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Unpacking Engineering Faculty's Discrepant Views of Mentoring through the Lens of Attachment Theory

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Abstract

The term mentorship can be interpreted in a variety of ways. This research paper examines the interpretation and individual mentoring experiences of three engineering faculty across ranks to capture their discrepant views toward faculty support relationships. In the context of a larger qualitative study to identify and compare perceptions of effective engineering faculty-to-faculty mentorship from the perspectives of both mentors and mentees, three engineering faculty stood out as markedly different from their fellow interviewees. Specifically, these three stood out because, while they each actively provide mentor-like support to other faculty or students, they expressed reluctance or aversion toward labeling these relationships as mentorship. This seemingly contradictory set of attributes motivated a closer examination of their stories. Data for this work are semi-structured interviews collected during the larger study. We frame our analysis using Attachment Theory, which describes how and when humans seek out support through "safe haven" and "secure base" functions. Safe Haven support is sought when an individual is in distress, and Secure Base support provides an anchor for independent exploration. The attachment system produces differing states of security related to underlying anxiety and avoidance dimensions. Differences in attachment states influence responses to social interactions and willingness to participate in close relationships such as mentoring. Our findings highlight the characteristics, causes, and consequences of three attachment states as they relate to faculty support interactions. By considering outlier cases of faculty support relationships, this work provides new ways of thinking about faculty mentorship and offers an approach to potentially remediate negative mentoring experiences.

Introduction

An activity often cited as critical for success in any field is mentorship. However, scholars from education, management, and psychology have defined mentorship differently [1], often conflating such activities with other types of developmental functions or relationships such as role modeling [2], teaching or coaching [3], and professional development training [4]. This variation in how mentorship is perceived can lead to challenges clarifying mentorship as a phenomenon [5]. Therefore, it's important to understand effective mentorship and how it might vary from person to person to ensure such interactions benefit all involved.

The current reported effort contributes to the growing body of knowledge and resources generated by the multi-institutional Mentorship 360 (M360) project, funded by the Kern Family Foundation. Junior and senior faculty were interviewed to examine perceptions of mentorship held by faculty mentees and mentors. Comparisons across mentors and mentees provided insights into existing alignments and misalignments regarding interpretations of effective mentorship [4], [6].

A subset of engineering faculty interviewed for this project stood out as unique from other participants because their perceptions of mentorship were fraught with uncertainty and/or inconsistencies despite being actively engaged in mentor-like support relationships with others. In these discrepant or deviant (i.e., outlier) cases, the participants expressed markedly different perceptions than their peers about mentorship. Each called into question or doubted whether their

experiences should be labeled as mentorship. These were not anticipated responses from participants choosing to participate in a study about effective mentorship [7], [8]. While other participants shared negative stories or gave examples of ineffective mentorship, none expressed reluctance or refusal to label their support relationships as mentorship. The seemingly contradictory combination of providing mentorship while questioning or invalidating one's own mentorship experiences motivated a closer examination of these faculty members' stories to determine what lessons could be gleaned from their perspectives [5], [7]–[9]. Analysis of discrepant cases that fall outside the norm is a critical strategy in qualitative research [7]–[9]. The uncertainty and inconsistency involved in such outlier cases do not invalidate the participants' stories but instead reflect the complexities in the phenomena under study [5], in this case, mentorship. Discrepant cases can provide clues to generating innovative hypotheses and understandings not readily apparent in more common responses [5], [8], [10], and, as such, require close examination to reveal their meaning [8].

We leverage attachment theory as a psychological and developmental lens [11], [12] to guide this study. Attachment theory has been extensively used to examine mentoring relationships and the underlying factors determining their involvement and success levels [11], [13]–[23]. The underlying goal of analyzing this subset of cases is to yield new insights into how some faculty engage in mentorship activities with other faculty. Two research questions guide this inquiry:

1. What are the mentoring perceptions, experiences, and behaviors of engineering faculty who hold discrepant views of mentorship?
2. How can this knowledge inform changes to faculty mentorship programs?

Background and Motivation

Effective mentorship varies from situation to situation and person to person. Common attributes of mentorship identified across the literature include a relationship that 1) has a dynamic impact over time and 2) functions as a way to learn and grow that is reciprocal but asymmetrical [1]. These attributes are found in the recent working definition of mentorship proposed by the National Academies of Science, Engineering, and Medicine [3] and prescribed by the M360 project:

> *"Mentorship is a professional, working alliance in which individuals work together over time to support the personal and professional growth, development, and success of the relational partners through the provision of career and psychosocial support.*" [3, p. 37].

The benefits of faculty receiving mentorship are well documented and include increased productivity, career satisfaction, career success, organizational commitment, and general well-being [13], [14]. Comparatively, little research has examined challenges associated with mentorship [15], even though a mentoring relationship, like every other human relationship, involves negative and positive experiences. The consequences of poor mentoring experiences can be harmful to mentors as well as mentees. Such experiences can sometimes be worse than the absence of any mentoring at all [24]. They can potentially hinder faculty's career progress, create tensions within departments, and drive promising faculty away from institutions or academia altogether [15].

Our preliminary analysis of engineering faculty interviews collected for this study found that junior faculty in engineering define effective mentorship as access to support networks of peers and senior faculty, emphasizing the importance of human connection [4]. Senior faculty described effective mentorship in terms of the support they provided, such as making themselves available through being accessible and helping junior faculty build a sense of independence by fostering agency [6]. Emergent perceptions of mentorship have generally aligned with the literature, including the NASEM's proposed definition of mentorship [3, p. 37]. Our motivation for this study is to do a deeper dive into faculty stories that represent a departure from the views of the rest of the participants.

Theoretical Framework

We frame our discussion of discrepant views of mentorship using attachment theory. Attachment theory is one of the grand theories of social and development research [18], involving the interrelated behavioral systems of attachment, caregiving, and support-seeking. Caregiving and support-seeking are reciprocal functions that strengthen adult relationships [11]. They exist in hierarchical forms of mentorship [2] and even more so in informal mentorship developed from interpersonal connections [23]. Attachment theory in adults explains the balance of dependence and autonomy between two people and how caregiving and support-seeking contribute to both parties' growth and exploration. This paper describes attachment theory in terms of the *mentor* as the caregiver or attachment figure and the *mentee* as the support seeker, recognizing that faculty members could find themselves in either or both roles throughout their careers.

Attachment can be conceptualized as a behavioral system explaining how humans (e.g., mentees) seek support [25]. The attachment system is *activated* when the mentee experiences distress and *resolves* when the goal of *felt security* is met. An attachment figure (e.g., a mentor) can help satisfy the attachment system through *safe haven* and *secure base* functions. Safe haven occurs when a mentee seeks support from a mentor in response to a concern and then perceives that the mentor addresses their need expediently. Availability, responsiveness, and consistency are critical attributes of safe haven and are more important in achieving felt security for the mentee than the content of the advice or support provided [11]. The safe haven function restores well-being. Secure base occurs when the mentee engages in exploratory behavior as a result of believing the mentor's help is available if needed. A mentee's experience of a secure base contributes to goal-striving, personal learning through trial-and-error, and high levels of confidence and self-efficacy. Mentors can cultivate a mentee's experience of secure base by showing interest, encouraging the pursuit of challenges, helping remove obstacles, and not interfering or intruding on exploratory behavior. [26]–[28]. The secure base function advances well-being.

Safe haven and secure base contribute to a resolved attachment system, resulting in a *secure attachment* state. Indicators of secure attachment are the combined dimensions of low anxiety (i.e., positive self-concept, worthiness of support) and low avoidance (i.e., a belief in the dependability of others). Secondary attachment strategies may be employed when the safe haven and/or secure base functions are absent. For example, inconsistent or intrusive behavior from a mentor may communicate to the mentee they are unworthy of time and attention, *hyperactivating* the attachment system and creating a state of *anxious attachment*. This psychological state can lead to self-blame, a negative self-concept, and intensified support-seeking behavior [29]. Conversely, non-responsiveness or rejection can communicate to the mentee that others are unreliable and, therefore, untrustworthy, *deactivating* the attachment system and creating a state

of *avoidant attachment*. Even though the mentee's need is not resolved, support-seeking behavior ceases, and the mentee withdraws to attend to their issue alone. While attachment states during early life can solidify into lifelong dispositional *attachment styles* [11], adult attachment can also be event-specific, relationship-specific [23], and shift over time [30]. Therefore, secure attachment may be possible in specific instances or relationships, regardless of dispositional style [23].

Research Methods

The data for this paper comes from a research study investigating engineering faculty's perceptions of effective faculty-to-faculty mentorship [4], [6]. A total of 31 tenured/tenure-track faculty – 16 senior faculty and 15 junior faculty – were interviewed using a semi-structured interview protocol following a critical incident approach [31]. Senior faculty included those at the Professor rank and Associate Professor rank for a minimum of two years. Junior faculty included those at the Assistant Professor rank and Associate Professor rank for less than two years. Participants were recruited from the top twenty largest US doctoral-granting engineering schools, as determined by the 2021 American Society for Engineering Education (ASEE) Engineering by the Numbers report [32]. The research team contacted the heads/chairs of engineering departments within each of these twenty institutions with a request to share a study invitation and screening survey link with their engineering faculty. The screening survey was designed to take approximately 10-15 minutes to complete. It contained questions about the participant's academic job, mentoring relationships as a mentor (for senior faculty) or mentee (for junior faculty), and demographic information. Participants were only eligible for the study if they were a tenured or tenure-track faculty member.

Selected faculty were invited to participate in a 60-minute follow-up interview via Zoom, which was audio recorded and transcribed. Purposive sampling was used to ensure diversity of faculty rank, engineering discipline, geographical region, race, gender, and citizenship status in the responses. Interview questions asked participants to share incidents in which they provided or received formal and/or informal mentoring in three areas: (1) the job duties associated with their faculty job, including teaching, research, and service, (2) the interpersonal aspects of their faculty job, and (3) issues relevant to their held identities in their faculty job. Participants were also prompted to describe what effective faculty-to-faculty mentorship meant to them and discuss their mentoring experiences more generally. Faculty who participated in both the survey and the interview received a $99 Amazon gift card as compensation.

Patton [33] recommends the study of "outlier" or "deviant" cases in qualitative research for their potential to illuminate valuable insights that can be generalized to the study population as a whole. Unlike quantitative research, where outliers are discarded from the dataset, understanding what contributes to the variance exposed in disconfirming or discrepant evidence is vital to the interpretation of qualitative research [5], [7], [9]. Failure to investigate cases that do not conform to theoretical predictions could introduce bias and cause valid alternate explanations to be overlooked [7], [8]. The current paper focuses on three outlier participants from the larger sample because they each conveyed uncertainty or inconsistency in labeling their mentoring experiences as mentorship. No other participants in the larger study expressed such views. The outlier participants in this study represent the three faculty ranks included in the study and come from different engineering disciplines (aerospace engineering, biomedical

engineering, environmental engineering). All participants identified as women. Additional demographic attributes are given in the findings section as they relate to the narratives being shared. We do not draw any conclusions about the influence of gender or any other demographic characteristics on the views presented because of the small sample and unanticipated, emergent nature of the findings. New hypotheses derived from analyzing these cases will be used to reevaluate the rest of the dataset [10]. Further data collection may be necessary to explore demographic influences.

We used a priori coding [34] in three passes to analyze the three participants' transcripts. The first pass coded how they defined effective mentorship or described mentoring experiences using attributes from the NASEM definition of mentoring (relationship, growth, and type of support). The second pass coded evidence of the attachment functions of (secure base, safe haven). The third pass coded for dimensions of anxious, avoidant, and secure attachment. Emergent findings are presented as narratives to make the participants' experiences more accessible, engaging, and impactful [34]. Each narrative was created by summarizing the participant's interview using the participant's own words to the greatest extent possible. All quotations come directly from the transcripts, edited for tense and grammatical changes or the redaction of personally identifying information only. Following each narrative is our analysis of the narrative using attachment theory. Specifically, we interpret the participants' recollections of their mentoring experiences through the lens of the safe haven and secure base functions and their mentoring behaviors through the lens of the three attachment states (i.e., anxious, avoidant, and secure). We inferred each participant's attachment state based on available evidence in the transcripts of anxiety and avoidance levels, as defined by attachment theory [17]. Importantly, this inference is not meant to characterize the dispositional attachment style of any participant, which must be measured using validated test instruments [11].

Positionality Statement

The research team for this study consists of a doctoral student (the lead author), an assistant professor, and an associate professor. All affiliate with the engineering college at a single, large, very high research, doctoral-granting university. The lead author has also spent time as a non-tenure track faculty member at a large, high-research, doctoral-granting university. We collectively have a slight bias toward the value of faculty mentorship, having received mentorship from others and given mentorship to others. During sense-making discussions, the lead author drew from past professional and personal experiences with educational and human developmental theories to recognize patterns of attachment states that existed in the stories of faculty. All three authors resonate with the impact that attachment states and functions have had in our professional and personal lives.

Results

The emergent stories of three faculty members with discrepant views of mentorship are broken down in the following sub-sections. Each story provides evidence to frame their discrepant view, which is then framed using the functions of safe haven and secure base. The presence of these functions allowed for each participant to be classified within one of the attachment states – anxious, avoidant, and secure.

The assistant professor, Blake – "I don't know if that counts as mentorship." Blake defines

effective faculty mentorship as “anticipatory, understand[ing] what I'm trying to do and mak[ing] recommendations and giv[ing] advice when I ask for it and before I ask for it." Despite having a strong idea of what mentorship should look like, she continually questions whether the experiences she shares qualify as mentorship. Blake describes one interaction with a senior faculty member that she initially refers to as a mentor but ends the story by saying, “[U]h, they're not my mentor. They're just another faculty member in the department.” She also recounts seeking out help for a class she was teaching from one of her formally assigned mentors, particularly with materials and information on procedures for selecting a textbook and finding her roster. Describing what she found helpful from the interaction led to her noting, “I don’t know if it’s their mentorship, but the way that they set up their course was really organized.” Blake is even uncertain whether specific career advice from another one of her assigned mentors counts as mentoring when she shares, “…part of their recommendation as a mentor is that [classroom strategy] increases your [student evaluations] a lot… so, I guess that's a form of mentorship." She recalls times of receiving help and affirmation, stating, “ [Another] professor just in passing [said], ‘yeah, I have lab get-togethers,’ and I said, ‘yeah, I do that too.’” Here she continues to be uncertain whether these interactions were mentorship when she adds, “I don’t know if that counts.” Blake seems more confident identifying non-relational forms of mentorship, saying that she “Google [s] about it a lot, so it’s like the hive mind of mentorship (laughs), and [she goes] to workshops [that are] not really like one-on-one, but kinda programmatic mentoring.”

Although she gets answers to her questions and positive reinforcement, Blake is clearly not satisfied with the mentorship she is receiving as a junior faculty member. She laments that “…no one was going to tell [her] how to [perform a routine job task] if [she] didn't seek that out” but that “once [she] did ask, it was all right there and then even more than what [she] asked for.” She pinpoints the missing ingredient when she shares, “… it's reactive. I haven't been getting much of that anticipatory stuff as I would've hoped for.” Far from feeling free to explore and take risks, she describes how the mentorship she received from a senior faculty member may have held her back: "I felt like I had to adhere so strictly to this structure, [that it] hampered my academic freedom that I didn't realize that I had…. [the mentoring] hampered my development.” Still, Blake avoids speaking negatively about the people who have helped her despite the low satisfaction. Instead, she wonders, “I have so many mentoring mechanisms, but I don't know if it's my fault for the way I execute using them.” Blake’s past experiences have shaped how she approaches being a mentor to her students: “ [M]entoring is something that I think is really important because I had a bad experience and then tried to…. I spent so much time trying to be a good mentor. I feel like I spent a little bit too much time on it.”

Blake's expectations of mentoring align with the attachment functions of secure base and safe haven. Mentees experience secure base when feeling their needs are seen and safe haven when knowing they can turn to the mentor for help [19]. Blake expresses the general ability to find help when she looks for it, which satisfies the safe haven function of the attachment system. Although she appears to benefit from these interactions, she doubts whether they are mentorship. The common element across all these episodes is a lack of relational connection [27]. Importantly, Blake mentions incidental encounters with other faculty members and faculty professional development as her two main avenues for obtaining help. Both avenues lack an intentional and relational alliance component [3], [4], which means that Blake does not have a

mentor(s) specifically attuned to her needs. She, therefore, lacks a secure base [19], which diminishes her experiences with mentorship.

Blake's desire for a secure base and difficulty finding it appears to contribute to an anxious attachment state. Anxious attachment can be observed as hyperactivation and escalation of support-seeking [20]. Someone experiencing anxious attachment still hopes for the dependability of others but, like Blake, worries that they are to blame for their unmet needs [23]. Blake demonstrates further evidence of anxious attachment in her role as a mentor to her students. Mentors with anxious attachments can experience hyperactivation in their caregiving roles, similar to support-seeking hyperactivation [30]. Persistent hyperactivation of support-seeking and caregiving behaviors can, in turn, lead to negative outcomes, such as impacted cognitive functions [11] and eventual burnout [30].

The associate professor, Alex – "I hate that hierarchy of mentor-mentee." Alex identifies as a Latina scholar and Faculty of Color. For mentorship to be effective, she believes, " [b]uilding … trust is key. Then, being strategic about goals and … provid[ing] strategic advice." Alex describes strategic as "not just any advice, [like] 'oh, here's this [random workshop],' but really looking at it as a roadmap. You have a strategic plan of where [does the mentee] see [themself] in the next three, five years." Alex considers a mentor someone who understands their mentee and avoids espousing generic advice: "As a senior mentor, you need to have some knowledge of the scope of [the mentee's] work and identify those strategic areas." She indicates that strategic planning "helps set goals and helps [the mentee] take [chances]," and that mentors should encourage risk-taking and exploration: "… life is uncertainty. So, you take the detours, there's another grant in another area, and that's fine; go work on that too."

Alex's formal mentoring experiences have not lived up to her ideal. She shares, "I honestly don't see they are effective. [On] a scale from zero to ten, maybe four or five. In my experience, being the recipient [of mentorship] hasn't been too effective." As a mentee, Alex has experienced inattention, aloofness, and angry responses from those who are supposed to provide her with support. In addition, her previous mentors' advice to just emulate their actions has not gone over well with her. She remarks, "When the whole advice is… '[this is] who I am, and you should do the same, then you will get to where I am'… it is not very conducive to building trust or having the kind of relationship that is important." When she seeks out support today, Alex "manage[s]… to find other ways or reach out to other people who do not have that label of mentor."

Mentorship still appears to be important to Alex. She shares stories of multiple faculty members to whom she has provided strategic advice through relationships built on trust, aligning with her definition of mentorship. She also repeatedly disqualifies these interactions as mentorship, instead equating mentorship with a deficit, hierarchical approach: "When I talk about mentoring, [I am referring to] a top-down approach…I always try to move beyond [that] deficit model because, honestly, in the process, she also gave me advice." Relaying her experiences mentoring another Latina scholar, she reacts negatively and becomes visibly frustrated when the interviewer describes mentoring as needing help or support. Alex clarifies that "it wasn't, 'Oh, she needs help, and then I mentored her'… I'm not superwoman, [and] she's not a poor woman." Instead, she reiterates, "I really would like to move beyond the deficit model here…. She didn't need to feel supported… She's very independent and very mature, a scholar. I didn't work with her to

give her support, [nor did] she work with me to receive support." Eventually, Alex rejects even the terms mentee and mentor. She concludes another story: "I wanted to share that advice with my… my friend. I don't want to call her my mentee. She's… my colleague."

Alex's story can help us understand the characteristics, causes, and consequences of avoidant attachment. Avoidance in attachment theory is characterized by a negative internal working model of others [20]. Alex doesn't hesitate to point out the negative qualities of "mentors" who let her down—her description of a top-down deficit model of mentorship better fits the term *antimentor*, someone who impedes the professional development or achievement of another [35]. The avoidant attachment state is also called "dismissive" due to how legitimate needs and the importance of support providers are downplayed [29]. Alex repeatedly highlights the strengths of junior faculty, denying that there is even a need for support. When seeking support for herself, she avoids "people labeled mentor" because they are not dependable. The avoidant attachment state is a strategy for unmet attachment needs and involves deactivating the attachment system by denying needs and emphasizing self-reliance to avoid negative feelings [11].

Alex has fortunately not withdrawn completely from support relationships and still relies on friendships with colleagues to give and receive support [19], [23]. Even those with avoidant attachment can experience security in close relationships or when provided with safe haven and secure base functions. When Alex describes her support relationships (which she does not classify as mentorship) as building trust and strategic planning, she is describing safe haven and secure base. She knows that trust develops over time in small gestures that let a mentee know help is available when asked for and that a strategic plan is a powerful boost for exploration and risk-taking. She understands that mentors who want to create clones of themselves do not necessarily provide junior faculty with the trust and freedom to feel secure and be successful [13], [23]. She also reciprocates the trust and freedom given to her. Our results suggest that Alex, by all accounts, is engaged in relationships aligned with the mentoring literature, but her avoidant attachment as a de facto mentor could have negative consequences. Mentors with an avoidant attachment style could inadvertently contribute to deactivation in mentees by invalidating genuine needs or implying a necessity for independence [19].

The full professor, Jordan – "I don't believe in mentorship." Jordan initially defines mentorship simply as "friendship." She later differentiates mentorship and friendship: "People tell me that they see me as a mentor, and I tell them that we're just friends and I'm just sharing my experience." She accepts the continued use of the terms mentor and mentee throughout the interview but occasionally raises objections with a mixture of annoyance and amusement. While she acknowledges, "there are a number of people that I mentor around the world," she admits to thinking that "mentorship is overrated." Jordan says of the mentorship she's received, "…if you insist that I must have had mentorship, then I would say I probably had people around me [that] I would go and ask this or that." She also reflects on the mentorship she's provided: " [I might] be his official mentor, I don't actually know. I actually don't believe in formal mentorship." Jordan expresses confusion about mentorship, saying that to her, having a mentor means "follow[ing] the path that someone has already paved, [even though] that's not how you become successful." Unable to reconcile this seeming contradiction, she concludes, "I don't know what [being] a mentor or role model means."

Jordan's apprehension around mentorship has been shaped by negative mentoring experiences. Jordan explains, "…in the first few years, [some mentors] did stuff to me that I had to undo in the following few years." She recalls how she shared a visionary research idea with a mentor early in her career that was "immediately dismissed, [like] 'nobody would ever buy into that," only for the mentor to write a proposal based on the idea six years later. Jordan excuses this breach of trust "because that's the world he knows," but notes, "[Y]ou should be able to tell from what I've said…. that I haven't had a good mentor, and that's why I don't believe in mentorship [or] think formal mentorship works." She warns that "mentors can actually be quite dangerous" if they do not understand their mentee. Jordan second-guesses whether she has ever had faculty mentorship, stating, "I don't think I had a mentor." She notes having to look outside her position for mentorship when stating, "I probably would say I've had two dozen mentors over time, and they're not necessarily people that are in my career [or] more senior to me."

Despite her negative experiences, Jordan takes the success and well-being of her mentees seriously. She makes herself available and freely shares resources, casually describing her generosity as "I think I just did stuff." She proactively provides mentees with opportunities to network by extending invitations "to come and give a talk" or "join when I'm having dinner with some program managers." She also describes how she both actively nudged and passively monitored one mentee: "I got her talking to people and, I guess over time, sort of watched out for her." Jordan typically does not know what mentees do with her advice. She is content to give her support and let them decide whether to use it or ignore it. Regardless of how she defines mentorship, Jordan's core philosophy in support relationships is to foster the mentee's confidence by assuring them they can:

> What I found is that once [junior faculty] are given the permission to whatever it is … if they feel that they have the right to do whatever it is they need to do, then they absolutely flourish. And I think all it is, is just giving them that permission.

Negative experiences have caused Jordan to reject the idea of formal mentorship. She instead seeks support in the form of friendships. Jordan expresses no ill will toward the mentors whom she perceives harmed her. Her mentoring experiences have made her question the meaning of mentorship and whether she's ever received mentorship, but she neither blames herself for her unmet needs nor engages in excessive support-seeking or caregiving. The inherent contradictions involved in Jordan's story make identifying her attachment state more complicated. She does appear to display characteristics of secure attachment, the internal psychological state characterized by low anxiety and low avoidance. Negative experiences influence those experiencing secure attachment less than those with anxious or avoidant attachment [23]. Jordan's secure attachment is particularly evident in how she values her experiences while humbly avoiding taking credit for her mentees' successes. She speaks highly of her mentees, frequently referring to their accomplishments and fostering their independence. She also has a forgiving and kind attitude toward her past mentors.

Jordan's example shows how secure attachment in a mentor can mitigate negative mentoring experiences. Her secure attachment orientation helps her to provide a secure base and safe haven function to her mentees. Jordan is responsive when someone has a growth opportunity, seeks help, or could benefit from support [11], [27]. She uses her professional experience and

connections to help mentees identify potential opportunities and warn about potential pitfalls [6], [15], [19]. Jordan benefits from providing support by experiencing confidence and personal growth through her mentees' novel activities and enjoying the psychosocial benefits of friendships, an element of mentorship that differentiates effective dyads and marginal ones [23]. Secure attachment could be Jordan's dispositional attachment style from childhood or partly because of her current career stage. As a full professor, she may have reached a point where previous negative experiences with mentorship have less of an impact on her attachment system.

Discussion and Implications

This paper explored the mentoring experiences, perceptions, and behaviors of three engineering faculty members with discrepant (i.e., outlier) views of mentorship. Blake, Alex, and Jordan all had negative mentoring experiences, leading to confusion, rejection, and contradiction regarding the terms mentors and mentorship. The outcome for each participant manifests itself in a slightly different way. Blake constantly has to seek out support, a hyperactivation of her attachment system, indicating an anxious attachment state. Alex withdraws and rejects the idea of her mentees needing support, a deactivation of her attachment system, indicating an avoidant attachment state. Jordan manages to maintain a balance of autonomy and dependence in her professional support relationships, even if she doesn't call them mentorship, and has a high view of herself and others, seemingly indicating a secure attachment state. These examples can begin to identify the characteristics of each mentorship attachment state within our own mentoring relationships and programs.

Secure attachment and felt security are crucial to differentiating successful mentoring relationships from marginal ones [23]. If insecure attachment states are detected in mentoring relationships, the next step is to examine what is interfering with felt security. The participants' attachment states can be traced back to causes rooted in the attachment functions of secure base and safe haven. Blake is missing a relational commitment from a mentor who anticipates her needs; she is not experiencing the benefits of a secure base from which she can confidently take risks and explore. Alex, on the other hand, was let down by "mentors" who were supposed to provide support. She internalized that mentors are untrustworthy and that no safe haven exists for her to seek refuge when she needs it. When mentors are unhelpful, unreliable, or interfering, they fail to provide the two basic psychological functions needed and expected from a mentee. Although negative mentoring experiences have less of an impact on someone with a secure attachment state, either by disposition or developed over time [23], Jordan's experiences similarly show that assigning the term "mentor" to someone who does not provide a secure base and safe haven is detrimental to mentees, departments, mentoring programs, and the concept of mentoring itself.

Mentorship without understanding can be dangerous, as Jordan warns us. The danger comes from giving someone the *label* of mentor who is unavailable, unresponsive, inconsistent, intrusive, arrogant, or sabotaging. For Blake, her mentoring experiences have hindered her academic freedom and caused her to question herself. Alex's experiences have caused her to deny her support needs and the needs of the junior faculty she works with. Jordan, who displays the characteristics of an excellent mentor, does not want to be called a mentor or be involved in formal mentorship programs. Mentors who expect to be emulated or who stifle growth and innovation in mentees could be doing so without realizing it. University mentoring programs

could also be damaged by mentors with bad reputations, wasted resources, and the loss of participation by excellent mentors. The definition of mentorship, along with the human attachment system, creates an implicit expectation that "mentors" will provide support and felt security through the safe haven and secure base functions. Substantial personal, professional, and intrapsychic damage can befall the mentee when that doesn't happen [20].

Attachment theory provides a way of shifting our perspective of mentorship from a role-based or task-based concept to a functional concept. Positive mentoring experiences can create secure relationship-specific attachment orientations, regardless of the mentee's dispositional style [23]. We can address mentorship challenges by first acknowledging the potential for dysfunction in mentoring dyads and the complexities of mentoring relationships and then conceptualizing mentorship in terms of the functions of safe haven and secure base. Some mentoring programs have attempted to apply these ideas by type-matching dispositional attachment styles when assigning mentoring dyads [21], but successful mentorship outcomes rely more on what occurs during the relationship than any single pre-existing characteristic of the parties involved [35]. Knowledge of attachment theory constructs can help mediate insecure attachment styles in both mentors and mentees [30]. Integrating the functions of safe haven and secure base with a goal of felt security into the mentorship process will help undergird the development of quality mentoring relationships [23].

It might be tempting to think that all mentorship should be informal and organically developed. Still, an ad-hoc approach is overly reliant on the initiative of mentors and mentees and may leave some individuals without the adequate support they need [14]. Faculty mentorship outcomes are influenced by institutional involvement, and the investment made into mentoring programs could have a greater impact by shifting the approach [1], [4], [14], [18], [35]. For instance, similar to the way responsiveness and availability of a mentor are more important than the actual support provided, satisfaction with a mentoring relationship has a greater impact on positive mentoring outcomes than any design feature of a formal mentorship program [23], [24]. If the mentor's key goal is understood as building felt security through safe haven and secure base functions, then institutions can support this goal through facilitation and training. Training both mentors and mentees in attachment theory can help with goal setting, communication, and troubleshooting issues. Mentoring programs can focus their efforts on structures that facilitate dyad matching (such as Yun et al.'s mutual mentoring program) versus assigning or legislating matches [2], [4]. Additionally, understanding the psychological dynamics of attachment can help administrators of mentoring programs broker interventions to assist mentoring dyads that may be failing [15].

Future Work

Future research for the ongoing study of engineering faculty-to-faculty mentorship will involve examining the rest of the data set for evidence of attachment function in both effective and ineffective mentorship [10]. Particularly since all three of the participants highlighted in this paper are women, additional data collection could be conducted to seek out others who question or reject the concept of mentorship [5], [9]. Such data will help understand the influence of gender and other demographic characteristics on these findings. The discrepant views found here can help us challenge conventional thinking around mentorship [10] and lead to the development of frameworks [15] to help with training and facilitation strategies, such as assessing exploration and well-being as positive outcomes of mentoring [23]. Further investigation is needed into the

impact of felt security on research productivity, creativity, and self-management [17] and how attachment, caregiving, and support-seeking behaviors are coordinated in mentoring dyads [36]. The sum of this work will advance our understanding of faculty mentorship and inform potential shifts in how faculty-to-faculty mentorship is executed within engineering units.

References

[1] L. T. Eby, J. E. Rhodes, and T. D. Allen, "Definition and Evolution of Mentoring," in *The Blackwell Handbook of Mentoring*, T. D. Allen and L. T. Eby, Eds., Oxford, UK: Blackwell Publishing Ltd, 2008, pp. 7–20. doi: 10.1002/9780470691960.ch2.

[2] E. C. Shapiro, F. P. Haseltine, and M. P. Rowe, "Moving Up: Role Models, Mentors, and the 'Patron System,'" *Sloan Manage. Rev.*, vol. 19, no. 3, pp. 51–58, Spring 1978.

[3] National Academies of Sciences, Engineering, and Medicine, "The Science of Effective Mentorship in STEMM," National Academies Press, Washington, D.C., Dec. 2019. doi: 10.17226/25568.

[4] S. Brunhaver, A. Carberry, and R. Renteria, "Junior Engineering Faculty's Perceptions of Effective Faculty Mentorship Practices," *Chron. Mentor. Coach.*, vol. 5, no. 14, pp. 416–420, Oct. 2021.

[5] T. M. J. Antin, N. A. Constantine, and G. Hunt, "Conflicting Discourses in Qualitative Research: The Search for Divergent Data within Cases," *Field Methods*, vol. 27, no. 3, pp. 211–222, Aug. 2015, doi: 10.1177/1525822X14549926.

[6] J. H. Perkins, A. Carberry, and S. Brunhaver, "WIP: Perceptions of Effective Engineering Faculty-to-Faculty Mentorship Practices," 2022.

[7] D. Ezzy, "Are qualitative methods misunderstood?," *Aust. N. Z. J. Public Health*, vol. 25, no. 4, pp. 294–297, 2001, doi: 10.1111/j.1467-842X.2001.tb00582.x.

[8] J. Mahoney, "Qualitative Methodology and Comparative Politics," *Comp. Polit. Stud.*, vol. 40, no. 2, pp. 122–144, Feb. 2007, doi: 10.1177/0010414006296345.

[9] J. M. Morse, "Critical Analysis of Strategies for Determining Rigor in Qualitative Inquiry," *Qual. Health Res.*, vol. 25, no. 9, pp. 1212–1222, Sep. 2015, doi: 10.1177/1049732315588501.

[10] P. Bazeley, "Analysing Qualitative Data: More Than 'Identifying Themes,'" vol. 2, no. 2, 2009.

[11] M. Mikulincer and P. R. Shaver, *Attachment in adulthood: structure, dynamics, and change*, Second edition. New York: Guilford Press, 2016.

[12] J. Yip and K. E. Kram, "Developmental networks: Enhancing the science and practice of mentoring," *Sage Handb. Mentor.*, pp. 88–104, 2017.

[13] J. H. Yun, B. Baldi, and M. D. Sorcinelli, "Mutual Mentoring for Early-Career and Underrepresented Faculty: Model, Research, and Practice," *Innov. High. Educ.*, vol. 41, no. 5, pp. 441–451, Nov. 2016, doi: 10.1007/s10755-016-9359-6.

[14] N. Hubbard Murdoch, E. Ens, B. Gustafson, and T. Chambers-Richards, "A mixed method mentorship audit: assessing the culture that impacts teaching and learning in a polytechnic," *Empir. Res. Vocat. Educ. Train.*, vol. 13, no. 1, p. 14, Dec. 2021, doi: 10.1186/s40461-021-00119-x.

[15] S. E. Straus, M. O. Johnson, C. Marquez, and M. D. Feldman, "Characteristics of Successful and Failed Mentoring Relationships: A Qualitative Study Across Two Academic Health Centers," *Acad. Med.*, vol. 88, no. 1, pp. 82–89, Jan. 2013, doi:

10.1097/ACM.0b013e31827647a0.
[16] B. R. Ragins, “Diversified Mentoring Relationships in Organizations: A Power Perspective,” p. 41, 2020.
[17] J. Yip, K. Ehrhardt, H. Black, and D. O. Walker, “Attachment theory at work: A review and directions for future research,” *J. Organ. Behav.*, vol. 39, no. 2, pp. 185–198, Feb. 2018, doi: 10.1002/job.2204.
[18] M.-L. Germain, “Formal Mentoring Relationships and Attachment Theory: Implications for Human Resource Development,” *Hum. Resour. Dev. Rev.*, vol. 10, no. 2, pp. 123–150, Jun. 2011, doi: 10.1177/1534484310397019.
[19] R. Reitz, S. Mitchell, and S. Keel, “Attachment-informed mentorship.,” *Fam. Syst. Health*, vol. 35, no. 4, pp. 498–504, Dec. 2017, doi: 10.1037/fsh0000300.
[20] T. A. Scandura, “Dysfunctional Mentoring Relationships and Outcomes,” *J. Manag.*, vol. 24, no. 3, pp. 449–467, Jun. 1998, doi: 10.1177/014920639802400307.
[21] C. Tribbett, “Building Effective Mentorship Dyads with the Use of Attachment Theory,” presented at the Creating Healthy Work Environments 2017: Best Practices in Clinical and Academic Settings., Indianapolis Indiana, 2017. [Online]. Available: http://hdl.handle.net/10755/621312
[22] S. Wang, R. A. Noe, Z.-M. Wang, and D. B. Greenberger, “What affects willingness to mentor in the future? An investigation of attachment styles and mentoring experiences,” *J. Vocat. Behav.*, vol. 74, no. 3, pp. 245–256, Jun. 2009, doi: 10.1016/j.jvb.2008.12.002.
[23] S. Wang, D. B. Greenberger, R. A. Noe, and J. Fan, “The Development of Mentoring Relationships: An Attachment Theory Perspective,” in *Research in Personnel and Human Resources Management*, M. R. Buckley, A. R. Wheeler, and J. R. B. Halbesleben, Eds., Emerald Publishing Limited, 2017, pp. 53–101. doi: 10.1108/S0742-730120170000035003.
[24] B. R. Ragins, J. L. Cotton, and J. S. Miller, “Marginal Mentoring: The Effects of Type of Mentor, Quality of Relationship, and Program Design on Work and Career Attitudes.,” *Acad. Manage. J.*, vol. 43, no. 6, pp. 1177–1194, Dec. 2000, doi: 10.2307/1556344.
[25] J. Bowlby, *Attachment and loss: Volume 1 Attachment*, 2nd ed. New York: Basic Books, 1969.
[26] B. C. Feeney, “A Secure Base: Responsive Support of Goal Strivings and Exploration in Adult Intimate Relationships,” *J. Pers. Soc. Psychol.*, vol. 87, pp. 631–648, 2004, doi: 10.1037/0022-3514.87.5.631.
[27] N. L. Collins, M. B. Ford, and B. C. Feeney, “An Attachment-Theory Perspective on Social Support in Close Relationships,” in *Handbook of Interpersonal Psychology*, L. M. Horowitz and S. Strack, Eds., Hoboken, NJ, USA: John Wiley & Sons, Inc., 2010, pp. 209–231. doi: 10.1002/9781118001868.ch13.
[28] N. L. Collins and B. C. Feeney, “A safe haven: An attachment theory perspective on support seeking and caregiving in intimate relationships,” *J. Pers. Soc. Psychol.*, vol. 78, no. 6, pp. 1053–1073, Jun. 2000, doi: 10.1037/0022-3514.78.6.1053.
[29] K. Bartholomew and L. M. Horowitz, “Attachment styles among young adults: A test of a four-category model,” *J. Pers. Soc. Psychol.*, vol. 61, pp. 226–244, 1991, doi: 10.1037/0022-3514.61.2.226.
[30] K. Miles, “Using attachment theory in mentoring,” *Nurs. Times*, vol. 107, no. 38, pp. 23–25, Sep. 2011.
[31] J. C. Flanagan, “The critical incident technique,” *Psychol. Bull.*, vol. 51, no. 4, pp. 327–358, 1954, doi: 10.1037/h0061470.

[32] American Society for Engineering Education, “Engineering and Engineering Technology by the Numbers 2020,” Washington, DC, 2021.
[33] M. Q. Patton, *Qualitative research & evaluation methods: integrating theory and practice*, Fourth edition. Thousand Oaks, California: SAGE Publications, Inc, 2015.
[34] D. J. Clandinin and F. M. Connelly, *Narrative Inquiry: Experience and Story in Qualitative Research*. John Wiley & Sons, 2004.
[35] T. D. Allen, L. T. Eby, and E. Lentz, “Mentorship behaviors and mentorship quality associated with formal mentoring programs: Closing the gap between research and practice.,” *J. Appl. Psychol.*, vol. 91, no. 3, pp. 567–578, 2006, doi: 10.1037/0021-9010.91.3.567.
[36] L. T. Eby and M. M. Robertson, “The Psychology of Workplace Mentoring Relationships,” *Annu. Rev. Organ. Psychol. Organ. Behav.*, vol. 7, no. 1, pp. 75–100, Jan. 2020, doi: 10.1146/annurev-orgpsych-012119-044924.