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Stutte, Denton T. *Friends or Critical Friends*

Abstract

The following study investigates the components of critical friendship in the hope of establishing a measure that can be used to assess one's ability to serve as a critical friend. Critical friendship is an underserved component of feedback giving and receiving that fits within the collaborative learning framework. A critical friend is defined as "a trusted person who asks provocative questions, provides data to be examined through another lens, and offers critique of a person's work as a friend" (Costa & Kallick, 1993, p. 50). A measure of critical friendship was developed here, The Critical Friendship Scale (CFS), to determine one's level of critical friendship. A principal component analysis revealed the following components of the Critical Friendship Scale: giving feedback, interpersonal trust, receiving feedback, intellectual desire, intrapersonal trust, carefulness, and caring. This scale provides a basis for which to further improve and develop a valid and reliable measure for assessing one's level of critical friendship. As such, future research should look to improve the CFS and then use it in training individuals in critical friendship. The CFS also has the opportunity for broader use within the feedback domain as scholars search for ways to give effective feedback to diverse audiences.

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Chapter I: Literature Review

Feedback is an important element within learning (Hattie & Timperley, 2007). It can be used to provide notes on performance, from identifying gap areas to noting areas of excellence (Hattie & Timperley, 2007). However, not all feedback is deemed useful or acted upon (Johnson, 2016). How do those providing feedback ensure that the feedback given is used? The idea of critical friendship is a possible solution. A critical friend is defined as “a trusted person who asks provocative questions, provides data to be examined through another lens, and offers critique of a person’s work as a friend” (Costa & Kallick, 1993, p. 50). However, there has been little research conducted on what specific qualities define this relationship. The following study aims to improve the knowledgebase concerning critical friendship through the development of an inventory assessing how closely one’s relationship with another aligns with critical friendship. By creating a scale that gauges how much a relationship exemplifies a critical friendship, more research can be done in this domain. This will impact not only the critical friendship domain, but also help in defining what kind of interactions best accommodate utilizable and useful feedback. Further, improving our knowledge of how feedback functions also benefits the collaborative learning domain. When feedback is presented in a collaborative learning environment, practicing critical friendship could improve the overall learning experience.

History of Collaborative Learning

The language surrounding collaboration has varied widely within relevant literature. Whether the literature is specifically discussing groups, teams, collaborative efforts, or cooperative efforts, it is focused inherently on a distinction between accomplishing a task as an individual and accomplishing a task as something other than an individual. There has been some controversy as to whether collaborative, cooperative, group, and team learning all indicate the

same concept (Kirshner, 2001). This debate is present in educational pedagogy literature, where a distinction is made based on how much control a teacher has over the direction and process of learning within their classroom (Kirshner, 2001). From this point forward, this review will use collaborative learning to discuss all forms of non-individual based learning.

When we consider the history of collaborative learning, the phenomenon was relatively unheard of before the 1980s (Johnson & Johnson, 2009). Prior to the 1980s, individualism and competition reigned supreme in learning and education (Johnson & Johnson, 2009). Interpersonal competition, or individuals competing closely against each other in order to learn, ran supreme throughout this period (Johnson & Johnson, 2009). However, this competitive learning died off in favor of “rugged individualism” (p. 365), defined by highly private individual learning with minimal student to student interaction (Johnson & Johnson, 2009). A surge of social science literature in the 1970’s and 1980’s prompted the shift to collaborative learning – with this trend continuing to strengthen through today (Johnson & Johnson, 2009).

Requirements for Successful Collaboration

With the change from individualism to collaboration came a need to examine the benefits of collaborative learning. The important question becomes: What makes a group different from individuals who work separately beside each other? Peters and Armstrong (1998) liken this separated, or individualized work, to the old math principal that $1+1=2$. This example highlights what occurs when individuals work alone side by side together. One person has ideas and writes them down, another person has ideas and writes them down, and then they put those two documents together and you have two persons’ thoughts and ideas. This is not collaborative learning. Instead, Peters and Armstrong (1998) liken collaborative learning to $1+1=3$. This highlights that when collaborating new ideas are formed through the combined effort of the two

individuals. Without this interaction new ideas cannot be created, because there is an essential component missing: the collaboration. Each individual contributes a part to the combined effort, and the partnership contributes “something that does not and cannot fully exist in the lives of individual collaborators” (Peters & Armstrong, 1998, p. 75). Thus, a team or group is inherently different from individuals, since a team is a social system, and social systems produce different goods than individuals (Salomon & Globerson, 1989).

In order for collaboration in teams to function properly a number of roadblocks must be avoided: the free-rider effect, the sucker effect, status differential effects, and ganging up on the task effects (Salomon & Globerson, 1989). The free-rider effect occurs whenever one group member continually expends less and less energy into the project the expense of other group members increased energy output (Salomon & Globerson, 1989). They make an important distinction between ability and energy expenditure here. It is not the case that high ability members always exert higher amounts of energy. More simply, the weakest link is not necessarily the one who ‘free-rides’. If a task is built so that the group’s performance is based more so on the least able team member (conjunctive tasks) then it is the most able team member who free-rides. No matter how much effort they expend their performance is ultimately decided by less able team members and thus they disengage. This effect can be remedied through changing the task to be additive in nature, where the result depends on what maximal value can be achieved through the group (such as tug of war).

The sucker effect interacts with the free-rider effect such that if someone realizes that a group member is ‘free-riding’ they may steadily reduce their own effort in order to avoid being the ‘sucker’ (Salomon & Globerson, 1989). Similarly, this effect can occur in both high-ability and low-ability individuals. It is best to consider this effect in terms of equality of effort.

Individuals look to equalize any effort imbalances when they recognize they are putting in more or less effort than their fellow team members. Salomon and Globerson (1989) make note that the sucker effect is found regardless of whether the individual sees their team members are capable but inputting low effort or simply low in ability.

Status differential effects occur whenever individuals contribute to groups disproportionately (Salomon & Globerson, 1989). This not only results in effort differences between group members, but can also negatively impact the collaboration. To bring back the previous math example, a group that suffers from this effect might get $1+1=2.3$ instead of $1+1=3$. This is because when group members contribute to a collaboration disproportionately, there is less opportunity for individuals to learn from the thoughts and opinions of the low effort group members. This effect occurs whenever an individual is initially perceived as being particularly educated on the collaboration topic of interest, and is such given a high-status ranking. High status ranking individuals are given more opportunities to speak and contribute and others defer to their opinions, which only enhances their high status ranking. Salomon and Globerson (1989) keenly liken this to the old adage “the rich get richer and the poor get poorer” (p. 95).

Lastly, Salomon and Globerson (1989) coin the final effect “ganging up on the task” (p. 95). This situation is built upon the idea that collaboration is more effort than it is worth. To bring back the math metaphor, this example is the standard $1+1=2$ math concept. It is readily apparent whenever individuals are unequally invested or interested in a particular collaboration. These teams decide that the ‘path of least resistance’ would be to avoid the collaborative process altogether since, in order for collaboration to happen, a certain level of buy-in from team members must be made. The team decides that it would require more effort to create this buy-in

than the collaboration warrants, and thus forgo 'true' collaboration, instead choosing to work together as individuals on a project.

Johnson and Johnson Model

Collaborative learning spans a wide and complex domain. The roadblocks to collaborative learning previously discussed only add to the complexity of collaborative learning. To answer this complexity, Johnson and Johnson (2009) propose the following model. This model of collaboration includes five elements for successful cooperation: (1) positive interdependence, (2) individual accountability, (3) promotive interaction, (4) the appropriate use of social skills, and (5) group processing.

Positive interdependence is defined as the success of one person being dependent on the success of the group (Laal, 2013). Simply, this is cooperation towards a shared goal (Laal, 2013). Interdependence does not always have to be positive. Negative interdependence is frequently observed as competition, whereas the lack of interdependence is found in individual work (Laal, 2013). Positive interdependence is further broken into three separate parts: outcome interdependence, means interdependence, and boundary interdependence (Johnson & Johnson, 2009).

Outcome interdependence is the mutual cooperation towards a shared goal or reward (Johnson & Johnson, 2009). Means interdependence is the collection and mutual distribution of resources, roles, and tasks (Johnson & Johnson, 2009). Boundary interdependence encompasses both identity and environmental interdependence. Individuals may group themselves into smaller segments from a large group based on their shared history (identity) or proximity to each other (environmental; Johnson & Johnson, 2009). Positive interdependence is different than either group membership or group interaction (Johnson & Johnson, 2009). In order for the positive

effects to develop, members of the group must feel that the success of the group is dependent on their individual contributions (Johnson & Johnson, 2009). It is not enough to simply be a member of a group. Similarly, it is not enough to simply have the opportunity to work with others – there is a responsibility aspect missing from this scenario (Johnson & Johnson, 2009). Positive interdependence creates a sense of responsibility on the individual to succeed for the success of the group and to assist others in their own personal success (Johnson & Johnson, 2009).

The second aspect of successful collaboration, (2) individual accountability, is defined as the assessment of an individual's contribution against a performance standard. This process does not have to be formal, as many groups will hold informal or unspoken performance standards (no misspelled words in a written assignment). However, formal standards and expectations increase individual performance, and it is this kind of accountability that is further explained (Johnson & Johnson, 2009).

It has been noted that individual accountability also lends itself to the responsibility piece explored with positive interdependence (Johnson & Johnson, 2009). Individuals who feel that their contributions cannot be identified within the group will lack the ability to be accountable for their work (Johnson & Johnson, 2009). This, in turn, reduces the responsibility one feels to do their best work, as they are not being held accountable for the quality of their work (Johnson & Johnson, 2009). There are two ways to address this issue – reduce group size or institute formal accountability checks (Johnson & Johnson, 2009). Laal, Geranpaye, and Daemi (2013) note that individual accountability reduces the likelihood of social loafing and free-riding, which have been noted to reduce collaborative learning (Salomon & Globerson, 1989). Specifically,

when instituting formal accountability checks, individual accountability allows for the group to “identify who needs more assistance, support, and encouragement in learning” (p. 287).

The third aspect of successful collaboration, (3) promotive interaction, is defined as the process of encouraging others to do their best work in order to improve the chances of the groups success (Johnson & Johnson, 2009). This is in contrast to oppositional interaction, where individuals inhibit each other from doing their best work, and no interaction, where individuals work separately towards the group’s goals (Johnson & Johnson, 2009). In order to engage in promotive interaction, individuals have to let go of the competitive instinct to be the better than their peers and instead focus on bringing out the best in their colleagues. The fourth aspect of successful collaboration, (4) appropriate use of social skills, is defined as developing trust with group members, establishing effective communication among group members, supporting each other, and effectively handling group conflicts (Johnson & Johnson, 2009). These skills form the backbone for all the interactions that occur during collaborative practices (Johnson & Johnson, 2009).

The final aspect of successful collaboration, (5) group processing, is defined as a project discussion about the group member’s individual contributions, what is working well, what is not, and what improvements could be made based on this information (Johnson & Johnson, 2009). Group processing leads to increased group productivity and improves individual contributions (Johnson, Johnson, Stanne, & Garibaldi, 1990). Further, this group processing is particularly effective at improving performance for small teams (Johnson et al., 1990).

Feedback

Within collaborative learning, feedback is clearly an important element. In Johnson and Johnson’s (2009) model, feedback opportunities abound through each of the aspects. In fact,

group processing is essentially another way of saying group feedback. Feedback is not the same concept as collaborative learning, and it is possible to imagine a scenario where collaborative learning takes place, but no feedback is exchanged. As such, the following section will further examine the niche that feedback plays within collaborative learning.

Most would agree that feedback is an important element of our current educational system. After all, receiving a grade for the work done is feedback in a basic sense. The grade itself is providing information on the quality of the work. It is difficult to imagine a learning environment where feedback is not an essential piece. Yet, feedback is often put on the back-burner when discussing quality within learning. Topics for learning often revolve around groups or individuals, discussions or lectures, and exams or homework. Archer-Kath, Johnson, and Johnson (1994) iterate the importance of feedback to learning, whether in groups or as individuals. They studied middle school students taking a German class. Students were split into either individual feedback groups or group-based feedback groups. They conclude that individual-specific feedback is more effective at increasing a number of positive factors including motivation for achievement (Archer-Kath et al., 1994). Moreover, how this feedback is delivered is key to increasing this motivation. Feedback should be focused on the actions of specific group members as opposed to the group overall, and discussed in person as opposed to indirect communication (Archer-Kath et al., 1994).

Feedback, like collaborative learning, is a wide domain that encompasses a number of topics. For instance, feedback can be sought out or inferred, given in groups or individually, and provided in trusting relationships or through indifferent means. This last category is the niche where critical friendship lives. Ashford and Cummings (1983) looked into individual feedback seeking behaviors, or the process of actively monitoring and seeking feedback information. They

suggest that individuals will use feedback seeking behaviors when (1) the feedback is valuable, when (2) the current amount of feedback is inadequate for improvement and (3) the cost is low. They further divide cost into three different categories: effort cost, or how much effort is required to obtain the feedback, face loss cost, or the risks associated with seeking feedback, and inference cost, or the amount of inference associated with seeking feedback. Because of these costs, feedback is sought out less frequently. When feedback is sought, it may only be because individuals are confirming what they already knew through monitoring perceived feedback rather than inquiring for specific feedback. Ashford and Cummings (1983) suggest that inquiry, rather than monitoring, feedback seeking behaviors should be encouraged to reduce the amount of confirmation bias.

Eva et al. (2012) further delved into how feedback is interpreted and utilized through a sample of students within the medical profession. The researchers conducted focus groups with 134 individuals within medical training programs ranging from undergraduate to practicing physician programs in five countries. The focus groups centered around perceptions of self-assessments and what sorts of activities prompt meaningful reflection on their assessments. The researchers found that the level of comfort, experience, and confidence in the receiver of the feedback manifested in two different ways: it enabled the receiver to ask for and accept feedback or to guard against critical feedback. Of these, confidence was found to play the largest role in requesting feedback, but also lead to the most issues whenever individuals projected too much confidence. They found that the process of reconciliation when the external feedback given does not match one's self perception is complex and deserves further study. They described their findings in terms of hot cognition or cold cognition. Hot cognitions are related to emotions, arousal, and motivation and are linked to feedback that strengthens one's self perceptions. Cold

cognitions are unemotional and analytical. Similar to Ashford and Cummings (1983), Eva et al. (2012) found that confirmation bias, a type of cold cognition, is a prevalent concern when seeking and receiving feedback.

When individuals seek feedback, they often seek out that which confirms their suspicions and not seek out that which does not. Hot cognitions were also found in Eva et al.'s (2012) study, such as the idea of vulnerability. Before seeking out feedback, their participants needed to have confidence in being vulnerable, a trusting relationship with the feedback giver, and preparation for the initial uncomfortableness of knowing that one's work is suboptimal. This struggle in whether or not to seek feedback pulls on the individuals emotions, either motivating or demotivating them towards seeking feedback.

Evans (2013) conducted a meta-analysis of assessment feedback in higher education, and it is her findings on peer feedback which are particularly relevant to this discussion. Her review indicated that peer feedback can be helpful, however it is not universally useful. Specifically, how peer feedback is implemented, the academic abilities of both parties, whether the feedback is formative or summative in nature, and the level of training peers receive for giving and receiving feedback affects their future performance. Further, she found that students must be willing and active participants in this feedback exchange, as well as ready to grow and develop. These findings suggest that peer feedback is a complex process and that there are many elements involved in the process of giving and receiving feedback from a peer.

Hattie and Timperley (2007) identified four different kinds of feedback within education: feedback about the task, feedback about the process, feedback focused at self-regulation, and feedback about the self as a person. They found that feedback about the self as a person, such as 'You're very smart' was the least effective kind of feedback. Similarly, feedback at the task

level, such as ‘You need to add a Methodology section’ often inhibits creative problem solving and higher-order thinking. Instead, they found that feedback about the process, ‘This paper needs editing, use the skills you learned yesterday to do so’, or regulation, ‘You have the skills necessary to write a creative introduction, review this section to ensure this is up to your expectations’ were the most potent kind of feedback. The difference between process and regulation is subtle, but important. Process based feedback provides greater information about what specific skills should be drawn on to improve whereas regulation based feedback suggests that the receiver has the required self-evaluation skills to improve the quality of the task.

Langer (2011) found that the effectiveness of feedback in education depended on the emotional response to the feedback, the level of interactivity between feedback giver and receiver, and in the level of cognitive processing that the receiver devotes to the feedback. This last point exemplifies that feedback is not a passive process, but an active process of engagement. Langer (2011) also found that the reciprocal process of giving and receiving feedback is undervalued, which is further strengthened by the limiting definition of feedback behavior provided by Johnson (2016). Lastly, Langer (2011) suggests that feedback behaviors are highly individualized, and that in order to be an effective feedback giver, one must be willing to adapt to the receiver.

Bok et al. (2013) point to three key factors that affect feedback seeking behaviors for medical students. The first factor is the intentions and qualities of the feedback giver. The giver must be a respected individual with whom the receiver believes has had adequate exposure to their performance to provide feedback and have the receiver’s best interests at heart. Secondly, the relationship between the feedback giver and receiver is important. This relationship needs to be strong, not in the sense that the two individuals are friends or have similar personalities, but in

the sense that they must have consistent exposure to each other over a span of time. This links back to the first factor indicating that adequate exposure of the receiver's performance must be met. In order to obtain this exposure, it makes sense that consistent interactions between the parties would occur over this duration. Lastly, the motives of feedback receiver are important. Feedback receivers need an appropriate amount of self-efficacy to approach receiving feedback head on. Bok et al. (2013) suggest that those seeking feedback should do so actively, rather than passively. This supports the conclusion of Ashford and Cummings (1983) that inquiring about feedback is preferential to monitoring for feedback cues.

A number of characteristics have been linked to feedback effectiveness (Johnson, 2016; Omer & Abdularhim, 2017). Omer and Abdularhim (2017) provided the following conceptual characteristics of constructive feedback based on their review of the literature: a collaborative learning environment, using dialogue effectively, using the correct curricular and teaching designs, and effectively communicating. In addition, they suggest that quality feedback should be: immediate, specific, non-judgmental, based on first-hand data, accurate, improvement-based, helpful, solicited rather than imposed, relevant, balanced, understandable, consistently given, tailored, and confidential. Johnson (2016) found the following 10 factors were related to feedback effectiveness: language, content, timing, form, source, emotion, recipient, knowledge, feedback giving, and pedagogy. Of these, language, content, timing, and form, were found to be important for all learning goals. The language factor focuses on whether the feedback is explicit or implicit, mirroring the previous discussion of Ashford and Cummings' (1983) distinction between inquiry vs. monitoring based feedback. The content factor focuses on whether the feedback is generic or specific, as well as the amount of feedback given, which mirrors the work of Hattie and Timperley (2007). The timing factor focuses on whether the feedback is given immediately or

delayed and how frequently feedback is provided, a quality that Omer and Abdularhim (2017) also note. Lastly, the form of feedback is important. Feedback can be given in written or oral forms, structured or unstructured, and face to face or through a medium. This last component mirrors the work of Archer-Kath et al. (1994) and their suggestion that feedback be provided face to face.

Ashford and Cummings (1983) also note that in their conceptualization of feedback, the pair is made up of a more senior feedback giver and a less senior feedback receiver. This is problematic, as it excludes peer feedback, which has shown up across this review of literature (Evans, 2013). Similar to Ashford and Cummings (1983), professional face, or face cost, proves to be an important factor in receiving and utilizing feedback. Johnson (2016) also points out that feedback giving is a skilled activity and that there is relatively little research conducted on how to provide feedback effectively. This lends itself to the view that there could be an ideal situation in which one is most receptive to feedback, strengthening the argument for critical friendship. As previously discussed, critical friendship occupies a specific niche of feedback where relationships are key to delivering feedback that will be heard and utilized. An examination of this niche is provided below.

Critical Friendship

To reiterate the definition of a critical friend provided at the beginning of this chapter, Costa and Kallick (1993) provide the following: “a trusted person who asks provocative questions, provides data to be examined through another lens, and offers critique of a person’s work as a friend” (p. 50).

A guiding component of critical friendship is the ability to build and maintain trust (Swaffield, 2004). Swaffield (2004) suggests that this trust is best built up through consistent

interactions both in and out of the individual's professional life. The time required for building trust does not follow a fixed structure. Exhaustive trust building exercises over a small span of time develop the ability to be critical friends just as well as less intense trust building exercises over a long span of time (Swaffield, 2004). Gibbs and Angelides (2008) disagree with Swaffield and her conception of what trust constitutes in a critical friendship. They suggest that Swaffield's definition implies a utilitarian trust. This utilitarian notion of trust merely masks itself as a component of critical friendship (Pettit, 1995).

The trust required for critical friendship must show both moral intentionality as well as belief in competent interactions. Swaffield's (2004) exploration of trust encompasses the latter part of this statement, and it is the beginning part of this statement that Gibbs and Angelides (2008) call to attention. Pettit (1995) calls for trust to identify and recognize the intention to relate to the other person, not merely to perform the action of engaging in critical friendship. This is an important distinction, as it highlights that critical friendship is an evolving process that requires special attunements to the different kinds of trust between individuals. It is not enough to trust that someone will complete the task or do the task well, the individuals engaging in critical friendship must trust that the other has their best interest at heart.

An essential component of critical friendship is the friendship part. Friendship is a rather loose term, however, and the usage of friendship in this case must be made clear. Critical friendship is inherently different than critical companionship or acquaintanceship (Gibbs & Angelides, 2008). The following examples will highlight the difference between these three types of critical relationships.

Consider the following scenario. Performance review time has arrived and it is time to conduct a personal review. There are three possible delivery methods. A close friend and

confidant can perform the review, a respected boss can perform the review, and an unknown member of human resources can perform the review. The close friend takes the time to go over each area of the review, asking for feedback and offering their own ideas. They take time to reflect on the recipient's feelings and offer reassurances when necessary. When they go over the recipient's weakest area and hone in on specific ideas for substantial improvement. At each step of the process they are engaged with the recipient and their improvement. This interaction would be considered a one-way example of critical friendship.

Next up, a well-respected boss also takes time to go through each item. She focuses on specific areas for improvement, but asks few questions. The questions that she does probe for the recipient's understanding rather than reflection of the topic discussed. This interaction would be considered a one-way example of critical companionship. Finally, the human resources representative conducts the review formally without asking any questions and rapidly finishes the review. He focused his attention on areas for improvement, but offered few suggestions and did not inquire for feedback. This interaction would be considered a one-way example of critical acquaintanceship. These examples highlight how various levels of trust impact the ability to engage in true critical friendship. Similarly, it is important to note that the authority of the figure does not necessarily mean that critical friendship is more likely to occur. Critical friends do not necessarily require that they be your bosses or in positions of power for them to be affective. This topic is discussed in detail below.

There is conflicting literature concerning whether critical friendship is required to be reciprocal, requires a figure of authority, or can be done by peers, and whether or not it requires a formal structure. Gibbs and Angelides (2008) note in their study of critical friendship that some, such as Swaffield, highlight the utility based nature of critical friendship. This relationship exists

only to serve the purpose of improvement around a particular area, and once completed, the relationship ends (Gibbs & Angelides, 2008). This way of viewing critical friendship is hardly a friendship at all, and is at best critical companionship. Similarly, Loughran and Brubaker (2015) apply critical friendship to executive coaching. Executive coaching is a long-term professional relationship in which the coach provides the client actionable steps towards improvement and learning (Loughran & Brubaker, 2015). While the two concepts are not mutually exclusive, executive coaching should not be misconstrued as critical friendship. Executive coaching injects a power dynamic into critical friendship. This is not to say that executive coaching cannot have elements of critical friendship, but rather that in order for executive coaching to be true critical friendship, the removal of the status differential would be required.

Nilsson (2013) also employed critical friendship with a power discrepancy between the individuals. In this study, Nilsson, a professional working in the center of teaching and learning, became a critical friend to six engineering professors in order to improve their reflection skills for better student learning and outcomes. Nilsson (2013) notes that previous literature does not specify this as a requirement and that the critical friendship flowed both ways throughout the relationship with both parties experiencing growth. Even though the authority figure was initially known as an expert in the field, through the process of developing critical friendship, this dynamic shifted into a peer environment. This reciprocity is an important component for true critical friendship. By participating in this critical friendship, the engineering professors were able to further develop as teachers and improve their skills. Nilsson herself says that engaging in this critical friendship challenged and developed her practice as an academic developer. She also notes that even though she started out as the expert on academic development, she transitioned

from an authority figure to a co-producer of knowledge and benefited from the reciprocal nature of the critical friendship.

Similarly, Hovardas, Tsivitanidou, and Zacharia (2014) found that when engaged in a feedback experience, students used the feedback they provided to others to assess the accuracy of the feedback they received. In this study, students were assigned to group work on projects with the additional responsibility of providing peer feedback to another group. When receiving feedback, the students actively compared this against the feedback they had provided others. If the received feedback fit with their own given feedback, then the students chose to change their own project work. This provides a possible explanation for how both parties are consistently benefiting while engaging in critical friendship. Even the provider of feedback is able to use that experience to grow their capabilities to receive and interpret the critique involved with critical friendship.

Receptivity to critical friendship encompasses not only the ability to gauge and evaluate the critiques provided, but to also reflect on the experience for further growth. Farrel (2001) found that preparation to engage in quality critical friendship is necessary. He specifically finds that the laying out of ground rules and the readiness to engage in reflection are two key readiness components. The ground rules discussed include attention to how much time will be devoted, on what schedule they will meet to engage specifically in critical friendship, and a discussion of the privacy of the involved conversations.

Fitting the Pieces Together

Critical friendship is an important component of the feedback domain. It occupies the corner of feedback focused on the relationships between the individuals. Similarly, feedback occupies a specific corner of collaborative learning, focused on giving and receiving critical

comments about the quality of one's work from others. Feedback given in a critical friendship focuses on the following factors identified by Johnson (2016) as important to feedback: emotion, source, recipient, and feedback-giving. Specifically, the source factor is especially important. Johnson (2016) points out that the relationship between the feedback giver and receiver is important, both how trusting this relationship is as well as its general strength.

The information presented here regarding collaborative learning, feedback, and critical friendship shows how each piece fits together from the larger collaborative learning domain, to the smaller feedback domain, to the even smaller critical friendship domain. The lack of information presented concerning the relationship required between two individuals for effective feedback to be provided has been noted. This is where critical friendship comes in, which provides a framework for how a good feedback-based relationship should function.

However, there has been little research conducted on what specific qualities define this relationship. The following study fills in this gap through an investigation of what qualities are essential to defining a critical friendship. By creating a scale that gauges how much a relationship exemplifies a critical friendship, more research can be done in this domain. This will impact not only the critical friendship domain, but also help in defining what kind of interactions best accommodate utilizable and useful feedback. Further, improving our knowledge of how feedback functions also benefits the collaborative learning domain. When feedback is presented in a collaborative learning environment, practicing critical friendship could improve the overall learning experience.

Chapter II: Methodology

The following study aimed to improve the knowledgebase concerning critical friendship through the development of an inventory assessing one's capacity to be a critical friend, the Critical Friendship Scale (CFS). Specifically, this instrument will be useful for individuals who frequently engage in feedback as a way of identifying areas for improving this relationship through critical friendship. Deductive scale development was employed in order to generate items for this inventory. Deductive scale development is a proven method for scale development (Hinkin, 1995). This approach requires knowledge about the dimension for which the item is being made as well as relevant literature surrounding the dimension (Hinkin, 1995). In addition, two additional scales were included in order to assess the validity of the created instrument. A combined sampling strategy involving snowball sampling through Facebook and a paid sample recruited through Amazon's Mechanical Turk (MTurk) system was utilized and then principal component analysis was conducted to establish the finalized critical friend inventory.

Participants

A combined recruiting approach utilizing Facebook snowball sampling and a paid MTurk sample was used. Both samples were exposed to the same survey hosted on the Qualtrics survey platform. A total of 201 participants were successfully recruited through the Facebook snowball sampling and 315 were paid for their participation through MTurk, for a total of 516 participants. Due to the nature of the Facebook sample, it is impossible to know the response rate for this sample, though the response rate was 100% for the MTurk sample. The sample contained 252 (48.8%) males, 262 females (50.8), and 2 who responded as other (0.4%). The average age of the participants was 34.87 years old. Three-hundred and seventy-six (73.2%) participants identified as white, 39 (7.6%) as Black or African American, 14 (2.7%) as American Indian or Alaskan

Native, 77 (14.9%) as Asian, 1 (0.2%) as Native Hawaiian or Pacific Islander, 7 (1.4%) as Other, and 2 (0.4%) chose not to respond. In regards to ethnicity, 9 (1.7%) identified as Cuban, 6 (1.2%) as Puerto Rican, 20 (3.9%) as Mexican American or Chino/a, 16 (13.1%) as other Hispanic or Latino/a and 5 (1%) chose not to respond. The remaining 460 participants identified as non-Hispanic. In addition, 3 (0.6%) identified as having less than a high school diploma, 58 (11.2%) held a High school degree or equivalent, 104 (20.2%) had attended some college without a degree, 37 (7.2%) held Associates degrees, 236 (45.7%) held Bachelor's degrees, 65 (12.6%) held Master's degrees, 6 (1.2%) held Professional degrees, 6 (1.2%) held Doctorates, and 1 (0.2%) individual chose not to respond. This demographic information can be found below in Tables 1, 2, and 3.

Table 1

Racial Makeup of Participants

| Race | Frequency | Percent |
|-------------------------------------|-----------|---------|
| White | 376 | 72.87 |
| Black or African American | 39 | 7.56 |
| American Indian or Alaskan Native | 14 | 2.71 |
| Asian | 77 | 14.92 |
| Native Hawaiian or Pacific Islander | 1 | 0.19 |
| Other | 7 | 1.36 |
| Missing | 2 | 0.39 |

Table 2

Ethnic Makeup of Participants

| Ethnicity | Frequency | Percent |
|------------------------------------|-----------|---------|
| Non-Hispanic | 460 | 89.15 |
| Yes, Cuban | 9 | 1.74 |
| Yes, Puerto Rican | 6 | 1.16 |
| Yes, Mexican American or Chicano/a | 20 | 3.88 |
| Yes, Other Hispanic or Latino/a | 16 | 3.10 |
| Missing | 5 | 0.97 |

Table 3

Educational Background of Participants

| Education | Frequency | Percent |
|---|-----------|---------|
| Less than a high school diploma | 3 | 0.58 |
| High school degree or equivalent (e.g. GED) | 58 | 11.24 |
| Some college, no degree | 104 | 20.16 |
| Associate degree (e.g. AA, AS) | 37 | 7.17 |
| Bachelor's degree (e.g. BA, BS) | 236 | 45.74 |
| Master's degree (e.g. MA, MS, MEd) | 65 | 12.60 |
| Professional degree (e.g. MD, DDS, DVM) | 6 | 1.16 |
| Doctorate (Ed.D, Ph.D.) | 6 | 1.16 |
| Missing | 1 | 0.19 |

Materials

The following section discusses the following scales used within this study: the created critical friendship measure, the cheerfulness scale, the vulnerability scale, and the demographic questions used.

Critical Friendship. The inventory was developed by generating and compiling a number of items and can be found in Appendix A. Specifically, items were generated under the following constructs intended to assess various areas within critical friendship: conversational skills, receiving feedback, giving feedback, trust, caring, and reflection and critical thought. Fifteen items were created within conversational skills, 15 within caring, 14 within trust, 15 within reflection and critical thought, 11 within giving feedback, and 13 within receiving feedback. In order to improve the quality of items, surveys interested in similar topics were consulted. The first scale consulted was the Counseling Self-Estimate Inventory (COSE), specifically the micro skills factor (Larson et al., 1992). Similarly, the Skilled Counseling Scale (SCS) was consulted in order to generate similar items, specifically those included in the attending and questioning components of the SCS (Urbani et al., 2002). While the created scale is not concerned with counseling specifically, the interpersonal interactions between a counselor and their client is similar enough to a feedback pair to use for generating items. In addition, several scales on the International Personality Inventory Pool have been consulted, including the 10-item representation of trust based on the NEO Personality Inventory (Costa & McRae, 1992), the 6-item representation of caring based on the Hogan Personality Index (Hogan, 1995), and need for cognition (Cacioppo & Petty, 1982).

Cheerfulness. This is a 10-item measure of cheerfulness based on the NEO Personality Inventory and can be found in Appendix B (Costa & McRae, 1992). It includes eight positively

keyed items, two negatively keyed items. It maintained good reliability within the current study ($\alpha = .83$). It was expected that cheerfulness would be unrelated to one's ability to be a critical friend and thus was used for the purpose of establishing discriminant validity.

Vulnerability. This is a 10-item measure of vulnerability based on the NEO Personality Inventory and can be found in Appendix C (Costa & McRae, 1992). It includes five positively keyed items, five negatively keyed items. It maintained good reliability within the current study ($\alpha = .87$). It was expected that vulnerability would be positively related to one's ability to be a critical friend and thus was used for the purpose of establishing convergent validity.

Demographics. Standard demographic variables were included in order to provide a basic description of the Facebook and MTurk sample studied. These included gender, age, ethnicity/race and education level and can be found in Appendix D.

Procedure

After receiving approval from the University of Wisconsin-Stout's Institutional Review Board, the survey (Appendix A, B, C, and D) link was spread through Facebook in the form of multiple posts from friends, family members, and colleagues. In addition, a number of participants ($n=315$) were recruited through MTurk and paid \$1.20 for their survey responses. The survey was hosted on Qualtrics, an online survey platform. Using Qualtrics allowed for easy implementation into the MTurk framework and allowed participants to take the survey at any time in any manner. Participants were asked to complete the created Critical Friendship Scale, the Cheerfulness scale (Costa & McRae, 1992), the Vulnerability scale (Costa & McRae, 1992), and a few demographic questions. The average time to finish the survey fell just over eight minutes in length.

Data Analysis

Data was analyzed in a number of ways. First, a principal component analysis was conducted to reduce the number of items in the created measure in order to create the Critical Friendship Scale. Following this finalization, the reliability, convergent validity, and divergent validity were assessed. Reliability was assessed using Cronbach's alpha, which measures the internal consistency of each of the identified constructs. Convergent validity was assessed through correlation tests using the Vulnerability scale (Costa & McRae, 1992) and divergent validity was assessed using the Cheerfulness scale (Costa & McRae, 1992).

Chapter III: Results

The purpose of this study was to create a new scale in order to assess one's ability to be a critical friend. Specifically, this study looked to compile a new scale and assess the validity and reliability of that scale. This section describes the results of principal component analysis conducted, the naming of the components retained through said analysis, the descriptive statistics of the completed scale, the results of Pearson correlations for validity and Cronbach's alpha for reliability, and inferential statistics involving the demographic variables.

Construct Validity

Principal component analysis (PCA) was conducted to assess the construct validity of the created Critical Friendship Scale and reduce the number of items down from the 83 within the original survey. The items and their intended constructs are listed below in Table 4 and can also be found in Appendix A.

Table 4

Predicted Factor Structure of the Initial 83 Items

Conversational Skills

1. I am confident that I can correctly verbalize my thoughts.
2. I feel I can accurately reflect my friends' words back to them.
3. I can concisely express my thoughts.
4. I feel I respond to my friends in an appropriate length of time (neither interrupt them or wait to respond too long).
5. I am confident in my ability to understand my friends.
6. I respond to my friends in meaningful ways.
7. I ask open ended questions.
8. I ask for specific feedback from my friends.
9. I lie to others to protect their feelings. (reverse coding)
10. I tell others what I think.
11. I consider myself closed-off. (reverse coding)
12. I can navigate difficult conversations.
13. I can maintain direct eye contact with my friends.
14. I lean forward while listening to my friends.
15. I repeat my friends' words back to them.

Caring

1. I care about my friends.
2. I appreciate the thoughts and feelings of others.
3. I am invested in my friends' happiness.
4. I think of my friends often.
5. I have a lasting bond with my friends.
6. I am able to put myself in another's shoes.
7. I feel my friends' emotions.
8. I know how to comfort others.
9. I anticipate the needs of others.
10. I feel little concern for others. (reverse coding)
11. I think of my friends fondly.
12. I want the best for my friends.
13. I consider myself an empathetic person.
14. My friends do not know that I care for them. (reverse coding)
15. I consider how my actions will affect those around me.

Trust

1. I consider myself trustworthy.
2. I do not trust those close to me. (reverse coding)
3. My friends would say I am trustworthy.
4. I confide my troubles in my friends.
5. I believe others have good intentions.
6. I believe that people are basically moral.
7. I suspect hidden motives in others. (reverse coding)
8. I question my friends' loyalty.
9. I would never betray my friends' trust.
10. I work hard to earn my friends' trust.
11. I place high importance on my friends' trust.
12. I am cautious to place trust in others. (reverse coding)
13. My friends know I will keep our conversations confidential.
14. I often gossip about my friends. (reverse coding)

Reflection and Critical Thought

1. I like to solve complex problems.
2. I need things explained only once.
3. I can handle a lot of new information.
4. I love to think up new ways to do things.
5. I am quick to understand things.
6. I love to read challenging material.
7. I have difficulty understanding abstract ideas. (reverse coding)
8. I try to avoid complex people. (reverse coding)
9. I avoid difficult reading material. (reverse coding)
10. I avoid philosophical discussions. (reverse coding)
11. I think back on my past experiences.
12. I examine the world around me with a critical eye.
13. I enjoy thought provoking discussions.
14. I never second guess my actions. (reverse coding)

15. I enjoy learning about new topics.

Giving Feedback

1. I am confident in my ability to provide feedback to others.
2. I can concisely provide my feedback.
3. I provide meaningful feedback.
4. When giving feedback, I am open to further discussion.
5. I can give feedback that may be difficult to hear.
6. I tell others what I think.
7. I am present while I provide feedback.
8. I am critical of the actions of others.
9. I am careful of how I word the feedback I give to others.
10. I am thoughtful about the feedback I provide.
11. I select my words carefully.

Receiving Feedback

1. I only need to receive feedback once to make an improvement.
 2. I can handle receiving lots of feedback.
 3. I am quick at acting on feedback.
 4. I have difficulty interpreting feedback.
 5. I ask for specific feedback.
 6. I ensure that I understand the feedback I receive.
 7. I prefer to have a dialogue about the feedback I receive.
 8. I am critical of my own actions.
 9. I handle feedback well.
 10. I am easily upset when criticized. (reverse coding)
 11. I dwell on criticism I receive. (reverse coding)
 12. I do not take criticism to heart. (reverse coding)
 13. I let my emotions get away from me. (reverse coding)
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Principal component analysis. Data was analyzed with IBM SPSS version 25. A principal component analysis was performed on the 83 items within the created Critical Friendship Scale to determine which, if any, of the items combined into distinct factors that could be extracted. An oblique rotation (Oblimin) was used as they allow components to correlate with one another. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .92 and Barlett's Test of Sphericity indicated a sufficient amount of correlation among items to conduct a principal component analysis $\chi^2(3403) = 19898.36, p < .001$. The communality of each item was above 0.3, indicating that each item's variance can be adequately accounted for by the extracted components. With this supporting evidence, a principal component analysis was conducted.

Table 5 shows the component loadings from the principal component analysis grouped by size. Only components with an eigenvalue of one or greater are presented.

Table 5

Oblimin Rotated Component Loadings of the CFS Grouped by Size

| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|-------|-------------|-------------|-------------|-------------|------|-------------|------|------|------|------|------|-------------|------|------|------|------|------|
| GF 5 | 0.67 | 0.05 | 0.14 | 0.03 | 0.07 | 0.07 | 0.07 | 0.03 | 0.06 | 0.05 | 0.03 | 0.09 | 0.08 | 0.11 | 0.03 | 0.16 | 0.03 |
| GF 3 | 0.57 | 0.03 | 0.01 | 0.04 | 0.00 | 0.30 | 0.04 | 0.03 | 0.06 | 0.20 | 0.12 | 0.01 | 0.13 | 0.00 | 0.03 | 0.05 | 0.07 |
| GF 1 | 0.53 | 0.17 | 0.03 | 0.04 | 0.13 | 0.21 | 0.07 | 0.11 | 0.02 | 0.01 | 0.01 | 0.02 | 0.26 | 0.11 | 0.02 | 0.03 | 0.07 |
| GF 2 | 0.47 | 0.02 | 0.17 | 0.08 | 0.05 | 0.23 | 0.09 | 0.18 | 0.20 | 0.02 | 0.02 | 0.11 | 0.11 | 0.19 | 0.12 | 0.11 | 0.13 |
| GF 6 | 0.47 | 0.08 | 0.01 | 0.06 | 0.22 | 0.18 | 0.12 | 0.14 | 0.11 | 0.00 | 0.05 | 0.32 | 0.00 | 0.13 | 0.12 | 0.01 | 0.11 |
| GF 7 | 0.47 | 0.01 | 0.04 | 0.04 | 0.09 | 0.09 | 0.15 | 0.05 | 0.04 | 0.02 | 0.07 | 0.08 | 0.13 | 0.29 | 0.07 | 0.12 | 0.15 |
| T 6 | 0.01 | 0.70 | 0.01 | 0.25 | 0.11 | 0.05 | 0.01 | 0.16 | 0.26 | 0.13 | 0.01 | 0.02 | 0.04 | 0.09 | 0.10 | 0.05 | 0.14 |
| T 7 | 0.08 | 0.67 | 0.06 | 0.20 | 0.02 | 0.01 | 0.03 | 0.13 | 0.06 | 0.02 | 0.05 | 0.11 | 0.07 | 0.01 | 0.06 | 0.00 | 0.15 |
| T 12 | 0.07 | 0.62 | 0.05 | 0.11 | 0.10 | 0.05 | 0.07 | 0.05 | 0.21 | 0.11 | 0.10 | 0.14 | 0.08 | 0.11 | 0.11 | 0.09 | 0.02 |
| T 5 | 0.00 | 0.62 | 0.05 | 0.32 | 0.14 | 0.20 | 0.05 | 0.12 | 0.09 | 0.02 | 0.06 | 0.11 | 0.00 | 0.06 | 0.07 | 0.06 | 0.12 |
| T 2 | 0.07 | 0.41 | 0.03 | 0.27 | 0.18 | 0.08 | 0.26 | 0.01 | 0.16 | 0.12 | 0.04 | 0.02 | 0.06 | 0.03 | 0.07 | 0.11 | 0.21 |
| T 8 | 0.03 | 0.37 | 0.03 | 0.32 | 0.22 | 0.04 | 0.11 | 0.03 | 0.22 | 0.04 | 0.01 | 0.06 | 0.02 | 0.04 | 0.07 | 0.04 | 0.26 |
| RF 12 | 0.04 | 0.11 | 0.70 | 0.25 | 0.03 | 0.02 | 0.01 | 0.15 | 0.00 | 0.01 | 0.03 | 0.13 | 0.15 | 0.08 | 0.07 | 0.01 | 0.01 |
| RF 10 | 0.04 | 0.11 | 0.61 | 0.41 | 0.04 | 0.06 | 0.06 | 0.11 | 0.04 | 0.01 | 0.08 | 0.08 | 0.10 | 0.04 | 0.09 | 0.04 | 0.07 |

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|-------|---|------|------|-------------|-------------|-------------|------|------|-------------|-------------|-------------|-------------|------|------|------|------|------|------|
| RF 11 | - | 0.03 | 0.18 | 0.60 | 0.28 | 0.06 | 0.09 | 0.03 | 0.11 | 0.13 | 0.17 | 0.04 | 0.00 | 0.04 | 0.08 | 0.04 | 0.03 | 0.04 |
| RF 9 | - | 0.17 | 0.05 | 0.58 | 0.06 | 0.03 | 0.02 | 0.05 | 0.08 | 0.17 | 0.11 | 0.31 | 0.11 | 0.01 | 0.07 | 0.01 | 0.03 | 0.11 |
| RF 13 | - | 0.01 | 0.12 | 0.49 | 0.41 | 0.03 | 0.06 | 0.11 | 0.08 | 0.06 | 0.01 | 0.00 | 0.02 | 0.17 | 0.10 | 0.11 | 0.13 | 0.11 |
| RF 2 | - | 0.05 | 0.01 | 0.42 | 0.08 | 0.09 | 0.08 | 0.04 | 0.04 | 0.04 | 0.15 | 0.21 | 0.09 | 0.07 | 0.23 | 0.10 | 0.10 | 0.28 |
| RF 8 | - | 0.01 | 0.22 | 0.38 | 0.03 | 0.10 | 0.14 | 0.16 | 0.13 | 0.02 | 0.34 | 0.05 | 0.08 | 0.09 | 0.00 | 0.10 | 0.04 | 0.02 |
| RC 9 | - | 0.12 | 0.05 | 0.05 | 0.82 | 0.06 | 0.04 | 0.02 | 0.17 | 0.04 | 0.02 | 0.01 | 0.01 | 0.08 | 0.01 | 0.02 | 0.04 | 0.06 |
| RC 8 | - | 0.01 | 0.08 | 0.06 | 0.75 | 0.02 | 0.05 | 0.05 | 0.00 | 0.00 | 0.03 | 0.02 | 0.05 | 0.12 | 0.04 | 0.00 | 0.04 | 0.02 |
| RC 10 | - | 0.09 | 0.04 | 0.12 | 0.74 | 0.10 | 0.07 | 0.07 | 0.01 | 0.00 | 0.06 | 0.05 | 0.01 | 0.02 | 0.06 | 0.12 | 0.10 | 0.16 |
| RC 7 | - | 0.06 | 0.10 | 0.01 | 0.56 | 0.06 | 0.07 | 0.10 | 0.14 | 0.03 | 0.07 | 0.02 | 0.04 | 0.15 | 0.19 | 0.02 | 0.19 | 0.11 |
| RC 14 | - | 0.09 | 0.04 | 0.33 | 0.45 | 0.06 | 0.07 | 0.06 | 0.25 | 0.17 | 0.11 | 0.08 | 0.06 | 0.04 | 0.01 | 0.01 | 0.15 | 0.05 |
| T 14 | - | 0.05 | 0.08 | 0.11 | 0.41 | 0.38 | 0.07 | 0.04 | 0.09 | 0.17 | 0.11 | 0.13 | 0.02 | 0.11 | 0.12 | 0.05 | 0.06 | 0.15 |
| RC 1 | - | 0.05 | 0.12 | 0.00 | 0.37 | 0.06 | 0.05 | 0.04 | 0.35 | 0.32 | 0.21 | 0.02 | 0.04 | 0.01 | 0.06 | 0.13 | 0.10 | 0.10 |
| T 13 | - | 0.01 | 0.06 | 0.10 | 0.00 | 0.62 | 0.20 | 0.06 | 0.12 | 0.07 | 0.08 | 0.10 | 0.13 | 0.04 | 0.02 | 0.08 | 0.10 | 0.05 |
| T 1 | - | 0.06 | 0.11 | 0.09 | 0.02 | 0.60 | 0.04 | 0.04 | 0.02 | 0.11 | 0.02 | 0.17 | 0.17 | 0.15 | 0.11 | 0.08 | 0.02 | 0.04 |
| T 3 | - | 0.02 | 0.04 | 0.00 | 0.03 | 0.53 | 0.04 | 0.15 | 0.12 | 0.11 | 0.02 | 0.14 | 0.04 | 0.12 | 0.13 | 0.15 | 0.14 | 0.18 |
| T 9 | - | 0.05 | 0.01 | 0.06 | 0.05 | 0.48 | 0.08 | 0.13 | 0.02 | 0.10 | 0.03 | 0.00 | 0.13 | 0.00 | 0.27 | 0.09 | 0.06 | 0.09 |

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|-------|------|------|------|-------------|-------------|-------------|-------------|-------------|-------------|------|------|-------------|------|------|------|------|------|
| T 11 | 0.09 | 0.03 | 0.06 | 0.16 | 0.39 | 0.16 | 0.29 | 0.10 | 0.01 | 0.13 | 0.15 | 0.34 | 0.14 | 0.06 | 0.09 | 0.10 | 0.05 |
| GF 11 | 0.04 | 0.06 | 0.02 | 0.05 | 0.12 | 0.77 | 0.04 | 0.06 | 0.11 | 0.01 | 0.14 | 0.05 | 0.04 | 0.08 | 0.01 | 0.08 | 0.08 |
| GF 9 | 0.06 | 0.00 | 0.03 | 0.16 | 0.10 | 0.73 | 0.04 | 0.09 | 0.16 | 0.11 | 0.01 | 0.05 | 0.04 | 0.11 | 0.09 | 0.00 | 0.01 |
| GF 10 | 0.12 | 0.01 | 0.02 | 0.02 | 0.17 | 0.64 | 0.07 | 0.02 | 0.04 | 0.05 | 0.05 | 0.04 | 0.04 | 0.02 | 0.08 | 0.08 | 0.07 |
| C 4 | 0.06 | 0.03 | 0.09 | 0.08 | 0.03 | 0.02 | 0.75 | 0.08 | 0.04 | 0.01 | 0.00 | 0.13 | 0.02 | 0.09 | 0.10 | 0.12 | 0.01 |
| C 3 | 0.00 | 0.03 | 0.03 | 0.01 | 0.03 | 0.05 | 0.75 | 0.08 | 0.06 | 0.06 | 0.02 | 0.00 | 0.03 | 0.01 | 0.00 | 0.08 | 0.05 |
| C 1 | 0.02 | 0.07 | 0.12 | 0.03 | 0.11 | 0.06 | 0.71 | 0.08 | 0.00 | 0.14 | 0.05 | 0.15 | 0.09 | 0.00 | 0.01 | 0.05 | 0.00 |
| C 5 | 0.08 | 0.02 | 0.15 | 0.00 | 0.02 | 0.01 | 0.70 | 0.01 | 0.08 | 0.01 | 0.02 | 0.12 | 0.02 | 0.08 | 0.16 | 0.11 | 0.03 |
| C 2 | 0.16 | 0.03 | 0.01 | 0.14 | 0.17 | 0.08 | 0.46 | 0.08 | 0.28 | 0.21 | 0.10 | 0.04 | 0.07 | 0.02 | 0.15 | 0.07 | 0.14 |
| C 11 | 0.06 | 0.07 | 0.10 | 0.05 | 0.20 | 0.13 | 0.36 | 0.12 | 0.01 | 0.04 | 0.02 | 0.27 | 0.02 | 0.06 | 0.20 | 0.03 | 0.03 |
| C 12 | 0.04 | 0.06 | 0.07 | 0.03 | 0.22 | 0.15 | 0.34 | 0.12 | 0.21 | 0.09 | 0.01 | 0.08 | 0.09 | 0.07 | 0.23 | 0.04 | 0.00 |
| RC 5 | 0.09 | 0.02 | 0.00 | 0.03 | 0.06 | 0.01 | 0.03 | 0.72 | 0.05 | 0.06 | 0.19 | 0.10 | 0.07 | 0.04 | 0.01 | 0.04 | 0.12 |
| RC 3 | 0.04 | 0.06 | 0.02 | 0.12 | 0.01 | 0.02 | 0.10 | 0.71 | 0.03 | 0.00 | 0.12 | 0.03 | 0.06 | 0.09 | 0.12 | 0.10 | 0.04 |
| RC 2 | 0.05 | 0.02 | 0.12 | 0.06 | 0.11 | 0.02 | 0.01 | 0.70 | 0.03 | 0.04 | 0.09 | 0.08 | 0.07 | 0.09 | 0.00 | 0.12 | 0.07 |
| RC 6 | 0.19 | 0.04 | 0.13 | 0.35 | 0.06 | 0.01 | 0.00 | 0.45 | 0.33 | 0.19 | 0.07 | 0.04 | 0.09 | 0.03 | 0.06 | 0.13 | 0.07 |
| C 10 | 0.14 | 0.22 | 0.11 | 0.28 | 0.02 | 0.01 | 0.04 | 0.11 | 0.40 | 0.09 | 0.03 | 0.03 | 0.07 | 0.19 | 0.08 | 0.08 | 0.06 |

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|-------|------|------|------|-------------|------|------|------|-------------|-------------|-------------|-------------|-------------|-------------|------|------|------|-------------|---|
| C 14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.09 | 0.10 | 0.08 | 0.36 | 0.02 | 0.02 | 0.23 | 0.09 | 0.40 | 0.04 | 0.02 | 0.11 | 0.01 | 0.08 | 0.03 | 0.10 | 0.11 | |
| RC 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.05 | 0.10 | 0.01 | 0.12 | 0.06 | 0.12 | 0.05 | 0.31 | 0.32 | 0.02 | 0.02 | 0.22 | 0.04 | 0.22 | 0.06 | 0.26 | 0.25 | |
| RF 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.08 | 0.13 | 0.12 | 0.31 | 0.12 | 0.01 | 0.05 | 0.01 | 0.32 | 0.07 | 0.19 | 0.20 | 0.10 | 0.15 | 0.01 | 0.20 | 0.07 | |
| CS 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.04 | 0.29 | 0.10 | 0.19 | 0.15 | 0.12 | 0.17 | 0.03 | 0.30 | 0.17 | 0.07 | 0.18 | 0.10 | 0.13 | 0.06 | 0.23 | 0.16 | |
| RC 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.09 | 0.12 | 0.12 | 0.07 | 0.03 | 0.00 | 0.29 | 0.10 | 0.04 | 0.62 | 0.06 | 0.08 | 0.13 | 0.08 | 0.07 | 0.05 | 0.02 | |
| RC 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.03 | 0.17 | 0.10 | 0.18 | 0.02 | 0.18 | 0.07 | 0.02 | 0.05 | 0.60 | 0.03 | 0.15 | 0.04 | 0.11 | 0.01 | 0.09 | 0.04 | |
| RC 13 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.13 | 0.01 | 0.01 | 0.23 | 0.02 | 0.08 | 0.00 | 0.24 | 0.01 | 0.37 | 0.06 | 0.15 | 0.16 | 0.22 | 0.13 | 0.03 | 0.12 | |
| GF 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.28 | 0.19 | 0.25 | 0.15 | 0.07 | 0.12 | 0.00 | 0.05 | 0.04 | 0.29 | 0.13 | 0.02 | 0.01 | 0.25 | 0.08 | 0.10 | 0.01 | |
| RF 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.04 | 0.06 | 0.01 | 0.05 | 0.03 | 0.05 | 0.07 | 0.15 | 0.10 | 0.01 | 0.81 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.10 | |
| RF 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.05 | 0.01 | 0.12 | 0.05 | 0.00 | 0.08 | 0.07 | 0.11 | 0.00 | 0.02 | 0.70 | 0.10 | 0.06 | 0.01 | 0.01 | 0.05 | 0.10 | |
| RF 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.22 | 0.06 | 0.06 | 0.07 | 0.10 | 0.02 | 0.10 | 0.10 | 0.24 | 0.07 | 0.35 | 0.18 | 0.12 | 0.03 | 0.07 | 0.05 | 0.31 | |
| RF 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.29 | 0.15 | 0.02 | 0.00 | 0.20 | 0.02 | 0.09 | 0.07 | 0.02 | 0.23 | 0.30 | 0.04 | 0.03 | 0.07 | 0.07 | 0.01 | 0.20 | |
| T 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.01 | 0.18 | 0.02 | 0.12 | 0.14 | 0.07 | 0.14 | 0.05 | 0.08 | 0.04 | 0.11 | 0.60 | 0.06 | 0.00 | 0.05 | 0.05 | 0.01 | |
| CS 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.24 | 0.06 | 0.04 | 0.06 | 0.27 | 0.19 | 0.19 | 0.09 | 0.01 | 0.14 | 0.03 | 0.50 | 0.28 | 0.03 | 0.06 | 0.04 | 0.08 | |
| T 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.13 | 0.04 | 0.04 | 0.07 | 0.27 | 0.08 | 0.24 | 0.05 | 0.25 | 0.03 | 0.08 | 0.45 | 0.08 | 0.03 | 0.15 | 0.18 | 0.05 | |
| CS 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.10 | 0.05 | 0.01 | 0.01 | 0.09 | 0.08 | 0.02 | 0.15 | 0.01 | 0.09 | 0.16 | 0.07 | 0.62 | 0.01 | 0.13 | 0.04 | 0.12 | |

| | | | | | | | | | | | | | | | | | | |
|----------|---|------|------|------|------|------|------|------|-------------|------|------|------|------|-------------|-------------|-------------|------|-------------|
| CS 4 | - | 0.11 | 0.08 | 0.07 | 0.01 | 0.06 | 0.08 | 0.04 | 0.06 | 0.04 | 0.02 | 0.20 | 0.13 | 0.61 | 0.05 | 0.02 | 0.10 | 0.03 |
| CS 5 | - | 0.04 | 0.04 | 0.00 | 0.05 | 0.04 | 0.03 | 0.04 | 0.08 | 0.08 | 0.00 | 0.28 | 0.03 | 0.57 | 0.06 | 0.25 | 0.01 | 0.04 |
| CS 3 | - | 0.18 | 0.05 | 0.11 | 0.06 | 0.10 | 0.10 | 0.07 | 0.29 | 0.11 | 0.02 | 0.01 | 0.10 | 0.51 | 0.00 | 0.01 | 0.12 | 0.04 |
| CS 2 | - | 0.02 | 0.06 | 0.03 | 0.05 | 0.02 | 0.12 | 0.11 | 0.19 | 0.26 | 0.20 | 0.07 | 0.02 | 0.41 | 0.10 | 0.11 | 0.07 | 0.12 |
| CS 6 | - | 0.26 | 0.00 | 0.11 | 0.02 | 0.04 | 0.08 | 0.01 | 0.05 | 0.01 | 0.11 | 0.07 | 0.15 | 0.38 | 0.11 | 0.27 | 0.14 | 0.09 |
| CS 12 | - | 0.10 | 0.14 | 0.16 | 0.02 | 0.14 | 0.08 | 0.12 | 0.22 | 0.12 | 0.02 | 0.10 | 0.03 | 0.36 | 0.26 | 0.14 | 0.05 | 0.11 |
| CS 9 | - | 0.18 | 0.03 | 0.03 | 0.09 | 0.25 | 0.17 | 0.09 | 0.09 | 0.25 | 0.07 | 0.05 | 0.05 | 0.04 | 0.47 | 0.09 | 0.13 | 0.05 |
| GF 4 | - | 0.24 | 0.01 | 0.08 | 0.07 | 0.03 | 0.27 | 0.02 | 0.08 | 0.06 | 0.11 | 0.01 | 0.06 | 0.15 | 0.40 | 0.02 | 0.10 | 0.17 |
| RC 15 | - | 0.07 | 0.06 | 0.14 | 0.04 | 0.10 | 0.12 | 0.10 | 0.32 | 0.10 | 0.29 | 0.13 | 0.16 | 0.06 | 0.36 | 0.14 | 0.19 | 0.06 |
| C 6 | - | 0.09 | 0.04 | 0.05 | 0.10 | 0.00 | 0.00 | 0.12 | 0.01 | 0.03 | 0.13 | 0.01 | 0.06 | 0.02 | 0.10 | 0.66 | 0.06 | 0.07 |
| C 13 | - | 0.01 | 0.10 | 0.06 | 0.07 | 0.01 | 0.06 | 0.19 | 0.11 | 0.00 | 0.05 | 0.05 | 0.07 | 0.01 | 0.03 | 0.61 | 0.09 | 0.16 |
| C 7 | - | 0.00 | 0.09 | 0.05 | 0.11 | 0.00 | 0.20 | 0.19 | 0.02 | 0.09 | 0.05 | 0.05 | 0.03 | 0.00 | 0.07 | 0.59 | 0.10 | 0.02 |
| C 15 | - | 0.00 | 0.06 | 0.07 | 0.04 | 0.25 | 0.19 | 0.04 | 0.02 | 0.25 | 0.00 | 0.16 | 0.06 | 0.02 | 0.26 | 0.41 | 0.10 | 0.14 |
| CS 7 | - | 0.10 | 0.02 | 0.03 | 0.03 | 0.03 | 0.00 | 0.11 | 0.02 | 0.15 | 0.25 | 0.05 | 0.10 | 0.22 | 0.20 | 0.37 | 0.14 | 0.14 |
| C 9 | - | 0.09 | 0.01 | 0.01 | 0.07 | 0.14 | 0.09 | 0.13 | 0.01 | 0.03 | 0.25 | 0.09 | 0.12 | 0.04 | 0.15 | 0.36 | 0.16 | 0.31 |
| C 8 | - | 0.07 | 0.04 | 0.06 | 0.01 | 0.06 | 0.19 | 0.10 | 0.03 | 0.04 | 0.25 | 0.02 | 0.01 | 0.17 | 0.02 | 0.33 | 0.04 | 0.29 |

| | | | | | | | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------------|-------------|
| CS 14 | 0.01 | 0.04 | 0.06 | 0.10 | 0.01 | 0.12 | 0.02 | 0.12 | 0.11 | 0.09 | 0.06 | 0.02 | 0.03 | 0.11 | 0.02 | 0.78 | 0.04 |
| CS 15 | 0.11 | 0.08 | 0.03 | 0.03 | 0.02 | 0.11 | 0.01 | 0.04 | 0.06 | 0.10 | 0.01 | 0.02 | 0.01 | 0.09 | 0.13 | 0.68 | 0.03 |
| CS 8 | 0.09 | 0.04 | 0.07 | 0.09 | 0.01 | 0.09 | 0.02 | 0.03 | 0.12 | 0.05 | 0.10 | 0.07 | 0.20 | 0.14 | 0.13 | 0.03 | 0.59 |
| RF 7 | 0.14 | 0.02 | 0.10 | 0.00 | 0.04 | 0.23 | 0.04 | 0.04 | 0.11 | 0.23 | 0.07 | 0.08 | 0.06 | 0.08 | 0.01 | 0.08 | 0.52 |
| CS 13 | 0.07 | 0.02 | 0.03 | 0.04 | 0.06 | 0.09 | 0.16 | 0.16 | 0.18 | 0.10 | 0.12 | 0.02 | 0.19 | 0.27 | 0.01 | 0.23 | 0.42 |

Note. CS stands for Conversational Skills, C for Caring, T for Trust, RC for Reflection and Critical Thought, GF for Giving Feedback, and RF for Receiving Feedback.

Table 6

The First Seven Component's Eigenvalues and their Percent of Variance Explained

| Component | Eigenvalue | Percent of Variance | Cumulative Percent Variance |
|-----------|------------|---------------------|-----------------------------|
| 1 | 17.21 | 20.73 | 20.73 |
| 2 | 8.18 | 9.85 | 30.58 |
| 3 | 4.67 | 5.63 | 36.21 |
| 4 | 3.24 | 3.90 | 40.11 |
| 5 | 2.10 | 2.53 | 42.65 |
| 6 | 1.90 | 2.29 | 44.93 |
| 7 | 1.80 | 2.17 | 47.11 |

The components were reduced from the initial 17 to the final seven. Only components with eigenvalues of greater than one were included. In addition, the percent of variance was considered. Components after the first seven added two percent or less of the variance explained and contained such a small number of items that they were not deemed useful in the final scale.

Items that loaded highly on more than one component were removed from the final scale. The high cross loadings on these items indicate that they measure more than one component of the CFS and thus were not used.

Naming the components of the CFS. The seven components of the CFS include giving feedback, interpersonal trust, receiving feedback, intellectual desire, intrapersonal trust, carefulness, and caring. The following sections explain the rationale behind the naming convention used, the number of items within each component, and an example item from each component.

Component 1: Giving feedback. Five Giving Feedback items loaded onto the first component after one cross-loading item was removed. A higher score in this component shows a greater proficiency at providing meaningful feedback and is captured by items such as “I provide meaningful feedback”.

Component 2: Interpersonal trust. Five Trust items loaded onto the second component after one cross-loading item was removed. A higher score in this component indicates a greater ability to place interpersonal trust and is captured by items such as “I believe that people are basically moral”.

Component 3: Receiving feedback. Five Receiving Feedback items loaded onto the third component after one cross-loading item was removed. A higher score in this component shows a greater ability to handle receiving feedback and is captured by items such as “I can handle receiving lots of feedback”.

Component 4: Intellectual desire. Four Reflection and Critical Thought items loaded onto the fourth component after three cross-loading items were removed. These items probe specifically at one’s enjoyment and ability to perform cognitive based tasks. A higher score on this component indicates a greater ability to perform cognitive tasks and is captured by items such as “I have difficulty understanding abstract ideas”.

Component 5: Intrapersonal trust. Four Trust items loaded onto the fifth component after one cross-loading item was removed. A higher score in this component indicates that others would place their trust in the participant and is captured by items such as “I would never betray my friends’ trust”.

Component 6: Carefulness. Component six, which consists of three total items, contains only items from construct of Giving Feedback. A higher score in this component indicates greater care in choosing how the participant communicates with others and is captured by items such as “I select my words carefully”.

Component 7: Caring. Component seven, which consists of seven total items, contains only the predicted construct of caring. A higher score in this component indicates a great ability to care about others and is captured by items such as “I think of my friends often”.

The correlations between these components are shown in Table 7.

Table 7

Correlations Between the Components of the CFS

| Component | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------------|---|-------|-------|-------|-------|-------|-------|
| 1. Giving Feedback | - | .16** | .42** | .19** | .47** | .41** | .40** |
| 2. Interpersonal Trust | | - | .30** | .28** | .33** | .16** | .34** |
| 3. Receiving Feedback | | | - | .30** | .26** | .15** | .13** |
| 4. Intellectual Desire | | | | - | .27** | .11* | .17** |
| 5. Intrapersonal Trust | | | | | - | .45** | .59** |
| 6. Carefulness | | | | | | - | .44** |
| 7. Caring | | | | | | | - |

** $p < .001$

The means, standard deviations, and the possible range of each component are shown in Table 8. The score for each component is the average of its items.

Table 8

Means, Standard Deviations, and Ranges for the Components of the CFS

| Component | Number of Items | N | Range | Minimum | Maximum | Mean | Std. Deviation |
|---------------------|--------------------|-----|-------|---------|---------|-------|-------------------|
| Giving Feedback | 5 | 512 | 20 | 5 | 25 | 19.79 | 2.99 |
| Interpersonal Trust | 5 | 513 | 20 | 5 | 25 | 16.81 | 3.39 |
| Receiving Feedback | 5 | 513 | 20 | 5 | 25 | 16.18 | 3.73 |
| Intellectual Desire | 4 | 515 | 16 | 4 | 20 | 13.41 | 3.94 |
| Intrapersonal Trust | 4 | 516 | 16 | 4 | 20 | 16.93 | 2.21 |
| Carefulness | 3 | 514 | 12 | 3 | 15 | 12.24 | 1.92 |
| Caring | 7 | 511 | 28 | 7 | 35 | 30.09 | 4.05 |

The final scale is shown below in Table 9 and includes the item number, the item text, and the primarily loading coefficient.

Table 9

Final CFS with Primary Loadings

| Item | Item Text | GF | IT | RF | ID | INT | CF | C |
|-------|---|------|------|------|------|-----|----|---|
| GF 5 | I can give feedback that may be difficult to hear. | 0.67 | | | | | | |
| GF 3 | I provide meaningful feedback. | 0.57 | | | | | | |
| GF 1 | I am confident in my ability to provide feedback to others. | 0.53 | | | | | | |
| GF 2 | I can concisely provide my feedback. | 0.47 | | | | | | |
| GF 7 | I am present while I provide feedback. | 0.47 | | | | | | |
| T 6 | I believe that people are basically moral. | | - | | | | | |
| T 7 | I suspect hidden motives in others. | | 0.70 | | | | | |
| T 12 | I am cautious to place Interpersonal Trust. | | 0.67 | | | | | |
| T 12 | I am cautious to place Interpersonal Trust. | | 0.62 | | | | | |
| T 5 | I believe others have good intentions. | | - | | | | | |
| T 5 | I believe others have good intentions. | | 0.62 | | | | | |
| T 2 | I do not trust those close to me. | | 0.41 | | | | | |
| RF 12 | I do not take criticism to heart. | | | - | | | | |
| RF 12 | I do not take criticism to heart. | | | 0.70 | | | | |
| RF 10 | I am easily upset when criticized. | | | 0.61 | | | | |
| RF 11 | I dwell on criticism I receive. | | | 0.60 | | | | |
| RF 9 | I handle feedback well. | | | - | | | | |
| RF 9 | I handle feedback well. | | | 0.58 | | | | |
| RF 2 | I can handle receiving lots of feedback. | | | - | | | | |
| RF 2 | I can handle receiving lots of feedback. | | | 0.42 | | | | |
| RC 9 | I avoid difficult reading material. | | | | - | | | |
| RC 9 | I avoid difficult reading material. | | | | 0.82 | | | |
| RC 8 | I try to avoid complex people. | | | | - | | | |
| RC 8 | I try to avoid complex people. | | | | 0.75 | | | |
| RC 10 | I avoid philosophical discussions. | | | | - | | | |
| RC 10 | I avoid philosophical discussions. | | | | 0.74 | | | |
| RC 7 | I have difficulty understanding abstract ideas. | | | | - | | | |
| RC 7 | I have difficulty understanding abstract ideas. | | | | 0.56 | | | |

| | | | |
|-------|---|------|------|
| T 13 | My friends know I will keep our conversations confidential. | 0.62 | |
| T 1 | I consider myself trustworthy. | 0.60 | |
| T 3 | My friends would say I am trustworthy. | 0.53 | |
| T 9 | I would never betray my friends' trust. | 0.48 | |
| GF 11 | I select my words carefully. | - | 0.77 |
| GF 9 | I am careful of how I word the feedback I give to others. | - | 0.73 |
| GF 10 | I am thoughtful about the feedback I provide. | - | 0.64 |
| C 4 | I think of my friends often. | | 0.75 |
| C 3 | I am invested in my friends' happiness. | | 0.75 |
| C 1 | I care about my friends. | | 0.71 |
| C 5 | I have a lasting bond with my friends. | | 0.70 |
| C 2 | I appreciate the thoughts and feelings of others. | | 0.46 |
| C 11 | I think of my friends fondly. | | 0.36 |
| C 12 | I want the best for my friends. | | 0.34 |

Note. GF stands for Giving Feedback, IT for Interpersonal Trust, RF for Receiving Feedback, ID for Intellectual Desire, INT for

Intrapersonal Trust, CF for Carefulness, and C for Caring.

Descriptive Statistics of the CFS

An average score for the CFS was calculated using the mean of the average of the 33 items that were retained through the principal component analysis. The mean and standard deviation of the CFS is shown in Table 10. A higher score indicates a great ability to be a critical friend. The highest score possible on the scale is 165, the lowest is 33.

Table 10

Means, Standard Deviations, and Ranges for the CFS

| Variable | Grand Mean (SD) | Range of Possible Scores (Lowest to Highest) | N | Number of Items |
|----------|--------------------|---|-----|--------------------|
| CFS | 125.43 (13.95) | 33-165 | 498 | 33 |

Validity

To assess the convergent and discriminant validity of the CFS, a correlation was run between the measure, the Vulnerability Scale, and the Cheerfulness scale. The results are presented in Table 11.

Table 11

Pearson Correlation Results

| Scale | 1 | 2 | 3 |
|------------------------------|---|-------|--------|
| 1. Critical Friendship Scale | - | .51** | -.64** |
| 2. Cheerfulness Scale | | - | -.47** |
| 3. Vulnerability Scale | | | - |

** $p < .001$

The results show that the CFS is strongly positively correlated to Cheerfulness and strongly negatively correlated to Vulnerability. These results do not show a strong case towards

either discriminant validity with the Cheerfulness scale or convergent validity with the Vulnerability scale. The internal consistency of both the Cheerfulness Scale ($\alpha = .83$) and Vulnerability Scale ($\alpha = .87$) were acceptable.

Reliability

In order to assess the reliability of the created measure, Cronbach's alpha was calculated for each of the seven components and the CFS. These results are found below in Table 12.

Table 12

Reliability Results of the CFS and Component Parts

| Component/Scale | Cronbach's Alpha |
|---------------------------|------------------|
| Critical Friendship Scale | 0.88 |
| Giving Feedback | 0.81 |
| Interpersonal Trust | 0.68 |
| Receiving Feedback | 0.73 |
| Intellectual Desire | 0.84 |
| Intrapersonal Trust | 0.74 |
| Carefulness | 0.77 |
| Caring | 0.87 |

As shown in the table above, reliability estimates ranged from 0.68 to 0.89. This indicates that each component, apart from Interpersonal Trust, is reliable and that the overall Critical Friendship Scale is also reliable. In addition, the effect of removing each of the components on the reliability of the final scale was assessed. The change in Cronbach's Alpha upon removing any of the components was small enough that no removal made any meaningful change to the reliability estimate. As such, all items were retained after the reliability analysis.

Inferential Statistics

A number of inferential statistics were run in order to test for various group differences based on the demographic questions asked in the survey.

Gender. An independent samples *t*-test was run to test for gender differences in both the CFS and its components. Only giving feedback and carefulness did not show significant differences between males and female. Women ($M = 126.72$) scored significant higher than men ($M = 124.10$), $t(494) = -2.10$, $p = .037$ on the CFS. Women continued to score higher than men in Interpersonal Trust, Intellectual Desire, Intrapersonal Trust, and Caring. It was only in Receiving Feedback that men ($M = 16.77$) scored significantly higher than women ($M = 15.65$), $t(495.58) = 3.46$, $p = .001$. However, the effect sizes for these differences are small. The results can be found in Table 13.

Table 13

Independent t-test Results for Gender Differences in the CFS

| Scale/Component | <i>t</i> | <i>df</i> | <i>d</i> | Sig. (2-tailed) | Mean Difference | Std. Error Difference |
|---------------------|----------|-----------|----------|-----------------|-----------------|-----------------------|
| Giving Feedback | 1.37 | 508.00 | - | 0.170 | 0.36 | 0.27 |
| Interpersonal Trust | -3.22 | 509.00 | 0.28 | 0.001 | -0.96 | 0.30 |
| Receiving Feedback | 3.46 | 495.58 | 0.31 | 0.001 | 1.12 | 0.32 |
| Intellectual Desire | -2.79 | 474.55 | 0.25 | 0.005 | -0.97 | 0.35 |
| Intrapersonal Trust | -2.11 | 512.00 | 0.19 | 0.035 | -0.41 | 0.19 |
| Carefulness | -1.81 | 510.00 | - | 0.070 | -0.31 | 0.17 |
| Caring | -4.50 | 507.00 | 0.40 | 0.000 | -1.58 | 0.35 |
| CFS | -2.10 | 494.00 | 0.19 | 0.037 | -2.62 | 1.25 |

Education. A Spearman Rho was conducted to assess the relationship between the CFS and education. The results below in Table 12 show that only Interpersonal Trust is significantly related to education level. Spearman coefficients range from -1 to +1, with numbers further from zero representing a stronger relationship. As such, the Interpersonal Trust relationship is significant but weak.

Table 14

Spearman Rho Results of Education and the CFS

| | GF Comp | IT Comp | RF Comp | ID Comp | INT Comp | CF Comp |
|-----------|---------|---------|---------|---------|----------|---------|
| Education | -0.01 | -.12** | 0.02 | -0.04 | -0.07 | 0.02 |

Note. GF stands for Giving Feedback, IT for Interpersonal Trust, RF for Receiving Feedback, ID for Intellectual Desire, INT for Intrapersonal Trust, CF for Carefulness, and C for Caring.

** $p < .01$

Age. A correlation was run to investigate the relationship between the participants' age and their CFS score and components score. The results of this correlation are found in Table 13. These results show that age is weakly related to Interpersonal Trust and Intrapersonal Trust.

Table 15

Correlation Between Age and the CFS and its Components

| | GF Comp | IT Comp | RF Comp | ID Comp | INT Comp | CF Comp |
|-----|---------|---------|---------|---------|----------|---------|
| Age | -0.09 | .17** | 0.02 | 0.07 | .09* | 0.02 |

Note. GF stands for Giving Feedback, IT for Interpersonal Trust, RF for Receiving Feedback, ID for Intellectual Desire, INT for Intrapersonal Trust, CF for Carefulness, and C for Caring.

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

Chapter IV: Discussion

The purpose of this study was to develop a valid and reliable measure of one's ability to be a critical friend. Additionally, the effect of age, gender, and education on the constructed measure were examined. The following section discusses results of the analyses and their implications, the limitations of this study, and advice for future research within critical friendship.

A principal component analysis revealed seven different components: giving feedback, interpersonal trust, receiving feedback, intellectual desire, intrapersonal trust, carefulness, and caring. These components are similar to the predicted components initially suggested. The predicted component of Reflection and Critical Thought was changed to Intellectual Desire to more accurately describe the questions contained within the component. Similarly, Trust items loaded onto two different factors, one specifically interested with placing trust in other individuals and the other interested in how much others trust the participant. Lastly, three Giving Feedback items loaded onto a separate factor that assess one's ability to carefully word and phrase their communications.

The reliability of each component was acceptable (>0.70) with the exception of Interpersonal Trust, which had a questionable Cronbach's alpha of 0.68. Overall, the CFS has a Cronbach's alpha of .88, or nearly excellent, with its components ranging from .68 to .87 (Nunnally & Bernstein, 1995). Unfortunately, the measure was not able to be validated. It held strong associations with both Vulnerability and Cheerfulness. Specifically, the CFS was strongly positively correlated to Cheerfulness. This indicates that those who scored highly on the Cheerfulness scale also scored high on the CFS. Interestingly, the CFS was strongly negatively correlated to Vulnerability. It was expected that CFS and Vulnerability were strongly positively

related. This is not altogether surprising, as it may be that Vulnerability and Cheerfulness interact with social desirability. Items such as “I have a lot of fun” in the cheerfulness scale and “I panic easily” could have interacted with social desirability, causing participants to rate the positive sounding items in cheerfulness higher than their true value and the negative sounding vulnerability items lower than their true value. Similarly, vulnerability may not be socially desirable.

The components identified through the principal component analysis align with the previous research in the area. Specifically, trust was found to be an important part of critical friendship and is supported by the previous work of Swaffield (2004). Feedback also plays a role in critical friendship. Critical friendship is a two-way relationship that involves not only giving feedback but also interpreting the feedback that you receive in return.

From this study, there is little evidence that critical friendship is related to age or education level. This is not surprising, as it was not expected that critical friendship would be related to these dimensions, and no relationship was found within the literature. However, females were found to have significantly higher scores than males on the CFS and a number of its components. It was only in Intellectual Desire that males had higher scores than females. In terms of education, a Spearman Rho revealed a weak relationship between the Intellectual Desire component and education level, but there was no significant relationship found with the CFS. A weak correlation between age and trust, Intellectual Desire, and giving feedback was also found.

Limitations

Though this study has provided a reliable measure of critical friendship, a few concerns limit its usability. Since the researcher created the items, it is possible that the created scale missed essential components or overemphasized others. Specifically, the quality of the items

may have varied in such a way that those under the receiving feedback construct were lesser quality and thus less likely to load onto a component during principal component analysis. Better question quality would have been preferable across the board, and a more extensive review process for items prior to survey deployment might have helped improve the loadings. However, as Hinkin (1995) notes, deductive scale development is an appropriate way to generate items.

There a number of potential issues with using an MTurk sample: participants may self-select out of the survey at higher rates than normal due to checking the difficulty (Harms & DeSimone, 2015), problematic data collected from non-English speakers (Feitosa, Joseph, & Newman 2015), and the possibility that the sample will be overpopulated with underemployed or unemployed participants (Ross, Irani, Silberman, Zaldivar, & Tomlinson, 2010). Though using an MTurk sample raises these concerns, it was chosen due to the short data collection period and ease of use (Cheung, Burns, Sinclair, & Sliter, 2017). Similar to issues with the using MTurk, Facebook sampling also has a number of issues including lack of demographic diversity (Wells & Link, 2014) a tendency towards social desirability (Kasabova, 2014). Facebook users have been found to be majority female, white, and teenaged (Wells & Link, 2014). This is especially true in heavy Facebook users, who are much more likely to be white (Wells & Link, 2014). Facebook users are also more likely to interact based on their perceived self, as opposed to their actual self, while using the website (Kasabova, 2014). This would lead to answers that do not accurately reflect the actual participant, but instead reflect their perceived self. This may be linked to the previously mentioned issues with assessing the convergent and discriminant validity.

Survey fatigue is another potential limitation. In order to create a novel scale a large number of items had to be used. The large number of items, coupled with the repetition of

answering the same kind of question (Likert-style) could lead to lesser quality in responses – especially those later in the survey.

Implications and Future Directions

No current scale exists for critical friendship. As such, this scale provides a basis for improvement in gauging one's ability to be a critical friend. As the scale was found reliable, but not valid, further work will need to be done in order to provide a strong measure of critical friendship ability. However, this scale does involve a number of essential components for being a critical friend, such as trust (Swaffield, 2004). Components like trust, ability to care, and feedback skills show that this scale captures one's level of interpersonal skills and could potentially be useful within that domain as well.

Different scales should be used to assess discriminant and convergent validity. Scales which are found reliable in the presence of social desirability would prove especially effective for assessing the validity of the scale. A number of constructs could prove useful for establishing discriminant validity such as docility, enthusiasm, extravagance, and fearfulness. Similarly, a number of constructs could prove useful for establishing the convergent validity such as extraversion, emotional stability, compassion, and authenticity. Further work toward establishing the predictive validity is also needed. For instance, perhaps critical friendship is predictive of one's grade point average in the classroom, or of performance evaluation in the workplace.

In addition, how this scale relates to the Big Five, or the five factor model of personality, would be an ideal next step. Components such as trust and caring may lie closely with Big Five personality traits such as openness and conscientiousness. Investigating this area allows researchers to better understand how the scale sits with existing scales in the domain.

Upon further development, this scale would prove valuable for instructors looking to teach critical friendship and could provide areas for which further training is needed for each individual student. Using the scale in a pre-post format might allow instructors to assess the effectiveness of their training programs. Additionally, this scale will allow students of critical friendship to improve their skills by identifying key components in which they are lacking. Critical friendship could also prove useful in the workplace, specifically as a component of leadership development. A key component to successful leaders is their ability to effectively communicate with their employees. This is especially true in times of feedback, such as during performance evaluations. The same skill identification that would prove useful to students would also allow leaders to better understand their growth areas when it comes to communicating with their team.

References

- Archer-Kath, J., Johnson, D. W., & Johnson, R. T. (1994). Individual versus group feedback in cooperative groups. *The Journal of Social Psychology, 134*(5), 681-694.
- Ashford, S. J., & Cummings, L. L. (1983). Feedback as an individual resource: Personal strategies of creating information. *Organizational Behavior and Human Performance, 32*(3), 370-398.
- Bok, H. G., Teunissen, P. W., Spruijt, A., Fokkema, J. P., van Beukelen, P., Jaarsma, D. A., & van der Vleuten, C. P. (2013). Clarifying students' feedback-seeking behaviour in clinical clerkships. *Medical Education, 47*(3), 282-291.
- Cacioppo, J. T., & Petty, R. E. (1982). Need for cognition scale. *PsycTESTS Dataset*.
doi:10.1037/t04601-000
- Cheung, J., Burns, D., Sinclair, R., & Sliter, M. (2017). Amazon mechanical turk in organizational psychology: An evaluation and practical recommendations. *Journal of Business and Psychology, 32*(4), 347-361.
- Costa, A. L., & Kallick, B. (1993). Through the lens of a critical friend. *Educational Leadership, 51*, 49-49.
- Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and the NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Eva, K. W., Armson, H., Holmboe, E., Lockyer, J., Loney, E., Mann, K., & Sargeant, J. (2012). Factors influencing responsiveness to feedback: On the interplay between fear, confidence, and reasoning processes. *Advances in Health Sciences Education, 17*(1), 15-26.

- Evans, C. (2013). Making sense of assessment feedback in higher education. *Review of Educational Research, 83*(1), 70-120.
- Farrell, T. (2001). Critical friendships: Colleagues helping each other develop. *ELT Journal, 55*(4), 368-374.
- Feitosa, J., Joseph, D., & Newman, D. (2015). Crowdsourcing and personality measurement equivalence: A warning about countries whose primary language is not English. *Personality and Individual Differences, 75*, 47–52.
- Garcia, T., & Monte, S. D. (2012). Group formation and the evolution of sociality. *Evolution, 67*(1), 131-141.
- Gibbs, P., & Angelides, P. (2008). Understanding friendship between critical friends. *Improving Schools, 11*(3), 213-225.
- Harms, P. D., & DeSimone, J. A. (2015). Caution! MTurk workers ahead—Fines doubled. *Industrial and Organizational Psychology, 8*(2), 183-190.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*(1), 81-112.
- Hogan, R. (1995). *Hogan personality inventory*. Tulsa, OK: Hogan Assessment Systems.
- Hovardas, Tsivitanidou, & Zacharia. (2014). Peer versus expert feedback: An investigation of the quality of peer feedback among secondary school students. *Computers & Education, 71*, 133-152.
- Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Researcher, 38*(5), 365-379.

- Johnson, D. W., Johnson, R. T., Stanne, M. B., & Garibaldi, A. (1990). Impact of group processing on achievement in cooperative groups. *The Journal of Social Psychology, 130*(4), 507-516.
- Johnson, M. (2016). Feedback effectiveness in professional learning contexts. *Review of Education, 4*(2), 195-229.
- Jolliffe, I. (2011). Principal component analysis. In M. Lovric (Ed.), *International encyclopedia of statistical science* (pp. 1094–1096). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Kasabova, A. (2014). Rethinking the perceived self: Samples from Facebook. *Acta Universitatis Sapientiae, Film and Media Studies, 9*(1), 209-228.
- Kirschner, P. A. (2001). Using integrated electronic environments for collaborative teaching/learning. *Learning and Instruction, 10*, 1-9.
- Laal, M. (2013). Positive interdependence in collaborative learning. *Procedia-Social and Behavioral Sciences, 93*, 1433-1437.
- Laal, M., Geranpaye, L., & Daemi, M. (2013). Individual accountability in collaborative learning. *Procedia-Social and Behavioral Sciences, 93*, 286-289.
- Langer, P. (2011). The use of feedback in education: A complex instructional strategy. *Psychological reports, 109*(3), 775-784.
- Larson, L. M., Suzuki, L. A., Gillespie, K. N., Potenza, M. T., Bechtel, M. A., & Toulouse, A. L. (1992). Development and validation of the counseling self-estimate inventory. *Journal of Counseling Psychology, 39*(1), 105.
- Loughran, J., & Brubaker, N. (2015). Working with a critical friend: A self-study of executive coaching. *Studying Teacher Education, 11*(3), 255-271.

- Nilsson, P. (2013). Developing a scholarship of teaching in engineering: Supporting reflective practice through the use of a critical friend. *Reflective Practice, 14*(2), 196-208.
- Nunnally, J. C., & Bernstein, I. H. (1995). *Psychometric theory*. New York, NY: McGraw-Hill.
- Omer, A. A. A., & Abdularhim, M. E. (2017). The criteria of constructive feedback: The feedback that counts. *Journal of Health Specialties, 5*(1), 45.
- Peters, J. M., & Armstrong, J. L. (1998). Collaborative learning: People laboring together to construct knowledge. *New Directions for Adult and Continuing Education, 1998*(79), 75-85.
- Pettit, P. (1995). The cunning of trust. *Philosophy & Public Affairs, 24*(3), 202-225.
- Ross, J., Irani, I., Silberman, M. S., Zaldivar, A., & Tomlinson, B. (2010). Who are the crowd-workers? Shifting demographics in Amazon Mechanical Turk. In K. Edwards & T. Rodden (Eds.), *Proceedings of the ACM conference on human factors in computing systems* (pp. 2863–2872). New York, NY: ACM.
- Salomon, G., & Globerson, T. (1989). When teams do not function the way they ought to. *International Journal of Educational Research, 13*(1), 89-99.
- Swaffield, S. (2004). Critical friends: Supporting leadership, improving learning. *Improving Schools, 7*(3), 267-278.
- Urbani, S., Smith, M. R., Maddux, C. D., Smaby, M. H., Torres-Rivera, E., & Crews, J. (2002). Skills-based training and counseling self-efficacy. *Counselor Education and Supervision, 42*(2), 92-106.
- Wells, T., & Link, M. (2014). Facebook user research using a probability-based sample and behavioral data. *Journal of Computer-Mediated Communication, 19*(4), 1042-1052.

Appendix A: Initial Critical Friendship Items

Factor: Conversational Skills

16. I am confident that I can correctly verbalize my thoughts. (32 COSE)
17. I feel I can accurately reflect my friends' words back to them. (25 COSE)
18. I can concisely express my thoughts. (11 COSE)
19. I feel I respond to my friends in an appropriate length of time (neither interrupt them or wait to respond too long). (15 COSE)
20. I am confident in my ability to understand my friends. (58 COSE)
21. I respond to my friends in meaningful ways. (10 COSE)
22. I ask open ended questions. (SCS)
23. I ask for specific feedback from my friends. (SCS)
24. I lie to others to protect their feelings. (reverse coding)
25. I tell others what I think.
26. I consider myself closed-off. (reverse coding)
27. I can navigate difficult conversations.
28. I can maintain direct eye contact with my friends. (SCS)
29. I lean forward while listening to my friends. (SCS)
30. I repeat my friends' words back to them. (SCS)

Factor: Caring

16. I care about my friends.
17. I appreciate the thoughts and feelings of others.
18. I am invested in my friends' happiness.
19. I think of my friends often.
20. I have a lasting bond with my friends.
21. I am able to put myself in another's shoes.
22. I feel my friends' emotions. (IPIP Caring)
23. I know how to comfort others. (IPIP Caring)
24. I anticipate the needs of others. (IPIP Caring)
25. I feel little concern for others. (IPIP Caring) (reverse coding)
26. I think of my friends fondly.
27. I want the best for my friends.
28. I consider myself an empathetic person.
29. My friends do not know that I care for them. (reverse coding)
30. I consider how my actions will affect those around me.

Factor: Trust

15. I consider myself trustworthy.
16. I do not trust those close to me. (reverse coding)
17. My friends would say I am trustworthy.
18. I confide my troubles in my friends.
19. I believe others have good intentions. (IPIP Trust)
20. I believe that people are basically moral. (IPIP Trust)
21. I suspect hidden motives in others. (reverse coding IPIP Trust)

22. I question my friends' loyalty.
23. I would never betray my friends' trust.
24. I work hard to earn my friends' trust.
25. I place high importance on my friends' trust.
26. I am cautious to place trust in others. (reverse coding)
27. My friends know I will keep our conversations confidential.
28. I often gossip about my friends. (reverse coding)

Factor: Reflection and Critical Thought

16. I like to solve complex problems. (IPIP NFC)
17. I need things explained only once. (IPIP NFC)
18. I can handle a lot of new information. (IPIP NFC)
19. I love to think up new ways to do things. (IPIP NFC)
20. I am quick to understand things. (IPIP NFC)
21. I love to read challenging material. (IPIP NFC)
22. I have difficulty understanding abstract ideas. (IPIP NFC). (reverse coding)
23. I try to avoid complex people. (IPIP NFC) (reverse coding)
24. I avoid difficult reading material. (IPIP NFC) (reverse coding)
25. I avoid philosophical discussions. (IPIP NFC) (reverse coding)
26. I think back on my past experiences.
27. I examine the world around me with a critical eye.
28. I enjoy thought provoking discussions.
29. I never second guess my actions. (reverse coding)
30. I enjoy learning about new topics.

Factor: Giving Feedback

12. I am confident in my ability to provide feedback to others. (COSE)
13. I can concisely provide my feedback. (COSE)
14. I provide meaningful feedback. (COSE)
15. When giving feedback, I am open to further discussion. (SCS)
16. I can give feedback that may be difficult to hear.
17. I tell others what I think.
18. I am present while I provide feedback.
19. I am critical of the actions of others.
20. I am careful of how I word the feedback I give to others.
21. I am thoughtful about the feedback I provide.
22. I select my words carefully.

Factor: Receiving Feedback

14. I only need to receive feedback once to make an improvement. (IPIP NFC)
15. I can handle receiving lots of feedback. (IPIP NFC)
16. I am quick at acting on feedback. (IPIP NFC)
17. I have difficulty interpreting feedback (IPIP NFC).
18. I ask for specific feedback. (SCS)
19. I ensure that I understand the feedback I receive. (COSE)
20. I prefer to have a dialogue about the feedback I receive. (SCS)

21. I am critical of my own actions.
22. I handle feedback well.
23. I am easily upset when criticized. (reverse coding)
24. I dwell on criticism I receive. (reverse coding)
25. I do not take criticism to heart. (reverse coding)
26. I let my emotions get away from me. (reverse coding)

Appendix B: Cheerfulness Scale

Positively Keyed:

1. I radiate joy.
2. I have a lot of fun.
3. I express childlike joy.
4. I laugh my way through life.
5. I love life.
6. I look at the bright side of life.
7. I laugh aloud.
8. I amuse my friends.

Negatively Keyed:

9. I am not easily amused.
10. I seldom joke around.

Appendix C: Vulnerability Scale

Positively Keyed:

1. I panic easily.
2. I become overwhelmed by events.
3. I feel that I'm unable to deal with things.
4. I can't make up my mind.
5. I get overwhelmed by emotions.

Negatively Keyed:

6. I remain calm under pressure.
7. I can handle complex problems.
8. I know how to cope.
9. I readily overcome setbacks.
10. I am calm even in tense situations.

Appendix D: Demographic Questions

1. I identify my gender as:
 - Male
 - Female
 - Other _____

2. Choose one or more races that you consider yourself to be:
 - White
 - Black or African American
 - American Indian or Alaska Native
 - Asian
 - Native Hawaiian or Pacific Islander
 - Other _____

3. Ethnicity: Are you of Hispanic or Latino/a origin?
 - No
 - Yes, Cuban
 - Yes, Puerto Rican
 - Yes, Mexican American or Chicano/a
 - Yes, Other Hispanic or Latino/a

4. What is your age? _____

5. What is the highest level of education you have completed?
 - Less than a high school diploma
 - High school degree or equivalent (e.g. GED)
 - Some college, no degree
 - Associate degree (e.g. AA, AS)
 - Bachelor's degree (e.g. BA, BS)
 - Master's degree (e.g. MA, MS, MEd)
 - Professional degree (e.g. MD, DDS, DVM)
 - Doctorate (e.g. PhD, EdD)