2), 249-267.

Snyder, K. E., Malin, J. L., Dent, A. L., & Linnenbrink-Garcia, L. (2014). The message matters: the role of implicit beliefs about giftedness and failure experiences in academic self-handicapping. *Journal of Educational Psychology, 106*(1), 230-241. doi:10.1037/a0034553

Sparr, J. L., & Sonnentag, S. (2008). Feedback environment and well-being at work: The mediating role of personal control and feelings of helplessness. *European Journal of Work and Organizational Psychology, 17*(3), 388-412.

Steelman, L. A., Levy, P. E., & Snell, A. F. (2004). The feedback environment scale: Construct definition, measurement, and validation. *Educational and Psychological Measurement, 64*(1), 165-184.

Turban, D. B., Jones, A. P., & Rozelle, R. M. (1990). Influences of supervisor liking of a subordinate and the reward context on the treatment and evaluation of that subordinate. *Motivation and Emotion, 14*(3), 215-233.

Wayne, S. J., & Ferris, G. R. (1990). Influence tactics, affect, and exchange quality in supervisor-subordinate interactions: A laboratory experiment and field study. *Journal of Applied Psychology, 75*(5), 487.

Whitaker, B. G., & Levy, P. (2012). Linking feedback quality and goal orientation to feedback seeking and job performance. *Human Performance, 25*(2), 159-178.

Table 1: *Means, Standard Deviations, and Correlations Among the Variables*

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. IPT	3.52	1.06																	
2. Ease	3.43	.49	.35																
3. Enjoy	3.90	1.02	.12	.77**															
4. Social	3.72	1.07	.13	.77**	.69**														
5. Natural	3.77	.96	.07	.75**	.69**	.86**													
6. Value	4.00	.90	.05	.72**	.75**	.64**	.67**												
7. Liking	4.02	.85	.00	.70**	.70**	.72**	.75**	.86**											
8. LMX	4.02	.86	.00	.69**	.64**	.65**	.69**	.83**	.86**										
9. Trust	3.56	.62	.09	.58**	.64**	.50**	.52**	.72**	.70**	.67**									
10. Feedback Environment	4.01	.65	.00	.63**	.55**	.63**	.65**	.81**	.85**	.87**	.66**								
11. Credibility	4.26	.79	-.02	.62**	.56**	.63**	.62**	.78**	.82**	.83**	.64**	.89**							
12. Quality	4.23	.75	-.02	.61**	.53**	.60**	.60**	.79**	.81**	.79**	.64**	.91**	.88**						
13. Delivery	4.10	.87	.03	.61**	.54**	.69**	.64**	.69**	.80**	.77**	.56**	.85**	.79**	.81**					
14. Positive Feedback	4.12	.88	.03	.44**	.40**	.44**	.47**	.52**	.60**	.61**	.47**	.75**	.61**	.59**	.70**				
15. Negative Feedback	3.90	.69	.05	.14	.06	.17	.25**	.42**	.32**	.34**	.22**	.52**	.35**	.42**	.20*	.30**			
16. Availability	3.48	1.02	-.06	.49**	.44**	.40**	.45**	.60**	.59**	.68**	.54**	.74**	.54**	.59**	.48**	.41**	.30**		
17. Intent	2.13	1.71	-.11	-.36*	-.52**	-.35**	-.35**	-.56**	-.56**	-.52**	-.54**	-.55**	-.48**	-.47**	-.44**	-.39**	-.27**	-.48**	

*

Table 2

Summary of Hierarchical Regression Analysis for Participant's Intent to Continue Collaboration With Faculty Research Advisor (N = 91)

	Model 1			Model 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
IPT	-.17	.15	-.10	-.21	.15	-.13
FE	-1.45	.23	-.55**	-1.31	.24	-.50**
IPT x FE				.61	.26	.21*
R^2		.31			.35	
F for change in R^2		20.01**			5.57*	

Note: IPT and FE were centered at their means.

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

Table 3

Summary of Hierarchical Regression Analysis for Trust Between Student and Faculty Research Advisor (N = 91)

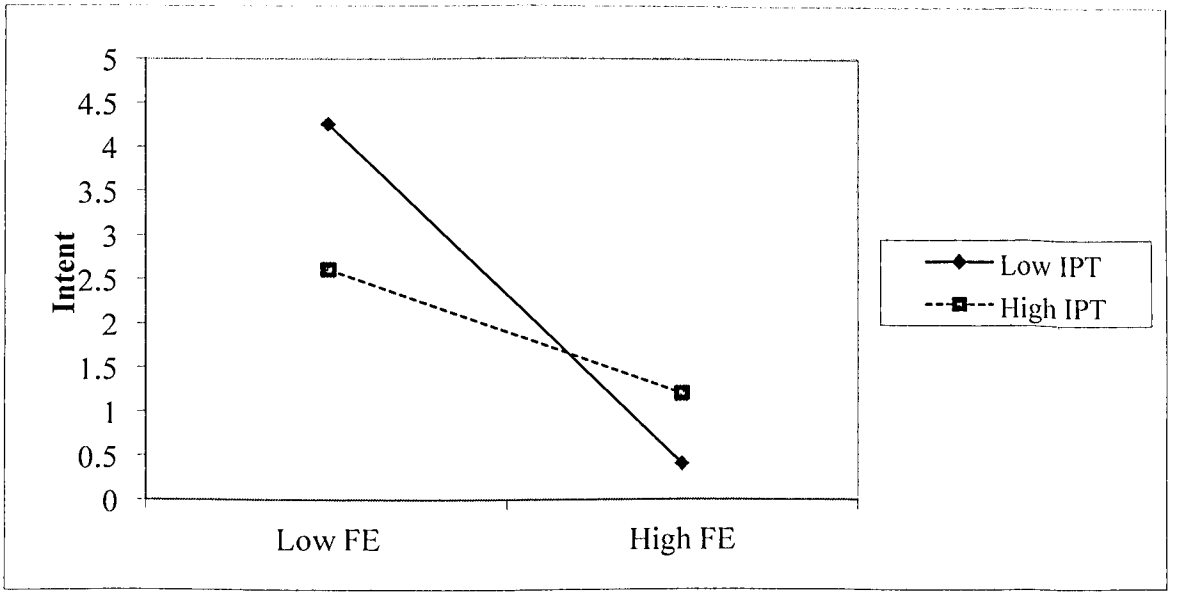
	Model 1			Model 2		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
IPT	0.56	.05	.09	.04	0.05	.06
FE	.63	.07	.66**	0.68	0.08	.71**
IPT x FE				.17	.08	.17*
R^2		.45			.03	
F for change in R^2		36.89*			4.45*	

Note: IPT and FE were centered at their means.

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

Figure 1

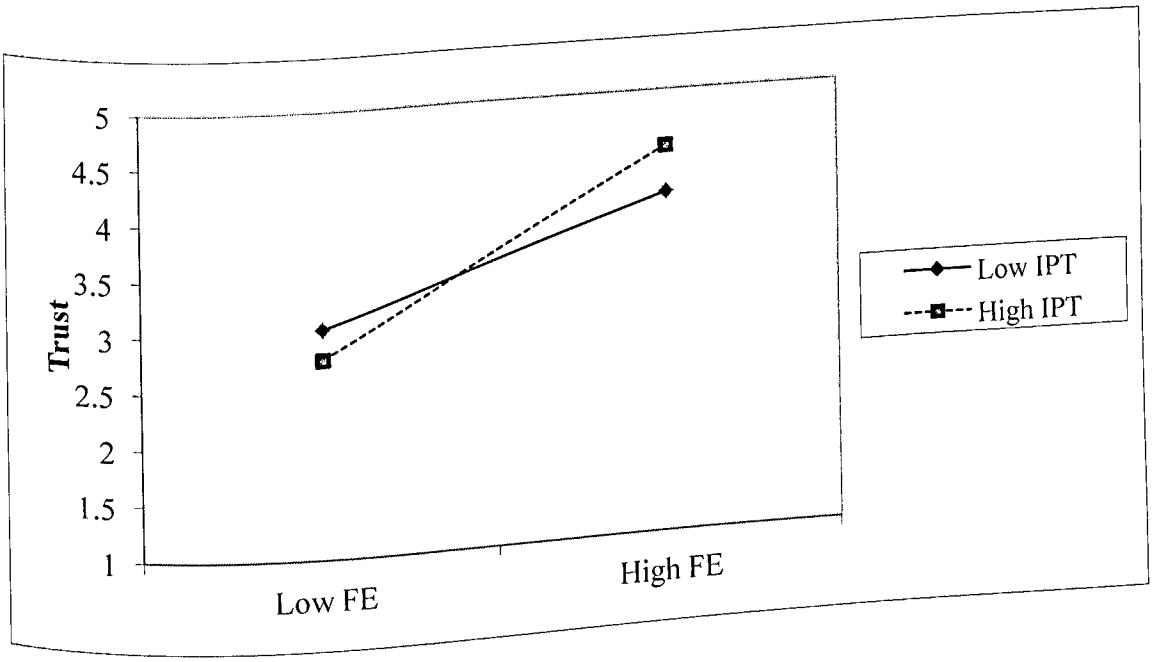
Interaction between Implicit Person Theory and Feedback Environment on Intent to Continue Collaboration



Note. Intent to continue collaboration is scaled such that 1 = *strongly agree* and 7 = *strongly disagree.*

Figure 2

Interaction between Implicit Person Theory and Feedback Environment on Trust


5
4.5
4
3.5
3
2.5
2
1.5
1
Trust
Low FE
High FE
Low IPT
High IPT

Appendix A: Demographic Measures

Please indicate your status on each of the following questions:

Age: ____

Gender: Male Female

Race: Caucasian

African American

Asian

Hispanic

Middle Eastern

Pacific Islander

Other: _____

When did you been working with your faculty research advisor? (Month, Year)

How many unique projects have you worked on with your faculty research mentor?____

What is the primary disciplinary affiliation of your research?_____

Appendix B: Implicit Person Theory Measure

The kind of person someone is, is something basic about them, and it can't be changed very much.

People can do things differently, but the important parts of who they are can't really be changed.

Everyone is a certain kind of person, and there is not much that they can do to really change that.

Note. Each item is accompanied by a scale ranging from 1 to 6 (1= strongly agree, 2= agree, 3= mostly agree, 4= mostly disagree, 5= disagree, 6= strongly disagree).

Appendix C: Ease of Interaction Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.

1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. It is easy to talk with my faculty research advisor.
2. The interaction with my faculty research advisor goes smoothly.
3. Interacting with my faculty research advisor is somewhat difficult. (R)

Appendix D: Enjoyment Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.

1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. It is interesting to interact with my faculty research advisor.
2. It is enjoyable to interact with my faculty research advisor.
3. It is exciting to interact with my faculty research advisor.

Appendix E: Social Comfort Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.

1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. I tend to relax easily with my faculty research advisor.
2. I feel very comfortable in my faculty research advisor's presence.
3. I feel completely at ease with my faculty research advisor.

Appendix F: Natural Non-Verbal Display Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.

1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. I am able to behave as I want to when interacting with my faculty research advisor.

2. It feels natural to interact with my faculty research advisor.
3. I am able to express my natural feelings when interacting with my faculty research advisor.

Appendix G: Value Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.
1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. The thought of having my faculty research advisor as a faculty research advisor is attractive.
2. I value having my faculty research advisor as a faculty research advisor.
3. I do NOT like having my faculty research advisor as a faculty research advisor. (R)
4. It feels good to have my faculty research advisor as a faculty research advisor.

Appendix H: Liking Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.
1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. I think my faculty research advisor would make a good friend.
2. I get along well with my faculty research advisor.
3. I like my faculty research advisor very much.
4. Working with my faculty research advisor is a pleasure.

Appendix I: LMX Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.
1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree

5 = Strongly agree

1. My faculty research advisor would definitely understand my problems and needs.
2. If I needed help at school I could count on my faculty research advisor.
3. I would expect to have an effective working relationship with my faculty research advisor.
4. My faculty research advisor could be trusted to make important decisions concerning my work.

Appendix J: Trust Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.
1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

1. If someone questioned my faculty research advisor's motives, I would give him/her the benefit of the doubt.
2. If I had my way, I wouldn't let this faculty research advisor have any influence over issues that are important to me. (R)
3. I would be willing to let my faculty research advior have complete control over my work.
4. I really wish I had a good way to keep an eye on my faculty research advisor. (R)
5. I would be comfortable giving my faculty research advisor responsibility for a task or problem which was critical to me, even if I could not monitor his/her actions.

Appendix K: Feedback Environment Measure

INSTRUCTIONS: Please indicate your response to the following statements regarding your perceptions of your faculty research advisor.
1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

Source Credibility

1. My faculty research advisor is generally familiar with my performance.
2. My faculty research advisor is fair when evaluating my performance.
3. I have confidence in the feedback my faculty research advisor gives me.

Faculty research advisor Feedback Quality

1. My faculty research advisor gives me useful feedback about my performance.
2. The performance feedback I receive from my faculty research advisor is helpful.
3. I value the feedback I receive from my faculty research advisor.

Faculty research advisor Feedback Delivery

1. My faculty research advisor is supportive when giving feedback about my performance.
2. When my faculty research advisor gives me performance feedback, he or she is considerate of my feelings.
3. My faculty research advisor is thoughtful when giving me performance feedback.

Faculty research advisor Favorable Feedback

1. When I do a good job on my work my faculty research advisor praises my performance.
2. My faculty research advisor generally lets me know when I do a good job. frequently receive positive feedback from my faculty research advisor.

Faculty research advisor Unfavorable Feedback

1. My faculty research advisor tells me when my work performance does not meet university standards.
2. On those occasions when my performance falls below what is expected, my faculty research advisor lets me know.
3. On those occasions when I make a mistake, my faculty research advisor tells me.

Faculty research advisor Feedback Availability

1. I interact with my faculty research advisor on a daily basis.
2. My faculty research advisor is too busy to give me feedback. (RS)
3. My faculty research advisor is usually available when I want performance information.

Appendix L: Intent Measure

INSTRUCTIONS: Please rate how much you agree with the following item:
1=Strongly Agree
2=Agree
3=Mostly Agree
4=Neutral
5=Mostly Disagree
6=Disagree
7=Stronlgy Disagree

1. I intend to continue working with this faculty research advisor.