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Psychological Safety as a Tool for Assessing the Effectiveness of Mentoring in Undergraduate Research

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Introduction

Research experiences have been shown to be effective in increasing engagement, retention, and graduation among historically underserved and low-income students. Beginning in 2015, Cal Poly Pomona studied the impact of undergraduate research on student success measures, especially graduation rates (Dong et al., 2024). A total of 6,654 unique Cal Poly Pomona students completed a survey on whether they participated in research and research-related activities while at Cal Poly Pomona. Results indicate that students who participated in research-related activities were almost **twice** as likely to graduate compared with students who did not participate in research-related activities. The study controlled for factors such as socioeconomic background, major of study, GPA prior to engaging in research, ethnic background, and gender. Students who participated in multiple research-related activities were also more likely to graduate than those who participated in fewer activities. Results also indicate that research participation is equally beneficial for historically underserved and majority students, having the potential to close equity gaps in graduation. A follow-up study at Cal Poly Pomona indicates that the benefit of the undergraduate research experiences is largely derived from the students developing a stronger sense of self-efficacy in their discipline. This increase in self-efficacy is strongly tied to the quality of mentoring the students receive while participating in research. Hence, access to quality mentoring plays an important role in increasing the success of students who participate in research.

Since mentorship plays such an important role in the impacts of undergraduate research experiences, it is important to maximize effective and inclusive mentoring in undergraduate research environments. To improve mentorship, mentors and undergraduate research programs need tools to assess mentoring. The literature around assessing mentoring mostly falls along two themes – outcomes, knowledge, and behavior that prepares protégés for future academic or career success, and relational behavior that promoted protégés' personal growth and self-efficacy (Berk et al., 2005, Ragins & Kram, 2007, Johnson et al., 2015, Byars-Winston et al., 2015, Pfund 2016, Boysen et al., 2020) For example, Berk et al. (2005) developed a 12-item survey where protégés rated their mentors on areas such as whether the mentor had content expertise (knowledge); provided appropriate feedback (knowledge); provided sufficient guidance (knowledge); was approachable (relational); was supportive and encouraging (relational); etc. A different approach is provided by

Limeri et al. (2024), where mentoring experiences are categorized as either supportive or destructive. Examples of survey items included whether the protégés viewed the mentor as encouraging or belittling, having compatible personalities or worked poorly together, etc. (Limeri et al., 2024). In all types of assessments reviewed, the protégés are asked to evaluate the mentor reflecting a culture of one-on-one mentoring in undergraduate research.

The addition of the psychological safety (PS) framework supplements the existing assessment tools for mentorship. The current tools ask students to provide feedback regarding the specific behaviors of the mentors whereas the PS framework probes the environment of the mentoring team. Since group-based research is becoming more common (Wallrich, et. al., 2024), being able to examine the dynamics of a research group is an important tool for a mentor. Adding PS to the toolkit of a mentor may spark mentor self-reflection and team conversations around productive undergraduate research environments.

This paper outlines the concept of PS in mentoring and how it can be used as a tool to engender an environment where the protégé has space to utilize all of their strengths. We start with a description of our institution to provide context for the cases we later share. We discuss how we can take advantage of research on teamwork to enhance how we see our mentoring relationships. We then discuss using psychological safety to guide reflection on the quality of our mentoring relationships and assess program objectives. Finally, we share three case studies as context for discussing how PS can be used in a research environment.

Institutional Demographics

California State Polytechnic University, Pomona (Cal Poly Pomona) is one of 23 campuses of the predominately undergraduate, public California State University (CSU) system. As a state university located in a multi-cultural urban metropolis, Cal Poly Pomona is a Hispanic Serving Institution (HSI) and provides access to higher education for a large number of historically underserved populations. The student enrollment as of Fall 2023 was 26,415 with 93% of the population (24,453) being undergraduate students. Cal Poly Pomona's enrollment is about 53% Hispanic, 22% Asian, 3% African American, 13% White, and the balance other ethnic minorities. Additionally, 55% of the students are first-generation college students and 49% were qualified as Pell-eligible with a disproportionate number of first-generation college students within the Pell-eligible population. According to the U.S. Census Bureau, the demographics of the city of Pomona are 70% Hispanic, only 67% with high school diplomas (national average is 86%), and about 17% with college degrees (national average, 33%). Approximately 26% of Pomona residents live below the poverty level. With this as background, CPP has invested significant resources to increase engagement, retention, and graduation rates of its students with a focus on high impact practices. Within the high impact practices, undergraduate research experiences have been shown to be particularly effective in promoting student success.

Foundational Research in Psychological Safety

In this work, we consider mentoring as a form of teamwork. There have been some significant gains in the research surrounding teamwork. The goals of teamwork and mentoring overlap in key areas including improving the speed and efficiency of interaction between team member (mentor-protégés) and also measuring the improvement in teamwork. We address both overlapping areas as ways to enhance the mentor-protégé relationship.

Tuckman and Jensen (1977) outlined the five stages of small group development. One of the stages is the performing stage where the team is at optimal performance. Peter Senge (1997) later published his book on the conceptual framework of the "learning organization" as the ideal team working environment. This book provides more precise language to describe a team "performing" at

its peak. According to Senge, in a learning organization, a team can communicate and adapt to changes in the environment which leads to increased knowledge for the team/organization and positive transformation for the team members. It is a virtuous cycle that starts with better communication of knowns, unknowns, and new challenges, which generates closer team member relationships. Closer relationships facilitate group learning (creating new knowledge and skills to solve new challenges), which results in achieving goals. The successful teamwork cycle creates positive transformation in the group that starts the virtuous cycle once again.

Amy Edmondson (1999) studied how teams develop into learning organizations, focusing on groups within an office furniture manufacturing company. She observed that higher levels of “team learning behavior” were significantly correlated with higher levels of psychological safety. To obtain these results she developed a seven-item survey to measure the extent to which teams create the foundation necessary to building a learning organization. Participants in the survey were asked to rate, on a 5-point Likert scale, their agreement to each of the following statements:

1. If I make a mistake on this team, it is often held against you. (R)
2. Members of this team can bring up problems and tough issues.
3. People on this team sometimes reject others for being different. (R)
4. It is safe to take a risk on this team.
5. It is difficult to ask other members of this team for help. (R)
6. No one on this team would deliberately act in a way that undermines my efforts.
7. Working with members of this team, my unique skills and talents are valued and utilized.

The (R) after statements 1, 3, and 5 denotes that the scores from those statements are reverse coded.

While Schein & Bennis (1965) first used the term “psychological safety” in their book on group methods for change, Edmondson’s work developing these survey items has become the primary tool for measuring psychological safety in teams. In 2017, Google completed an internal study to determine what makes a successful team (Duigg, 2016). Their work determined that the foundation of a successful team within their organization can be predicted by measuring PS of the team. If a team has high levels of PS, then they are prepared to utilize other knowledge, skills and attributes (KSA’s) to achieve team success. Without sufficient PS, the collective team’s KSA’s are not sufficient to generate measurable success on project tasks.

Since Edmondson published her original paper in 1999, others have utilized the PS assessment survey in various research works. These papers are published in a summary work by Edmondson and Lei (2014). The collected works demonstrate how PS is correlated with team performance, successful change adoption, and the extent to which people speak up at work.

Implementing Psychological Safety to Support the Mentoring Relationship

It is important to emphasize that PS was developed as a tool to assess a group environment. In other words, it is a tool for self- and team-reflection, not a pedagogical tool for improving team performance. Implementing the PS assessment can be as simple as creating an online survey that the members of the team can fill out anonymously. This can be for a single class, or as programmatic assessment across a department or college. Recent work by Payne et al (2024) applied this approach to assessing PS in engineering teams at both the senior capstone level and the first year “intro to engineering level” at two different institutions. Their approach used a seven-point Likert scale for each PS survey item. Survey responses revealed the mean PS score across all teams and universities was 78% - providing a baseline value of PS one may expect on a given academic team.

When introducing the survey to the students (and before they enter the online survey) make it clear which specific group interaction they should consider in their responses. They should not consider all interactions with all people, but they should be directed to think of a specific interaction they have had or are experiencing (preferably in the moment or recently completed). Also, students do not typically include faculty advisors or mentors as part of their group evaluations. Therefore, if you wish for the participants to include the faculty advisor or mentor as part of the interaction then you should also explicitly instruct the respondents to consider the role of the advisor or mentor in the assessment.

Special Case: implementation in small groups

Part of the challenge to improving the mentor-protégé relationship is that neither party has the vocabulary to communicate the challenges they are facing beyond declaring there are “personality differences” or “communication style differences.” These diagnoses are regularly used to describe a relationship that *cannot* be changed. Given the regular turnover in academic settings, if a group is diagnosed as having personality or styles differences, the members of the group bide their time until the end of the semester when the group naturally dissolves to avoid addressing the issue.

While it is possible that personality differences, or style differences, might be a factor in poor group performance, the source of difficulty often includes other factors. Unlocking the other factors requires knowing the vocabulary to form more curious questions. These curious questions are effective if they collect new insights (data) about the challenge the group is facing. Once you have the new insights, you will likely see beyond personality or styles as the cause of the challenges. This conceptual framework of collecting new data is especially relevant when working in small groups, and one helpful tool to assist with generating new perspectives is the PS assessment survey.

For small groups, an anonymous survey may not feel very anonymous if the mentor is using it to assess the mentoring relationship, which may only be a team of two individuals: The mentor and the protégé. In this case the PS survey can be used by the advisor to reflect on the mentor and protégé relationship. Therefore, for small groups of around eight or less, the authors recommend the following approach.

First, only use this approach if you can truly project a sincere curiosity to learn from your group and to apply the feedback you may hear. Thank your protégés for the courage they display just by being willing to have a conversation, for sharing their thoughts, and assure them that you will take the feedback into consideration. If you are not able to approach the conversation with curiosity and empathy guiding your desire to listen, then do not use this approach.

Second, introduce the concept of PS at your next meeting, or schedule a special meeting just for this conversation. The following is an example of how you may introduce the survey item discussion.

I recently learned about Psychological Safety and how others have used it to measure the health of successful teams. I thought it was relevant to how we are accomplishing our work, so I wanted to ask you how we are doing.

Third, review the reflection questions located in the Guided Reflection section where each of the survey items are revised as questions to guide reflection by the mentor alone, or with their protégé or group of protégés. Feel free to prime the conversation with related questions such as: “What could be an example of this kind of behavior?”, or “Have you seen this as a problem in teams you’ve been on in the past? What impact did that have?” However, the reflection question you really want to answer is, “How do you think we are doing right now?”

By reflecting on the PS survey through the guided reflection questions, you may start to see where problems might really exist. For example, what may have been counted as a “communication style” was really an issue with how one student responded when another student asked for help. What was labeled as a “personality” difference was actually someone not feeling like they belong in the group yet. In general, for every perceived violation of personality or style, there is generally an underlying behavior that was observed to lead to that conclusion. Beneath that behavior may be an attitude that needs addressing. In both cases, these are challenges that can be addressed and improved. They are not impossible obstacles.

Fourth, follow up on the conversation in the future. After a couple weeks, bring up the conversation again and ask if they have any additional thoughts they would like to share. Perhaps share instances where your actions, as the mentor, may have negatively impacted the team’s PS. Remind them that you think it is critical to create a psychologically safe environment. It is very likely that when you first approach the group reflection no one will speak up. Be patient. The more you reflect as a group, the more they will see how important this is to your definition of success.

Case Studies of Psychological Safety

The utility of measuring PS is enhanced by identifying ways to improve it on your teams. We offer the following scenarios to illustrate how a team of university students may not function effectively to better illustrate common barriers to successful undergraduate research environments and how the PS framework might be utilized.

Scenario 1 – The Veteran

Two students work together on a research project with a faculty advisor. Alex is an older student and a military veteran. Sam is a traditional student in their 2nd year in college. Having served in combat, Alex feels that the opportunity to go to college is precious and not an experience to be squandered. Alex plans out the tasks they must complete for the week and works to get everything done early. Sam engages with the research work like much of their other work – they are ok waiting until the day before something is due to get the work done. Alex feels frustrated that Sam does not seem to take their project seriously.

Alex cannot help but exude impatience for Sam’s meager efforts. In response, Sam feels constantly judged by Alex and that Alex is setting unrealistic expectations for getting the work done. Their interactions became mechanical and do not allow for free exchange of ideas. Alex has come to view Sam as incapable of doing the work, which also means that Alex sees himself as the one who is capable. Alex’s impatience with Sam evolved into indifference about the reasons why Sam struggles to keep up. Alex begins to see the interactions with the research team as in danger of failing, but thankfully Alex is there to “save the work” from Sam’s inferior efforts. The net result is very low trust between Alex and Sam.

According to the Arbinger Institute (2022), people develop an “inward” mindset when there is an event that happens, and we choose to act contrary to what we feel we should do for another person. Acting contrary to our notions of basic decency requires that we justify the action we choose as superior, the action we rejected as inferior, or both. The net result is that we no longer see the reality of the two alternatives, but we deceive ourselves into seeing one alternative as dramatically better or worse than the other.

Festinger (1957) described a phenomenon similar to the inward mindset as the result of a person who experiences cognitive dissonance then makes justifications to choose between two competing cognitions. In Alex’s case the two cognitions could be described as: complete the tasks effectively

and efficiently, or help Sam keep up with the work. In Alex's early analysis, they promoted the value of completing tasks as more valuable than helping Sam.

In our experience, many faculty turn to personality or communication styles to diagnose the challenge between Alex and Sam. As an alternative, we can view the challenge through the framework of Inward versus Outward mindsets (Arbinger Institute, 2022). The Arbinger Institute refers to Alex's orientation toward Sam as an inward mindset they label as the "Better-than" mindset. Arbinger Institute uses the analogy of someone trying to view their world while standing inside a box. The view of the people around them is completely obscured by the box's wall so they invent a perspective of others that is not relying on a view of reality but an imagined situation that fits their justifications. From inside the box, or with an inward mindset, Sam appears only as an obstacle to Alex's progress on the research project. To Alex, Sam is no longer visible as a human with their own goals, objectives, strengths, and needs but an object (obstacle) in their path.

The degree to which an inward mindset could be the main problem between Alex and Sam can be measured using the Psychological Safety assessment. To Sam, Alex's intimidating posture made it less likely for Sam to report mistakes (PS Survey Item 1). Since it seemed to Sam that Alex was "doing everything" there was little incentive for Sam to bring up alternatives or discuss different directions the research would take. Talking about new ideas is one type of "tough issue" to address even in good relationships (Item 2). Finally, we saw that generally, Sam was concerned about doing the 'right thing' rather than exploring and being curious. To do that, Sam would have needed to feel it was ok to take small risks (Item 4).

Scenario 2 – The Pacesetter

A team of 10 students has been charged to develop and launch a new product as part of a course. One student, Riley, became excited about the project and took the lead from the start, moving forward quickly. They identified the work that needed to be done and began assigning tasks to the other students. If the tasks were not completed immediately, Riley would often take over and complete the task themselves. After a few weeks of this, the other students began to withhold their participation from the project because Riley seemed to be doing it themselves anyway. From Riley's perspective the team began contributing less and less so they felt a need to shoulder more of the burden.

In addition to the Arbinger Inward / Outward mindset framework – with Riley exhibiting a "Better than" Inward mindset like Alex – we can also look at these challenges through a leadership styles framework described by Boyatzis & McKee (2005). Within this framework, leadership styles are categorized as either resonant or dissonant. 'resonant' leadership styles draw the team and leader closer to each other, while 'dissonant' leadership styles create separation between the leader and the team. Within the dissonant category are the Commander and Pacesetter styles. Dissonant leadership styles are not "bad" in all times and situations. There are many instances where having a commander come in and start assigning tasks to get things done is necessary. Similarly, situations may require a person to start doing tasks and "set the pace" for everyone to follow.

In Riley's case, the team was given an open-ended project with a tight deadline so there were a lot of inaction followed by uncertain actions. The team was probably grateful for Riley's help getting them started in a positive direction at first. Riley probably thought they were leading by example. However, over time, the team could not keep pace with Riley – a fact that Riley reminded them of each time Riley completed a task someone else should have completed. Being a pacesetter created significant emotional distance between Riley and the rest of the team leading to lower levels of trust. Goleman et al, (2001) explains that the resonant and dissonant leadership styles need to be selected utilizing our emotional intelligence. Goleman et al. explain that emotional intelligence is

self-awareness, self-regulation, social awareness and relationship management. So, if we know ourselves, and we are capable of reading the emotional states of others correctly, we should be able to select a style that help the team succeed. Stated another way, Riley was not wrong to use the pacesetter style. However, according to Goleman et al., once the team started to make progress, Riley should have observed a change in their team and adopted a different style.

The challenge is that no one is innately good at perceiving the emotional states of others around them. In general, even experts (e.g., FBI criminal profilers, and CIA Agents) are not able to correctly identify the emotional states of another better than random chance (Gladwell, 2019). At the same time, Gladwell also points out that the average person overestimates their emotional intelligence resulting in people thinking that they know others and regularly coming to incorrect conclusions about the people around them. In this case Riley thought of themselves as someone who understands people, yet they concluded the reason the team was falling behind was because they could not keep up with the pace of the project.

Using Wiseman's (2010) "Multipliers Model," people can become "unintentional diminishers." This concept is illustrated well by Riley's actions and reactions. Riley's plan wasn't to create an environment where the leader did all the work and the team simply watch from the sidelines. Riley was motivated by a desire to do quality work. We also do not think that Riley is against working in teams. However, instead of bringing out the best in others, Riley's approach began to have a negative impact on the team. From the PS assessment, we see a decrease in teammates becoming less likely to ask for help (PS Survey Item 5) because Riley would just take the work from them. Some were afraid to bring up alternatives because Riley seemed to already know what to do (Survey Item 2). Whenever Riley took work from a teammate, the teammate felt undermined (Survey Item 6). Finally, most did not feel very useful or valued (Item 7) because Riley was doing most of the work. At this point one might ask, "What if the person/team/protégé is/are, in fact, lazy, unreliable, unprepared, or poorly suited for the position they hold? Am I justified in leaving them behind, ignoring them, devaluing their (mostly non-existent) contributions then?" In response we share with you the third scenario.

Scenario 3 – The Toxic Teammate

Jo is a member of a research training program with 30 participants. Jo has several intersectional characteristics that make them a potential target for discrimination. Jo is dismissive of others in the program if they don't agree with Jo. Jo also makes uncomfortable advances toward a couple of the students, and they behave inappropriately both in and outside program meetings. None of the individual behaviors stand out as a clear case of harassment of the group or toward an individual, but the sum of their behavior pushed the boundaries of acceptance. However, when another student calls Jo out on their behavior, Jo reacts as the victim.

During the program, the advisors met with Jo to discuss their behavior. Jo reacted stubbornly and negatively to the conversation. Jo did not apologize for their behavior as reported by the other students and they continued to argue they were the victim. As the program progressed, Jo's behavior did not change until the program came to its scheduled end.

Patrick Lencioni (2010) developed a teamwork model to demonstrate the connection between trust and results. From Lencioni's perspective, a team's ability to achieve results is rooted in their capacity to trust each other. Once established, trust is required to have healthy conflict (sharing and resolving conflicting ideas to find the best solution), securing commitment from each team member (clarifying roles and expectations for each person), holding each other accountable (following up with each member on their commitments and ensuring quality work), and achieving the desired result (keeping the team focus on the shared result and not the individual).

One of the ingredients of team trust is vulnerability. Supporting this model, Brown (2015), while seeking to understand how humans build connection and lasting relationships, identified all relationships require vulnerability. In a basic sense, vulnerability means being able to say, “I am sorry,” “I made a mistake,” and “I need help.” You can measure the challenge associated with these three statements within PS survey items 2, 1 and 5 respectively. Additionally, each one of these statements also represents what it means to take small risks on a team (survey item 4).

Brown explains the choice to be vulnerable requires significant courage – especially when we have developed a habit of the “Need to be seen” inward mindset. The “Need to be Seen” mindset is observed when the individual tries to be well thought of but ends up pretending to fit in and feeling a bit fake, they tend to see others as an audience, or as judging them. These perspectives tend to generate feelings of stress, fear, and anxiety in the individual while they see the world around them as increasingly dangerous, judgmental and always watching (Arbinger Institute, 2022). The good news is that we are social creatures, so we crave connection with those around us (Sapolsky, 2018). Continuing to persist with an inward mindset requires regular justification to diminish the value of the connection and augment the value of the separation. Therefore, if we want to overcome this challenge, we need to demonstrate that we are always open to connection with the people like Jo on our teams.

This is easier said than done, of course. We cannot change Jo. Jo must choose to change on their own. Our challenge is continuing to see the “Jo”s on our teams as people and not objects. When Jo rejected their peer’s feedback on their behavior, as well as the advisors’ intervention, it would have been easy for everyone to feel justified in treating Jo differently than the rest. This reduces Jo’s humanity (all their goals, values, and strengths) into a single-cell organism: an obstacle. The result of this action-reaction collusion is one more way in which we can objectify humans.

When we hear the justifications coming to mind about how someone is “Just a ... (lazy, toxic teammate, who ruins everything, and so forth)” we can pause and recognize the choices we have before making unintentional choices. We can always choose if our heart is at war or at peace (Ferrell and Boyce, 2022). If we (as mentors) choose a heart of war toward Jo, our other protégés will react to our example. This might push them to make a choice – support us and become our tool in a campaign to isolate Jo, or support Jo and become an obstacle to us. Either way we objectify the others in this team by converting everyone into a tool or an obstacle. At this point we have failed as mentors.

It is often the case that the toxic teammate does not change to give everyone a magical resolution full of reconciliation between all parties. Most of the time, the requisite change and reconciliation happen much later. In the meantime, we always retain the power to see even the most toxic people as capable of change. We can continue to treat them with respect and dignity and always be ready for reconciliation as soon as the toxic teammate is prepared to change.

Improving Psychological Safety – Curiosity, Empathy, Vulnerability

While the purpose of this paper is to make the case for using PS to assess mentoring relationships, we feel it important to provide suggestions on how to improve psychological safety in our mentor-protégé and peer mentor relationships. Throughout this article we cited several authors and frameworks for diagnosing challenging relationships. From our reading of these materials, there are three common concepts that show up among all the references: curiosity, empathy, and vulnerability. We provide a short summary of how these concepts show up in the literature and how they impact psychological safety.

David Marquet (2013) shares the story of how he prepared for his promotion to submarine captain for a specific type of submarine. When the promotion came, he was assigned to a different submarine with different systems and with a reputation of poor staff performance. Because he was not familiar with this submarine's systems, he could not command his sailors on what to do; he was forced to exercise curiosity with every sailor by learning from them what their tasks were and how they executed their tasks. In his conversations, he listened to each sailor explain their jobs and share their perspectives on what was going well and what was not. Along the way, he built a habit and a reputation as someone who listens and then acts. The impact on the crew was they began to take small risks by coming up with solutions to problems before being ordered what to do and then taking intentional action once given the green light. As a result of this change, Marquet observed a complete performance change of the submarine's crew.

The impact of curiosity is also described by Liz Wiseman (2010) as having a multiplying effect. When we engage in activities with others using curiosity at each step, we invite them to use more of their ability to take ownership of their work and they begin to feel their efforts are valued. Wiseman shares her own story of working at Oracle and starting the company leadership development program as a relatively young professional. Faced with training many senior engineers with higher levels of education than her own, she had to develop a strong curiosity habit. She met with managers at all levels to create a program that reflected their needs and simultaneously demonstrated her ability to listen.

Listening to someone's ideas and then taking action – by making change, adapting policies, and improving processes – is another way by which we demonstrate empathy (Brown, 2015) for those around us. Throughout Brené Brown's work, the reader sees the twin themes of vulnerability and empathy. In her work, Brown focuses on how people build strong connections, and the main path to connection is through interpersonal vulnerability.

Pulling this all together, we can see that curiosity, empathy, and vulnerability make a virtuous cycle, and each step in the cycle can be measured by an item in the PS Survey. Since the power differential between mentor and protégé is too great to assume that the protégé will do anything to affect the level of psychological safety, it is imperative for mentors to take actions that demonstrate curiosity, empathy, and vulnerability in undergraduate research teams.

Guided Reflection

Since the PS framework is meant as a supplemental tool to encourage reflection, below are some guided reflection questions related to each item of the PS survey.

1. *If you make a mistake on this team, it is often held against you.*

For the mentor: How many times have you admitted you have made a mistake in front of your protégés? How many times have you admitted that you do not know something or are unsure about something?

For the group: How often do we discover and correct mistakes (both large and small)? If we expect our protégés to share with us our mistakes, we need to model how to share mistakes in public and normalize this process so that you can focus on the learning that mistakes can generate. If you are perceived as infallible, your protégés will feel uncomfortable sharing their mistakes even if you project a "nice, open, forgiving" personality to them.

A measure of effective teams is that they make mistakes, identify those mistakes, discuss the mistakes made, correct the error and learn from mistakes to prevent future errors in the future. This

process is fundamental to learning and building synapses for effective future doing (Chialvo & Bak, 1999).

2. *Members of this team are able to bring up problems and tough issues.*

For the mentor: How many times has a protégé approached me with a difficult topic (perhaps a new direction in the research, a critique about how I'm managing the work, or an admission that they've made a mistake)? How did I respond?

For the group: How many times have we approached each other with a difficult topic (correcting errors, proposing an alternative idea or strategy, discuss uneven workload, address performance issues, or address perceived personality or communication differences)?

As mentors, students should be willing to come to us with their questions and concerns about their work they are doing. It is appropriate for students to be resourceful and research their own information. However, if you see your protégés are avoiding speaking with you to the detriment of making progress (e.g., completing other tasks you did not discuss, taking too long to complete tasks you discussed, or completing tasks incorrectly over and over again) then this is evidence that your protégé does not feel free to bring up difficult topics with you.

Our effectiveness as a team also depends upon our ability to bring up difficult topics with each other. This can be intimidating because we can see difficult topics as "us versus them." Getting over that initial challenge is to recognize that difficult topics represent a shared challenge that we both have, and we need each other's perspectives to address the challenge. The more we discuss difficult issues, the more our mindset shifts from "me versus you" into "us versus our shared challenge." (Stone, Platten & Heen, 2023; Covey, 2020).

3. *People on this team sometimes reject others for being different*

For the mentor: What actions have I taken to ensure everyone feels welcome and that they belong? Do I allocate time for me to get to know the group and the group members to get to know each other?

For the group: What actions have you taken to help people feel welcome in the group?

When we join a new group, we typically wait on someone else to extend a welcome handshake or begin a conversation. People often assume that they do not belong because no one has initiated a conversation with them, and this is regularly perceived as being rejected because of some perceived differences between them and the other teams. The mentor/faculty advisor should initiate this process with each member of the group, but then each group member needs to do the same with the other members of the group. Otherwise, the only other sense of belonging they feel will be in the presence of the mentor (Davis et al., 2022).

4. *It is safe to take a risk on this team.*

Addressed through implementing questions to other survey items.

5. *It is difficult to ask other members of this team for help.*

For the mentor: How many times have students asked you directly for help or clarification? How did you react or respond?

For the group: How many times have we asked another person for help, and how many times have we helped others in the group?

Aside from regularly making mistakes we often misjudge what it takes to complete a task. Realizing that we do not know how to do something, or that the amount of work is more than one person can do in that specific timeframe (considering factors external to the team as well), is a normal way to develop self-awareness. Also, asking for help and offering help is an effective way to build a stronger connection with someone which leads to positive interpersonal dynamics (Patterson, et al., 2012).

6. *No one on this team would deliberately act in a way that undermines my efforts*

For the group: How many times have we seen another group member need something and sacrifice our time to support their work?

Negative group environments are those where competition drives people to withhold their collaborative support. Competition can lead to members withholding information, support, or taking over tasks assigned to other members without coordinating with the group members. This is largely what is meant by undermining the efforts of others and the group. To counteract this tendency, we should be actively looking for opportunities to support the efforts of each group member in selfless ways (i.e., ways that cannot be perceived as serving the person offering the support more than the person receiving the support) (Kang, 2022; Mostafa, Farley & Zaharie, 2021).

7. *Working with members of this team, my unique skills and talents are valued and utilized.*

For the mentor: How many times have you celebrated the collective or individual achievements of your group members?

For the group: How many times have you identified a skill or ability in another member of the group and recognized them for it?

To help your protégés feel like their individual skills and talents are valued, you'll need to find ways to recognize their effort. This does not mean handing out gold stars and paper certificates to every group member to ensure that everyone is a winner. One approach to recognizing each protégé's contributions utilizes their preferred team roles (Belbin & Brown, 2002). Using a simple assessment (www.123test.com/team-roles-test), protégés can identify the team roles they prefer – those that help them gain energy – or those that require additional effort – those that cost energy. Whenever the protégé completes a task that is outside their preferred roles you can celebrate the additional effort, they had to exert to complete the task. Even a small accomplishment can be celebrated sincerely in this way (Rosenfeld & Richman, 1997).

Conclusion

Psychological Safety was originally discussed as a characteristic of a positive team environment. What we propose in this dialogue is that it can also supplement existing measures of mentoring effectiveness. Whereas established assessment tools look at the protégés perceptions of their mentors' effectiveness at sharing knowledge and creating a supportive relationship, utilizing the PS survey can provide a window into the dynamic of the entire research team. We also hope that we provided sufficient resources through the different scenarios and guided reflection questions so that mentors can use PS as a tool for reflection on the effectiveness of the research team – whether that is a team of 2 or 30.

The purpose of this dialogue is to encourage all of us to reflect on our mentoring. Psychologically safe environments are good for the protégés and for the institution. It reduces the risk that protégés will fabricate data to please the mentor, creates a collaborative work environment as opposed to a competitive one, and can foster diversity of ideas and workstyles that will ultimately benefit everyone involved.

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