Title: “It’s not my fault.” Understanding medical students’ responses to clinical error: Patient safety implications

Submission Type: Research Highlights in Medical Education

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Purpose: The AAMC has designated identifying system failures and contributing to a culture of safety as a core Entrustable Professional Activity that all medical students should be able to perform upon entering residency (1). Developing proficiency in this EPA requires students both to identify and appropriately respond to error. Failure to recognize an error and a maladaptive response to error have critical implications for patient safety. The goal of this study was to expose near-graduating medical students to a clinical error during a simulation and use a mixed-methodology approach to capture and understand their responses to identifying or committing the error.

Approach/Methods: To investigate this question, data was collected on 72 of 90 near-graduating medical students. The students interacted with a standardized patient and nurse during a simulated encounter that included a standardized clinical error (mislabeling of a specimen). Students were observed to see whether or not they identified or committed the clinical error. Following the simulation, we interviewed 53 randomly chosen students using a semi-structured protocol during which a standardized written patient outcome was revealed. The patient suffered an adverse consequence if the error was committed. The interviews were transcribed verbatim and captured students’ emotions and attributions toward identifying or committing the error. Surveys of motivation, burnout, and self-esteem were administered pre-interview.

Results/Outcomes: Of the 72 students on which data was collected, 62 (86%) committed the error. Of the 53 students interviewed, 47 (89%) committed the error. Attribution Theory (2) can be used to characterize the students’ responses to identifying or committing the error. Preliminary data show that students fell into one of four categories: 1. Students identify the error and attribute success to internal causes (e.g., I did a great job). 2. Students identify the error and attribute success to external causes (e.g., this scenario made it obvious). 3. Students commit the error and attribute failure to external causes (e.g., I would have picked it up in real life). 4. Students commit the error and attribute failure to internal causes (e.g., this is all my fault). Attribution Theory will be further discussed as a framework to help explain why individuals react variably to a given experience, suggesting that varying responses arise from differences in the perceived cause of the initial outcome.

Discussion: In line with other literature on medical student simulations (3), near-graduating students struggled to identify a common clinical error. This is a patient safety concern. Medical student response to failure can be characterized within the framework of Attribution Theory. Raising awareness about individual attribution biases and tailoring feedback around them may influence subsequent student motivation around error prevention. Maladaptive responses are particularly important to identify and remediate prior to the start of residency.
**Significance:** Medical student response to error may dictate future action on students’ parts and is critical to patient safety. Maladaptive responses may lead students to fail to learn from error and thus not change future behavior. This phenomenon may be generalizable to medical student response to failure across academic and clinical domains.
Title: Sentinel emotional events: the triggers, nature, and effects of shame experiences in medical residents

Submission Type: Research Highlights in Medical Education

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Purpose: Shame is a powerful emotion that occurs in response to negative events such as making mistakes or experiencing mistreatment. [1-3] Little research has investigated the influence of shame on the medical learner. This inattention is troubling given the ubiquitous nature of shame and its association with multiple mental health challenges, including depression, anxiety, and addiction. [4] It is thus necessary to understand medical learners’ unique shame experiences, the outcomes of those experiences, and the contextual forces that shape them. Informed by Tracy and Robins’ theory of self-conscious emotions [5], we used hermeneutic phenomenology to characterize how shame is experienced by medical learners in clinical learning environments. We asked the following research questions: 1) What events trigger shame? 2) What is the nature of participants’ shame experiences? and 3) What are the effects of those experiences?

Approach/Methods: Hermeneutic phenomenology is an interpretive research methodology “aimed at producing rich textual descriptions of the experience of selected phenomena.” [6] We recruited 12 participants from an internal medicine residency at a large teaching hospital in the United States. Data collection began with participants writing about an experience during medical training in which they felt “flawed, deficient, or unworthy,” three characteristics of shame described in the psychology literature. [2] This was followed by a semi-structured interview that explored participants’ shame experience(s). Guided by the hermeneutic method, we iteratively analyzed the data and created rich descriptions about how participants experienced shame.

Results/Outcomes: Shame triggers reported by participants fell into three broad categories: events related to patient care, events related to learning processes, and events related to personal goals. The nature of participants’ shame experiences followed two broad patterns: major and minor shame reactions. Major shame reactions could be debilitating physical and emotional experiences that lasted hours-to-months, whereas minor shame reactions tended to be fleeting and less emotionally and physically intense. The immediate effects of major shame reactions were negative and destructive and included social isolation and impaired belonging; disengagement from learning; impaired psychological and physical wellness; reduced self-regulation and unprofessional behavior; and impaired empathy. Positive effects occurred after the passage of time and recovery from the shame reaction; positive effects included enhanced learning, enhanced empathy, and improved relationships.

Discussion: Major shame reactions can be sentinel emotional events that have significant physical and/or psychological effects in medical learners. Our data suggest links between shame and psychological distress, social isolation, and impaired empathy in medical learners; as such, shame may be a common denominator in persistent challenges affecting medical learners, including burnout, depression, and declines in empathy. The potential also exists that shame is a hidden driver of
unprofessional learner behavior, and teachers should consider the presence of underlying shame when addressing unprofessional behaviors in learners. Finally, learner shame may adversely affect patients by impeding competent and empathic patient care and by promoting disengagement from critical learning processes.

**Significance:** This study provides a foundation for a program of research about the role of shame in medical education, shining a light on this oft-hidden emotion.
Title: Into the Learning Zone: Psychological Safety and Accountability in Longitudinal Integrated Clerkships

Submission Type: Research Highlights in Medical Education

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Purpose: Longitudinal Integrated Clerkships are a form of clinical education in which third year medical students engage in comprehensive patient care across multiple medical disciplines simultaneously. LIC students have described patients, preceptors, peers and place as critical affordances that enhanced their educational success. In our study, we examined student-preceptor relationships developed in LICs through the lens of Psychological Safety (PS) and accountability. Accountability refers to the degree to which students are held to high standards while in pursuit of challenging goals. PS is a shared belief that one is safe to make mistakes during this risk-taking process and promotes learning behaviors that synergistically enhance the role of accountability. Workplace environments in which individuals experience both high PS and high accountability have been described as a Learning Zone. Other environments include Comfort, Apathy, and Anxiety Zones in which an imbalance of PS and accountability lead to enjoyable relationships without challenging work, disengagement with minimal effort, or considerable fearfulness contributing to inability to ask for help or share ideas, respectively. We hypothesized that a majority would be in Learning Zone environments due to collaborative relationships formed with preceptors over time.

Approach/Methods: This dual-institution, mixed-methods study included an electronic survey and semi-structured interviews of LIC graduates who took part in LICs at Harvard Medical School from 2004 to 2013 and the University of North Carolina School of Medicine-Asheville campus from 2009 to 2013. The 25-item survey included 13 questions about PS and 12 about accountability rated on a 5-point Likert scale. We interviewed a subset of study participants about their learning experience and utilized grounded theory to analyze the transcribed interviews and characterized stories into archetypical zones in order to better understand students’ learning environments.

Results/Outcomes: Survey results demonstrated that the majority of LIC graduates reported being in optimal learning environments throughout the year due to an appropriate balance of PS and accountability with their preceptors. Although, a majority of LIC graduates experienced high PS with preceptors, several described accountability to patients playing a critical role in their learning experiences based on 103 stories identified in the qualitative analysis of the interviews.

Discussion: Teams in environments with high PS demonstrate more learning behaviors than those without. Our findings suggest that high quality relationships developed over time in LIC settings result in decreased perception of hierarchical distance for students, coaching and support from preceptors, and increased level of familiarity that promote PS among preceptors and students. This PS often led to a specific kind of learning behavior: students felt more comfortable establishing relationships with patients who became a key source of accountability as they increasingly perceived LIC students as their “doctor(s)”. The high quality relationships established
through collaborative student-preceptor engagement may have allowed this form of higher accountability to be motivating and engaging rather than depleting or paralyzing, optimizing students’ learning environments.

**Significance:** Accountability and PS can help us understand the benefits of relationships formed in LICs and may provide a framework to help improve learning environments for students transitioning into clinical training in all medical education models.