TITLE: THE LEARNING ENVIRONMENT ASSESSMENT FRAMEWORK (LEAF) TOOL: ASSESSING PSYCHOLOGICAL SAFETY IN MORNING REPORT

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Background: Recent studies have shown that psychological safety may be important to resident perception of the work environment and improved psychological safety enhances resident satisfaction surveys; however, there's no evidence in the medical education literature that specifically assesses the relationship between psychological safety and learning behaviors or its impact on learning outcomes. We aimed to develop a tool used to assess the quality of a group learning environment using a morning report as an exemplar.

Materials/Methods: We used a systematic approach to develop a tool, the LEAF, guided by our theory-informed conceptual framework using psychological safety as a core construct. Through an iterative process, we derived an 18-item, 5-point Likert scale survey assessing 3 domains-- psychological safety (PS), learning behaviors (LB) and depth of knowledge (DOK)-- within a group learning environment. We piloted and administered the tool at neonatology morning report sessions. The participants, including faculty and trainees, used the tool to assess the randomly selected sessions. The sessions were also audio-recorded and transcribed for quantitative time study and qualitative analysis. We evaluated psychometric properties of the tool and analyzed the survey data with time study variables. Through the process, we gathered validity evidence according to standards (i.e. content, response process, internal structure and relationships to other variables) to support the interpretations of the LEAF tool.

Results: From 450 surveys administered, 393 were completed (87% response rate) from 25 sessions. Cronbach's α coefficient showed acceptable reliability. An exploratory factor analysis and confirmatory factor analysis conducted to test the hypothesized 3-Factor model of the final 15-item LEAF scale showed a good fit of the model with survey data. There were high correlations among Factors. Reliability estimates for the final 15 items were high (0.66 to 0.97). The path analyses indicated significant effect of the PS on the LB ($\beta=0.75$, $p<0.0001$), and the significant effect of LB on the DOK ($\beta=0.66$, $p<0.0001$). The PS has no effect on the DOK ($\beta =0.143$, $p= 0.088$).

Conclusions: The LEAF tool assesses psychological safety during morning report sessions. Evidence of validity and reliability are provided. This is the first report of association between psychological safety and learning behaviors in medical education.