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Research Article

MITIGATING STEREOTYPE THREAT: ORIENTATION EFFECTS ON ORTHOPEDIC RESIDENTS

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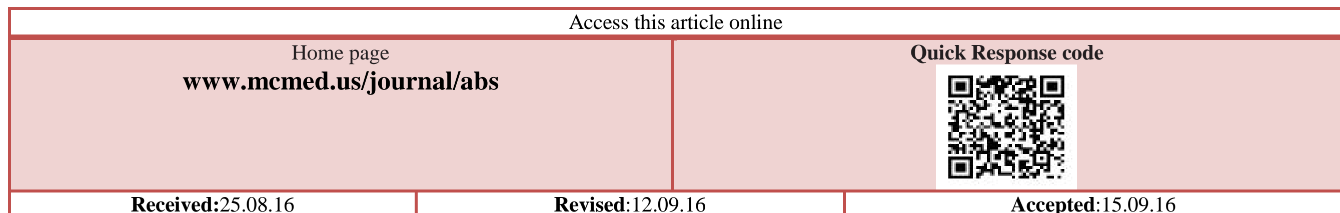
ABSTRACT

The study aimed to investigate whether an orientation session for orthopedic residents could mitigate stereotype threat, which occurs when individuals encounter negative stereotypes associated with their group identity during learning experiences. The intervention involved dual orientation sessions focused on responding during teaching rounds and surgery (OR). Participants' perceptions of stereotype threat were evaluated using 14 questions, with higher scores indicating greater experiences of stereotype threat. A total of 98 residents were part of the nonintervention group, while 54 participated in the intervention. Both groups scored similarly for poor perceptions of teaching performance (58 for nonintervention vs. 58.4 for intervention, p = 0.95) and OR (58 for nonintervention vs. 58.4 for intervention, p = 0.94). Poor teaching performance was associated with stereotype threat, leading to low self-esteem among residents. However, the simple orientation did not reduce stereotype threat significantly. Future research should explore longer-term interventions to enhance performance during teaching rounds and OR. Withdrawal symptoms, such as decreased motivation to address knowledge gaps and reduced participation in OR and teaching rounds, may ensue, potentially leading to burnout and psychiatric morbidity due to poor performance.

Keywords:-. Stereotype threat, Orthopedic residents, Intervention orientation, Perceived teaching performance, Operating room participation.



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INTRODUCTION

The diversity of surgical residents presents many challenges, including the need to create a learning environment that is effective. The needs of residents must always be taken into account in new residency training models. The learning process may not be effective if individual needs are not addressed. Many students fail to succeed in training environments for a variety of reasons, including stereotype threat. [1] Stereotype threat refers to conforming to stereotypes associated with one's own group. Any group about which a negative stereotype exists can potentially be affected by stereotyping [2] It is important to note that stereotyping affects all groups equally. Identifying the possibility of applying negative stereotypes to oneself cues the threat. In addition to African Americans performing worse on intelligence tests, whites performing worse on athletic ability tests, as well as women performing worse on math tests, stereotype threat can also negatively affect women. In particular, stereotype threat can be self-defeating for those who have overcome obstacles. Performance is adversely affected by [3] distinct, yet intertwined mechanisms: physiological stress, inability to monitor performance, and suppressing negative feelings and thoughts to regulate themselves. [4] As a result, cognitive and social performance suffers, [5] and “disidentification”2 can undermine motivation, resulting in withdrawal from learning when stereotype threat is chronic.

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METHODS

Participants

The intervention group consisted of residents of postgraduate year 1 who attended two 2-hour orientation sessions. PGY2–5 residents were placed in a nonintervention group. PGY1 residents entering residency programs increased in the intervention group, while their nonintervention group decreased.

Intervention

PGY1 residents received the intervention in the first year, while PGY2–5 residents did not. Intervention group residents were PGY1 and PGY2, while nonintervention group residents were PGY3–5. All PGY1 through PGY5 residents received the intervention starting in the fifth year. The meeting did not consist of didactic lectures, but was a highly interactive discussion based on individual experiences [6] Senior author emphasized high expectations for orthopedic surgery residents. In addition to common feedback from past residents, the senior author described his own experiences during rounds and in the operating room. This session discussed the residents' recent experiences during rounds and in the operating room. While some of those experiences were negative, many were simply the result of a lack of knowledge or experience. The residents' perception of poor performance was examined specifically: incompetent, stupid, or harassed with the intention of avoiding future exposure. Our orientation included 2 simple strategies for addressing perceived poor performance in teaching rounds and operating rooms: interacting with peers and encouraging early in residency to form study groups so that members can share experiences, learn together, and support one another.

OUTCOMES

As part of the anonymous questionnaire, we asked seven questions about teaching rounds and OR experience [7]. Residents were asked to rate their agreement with each statement on a scale of 1 (strongly disagree) to 7 (strongly agree) for each statement in the questionnaire. More negative responses were indicated by higher scores, where appropriate. Thus, the scores ranged from 14 to 98, with 98 representing the most negative experience.

Residents were asked to comment on the following questions:

1) Did you attend an orientation/meeting in your first year?
2) Was this meeting valuable to you? Why?
3) What was the meeting about? What if yes?
4) What suggestions would you make to improve that orientation?

ANALYTICAL STATISTICS

We compared teaching rounds, OR, and each survey question between intervention and nonintervention groups. We averaged the responses of residents who responded more than once. A paired t test was used to determine whether the non-intervention and intervention groups differed. Based on a scale of 1 to 7, the higher the score, the greater the negative emotion associated with the perception of poor performance. In question 7, an answer of 1 was scored as strongly agree, and an answer of 7 was scored as strongly disagree. The average of residents' responses was calculated.

In order to determine whether stereotype threat levels experienced during rounds and in the OR differed, we analyzed both the summary intervention and nonintervention group scores. [8]

RESULTS

A total of 168 orthopedic surgery residents participated in this study. A total of 98 (59%) participants responded at least once to the survey: 44 from the intervention group and 54 from the non-intervention group.

Analyses of comparisons

The paired t tests did not indicate a significant difference between the groups in terms of their combined overall results for both the teaching rounds and the OR surveys. Based on individual analysis of each question, no significant differences were found between the intervention and nonintervention groups (Table 1).

Analysis of collapsed groups

Compared with responses to the OR, rounds produced higher threat scores (Table 2).

Above 5.0 indicates high agreement with stereotype threat statements about emotions. Scores below 5.0 indicate low agreement. On average, residents who perceived poor performance desired to read about the topic, felt ashamed/embarrassed, and felt incapable. However, they felt less unsuccessful, angry, avoided the situation, or hated their jobs when they felt poor. For rounds, a score of 0.9/7 and for OR, 2.3/7 indicate high agreement with the statement " The performance made you want to know more about the topic."

Follow-up email response

At the end of the study, 34 residents responded to the email. A majority of them remembered attending the meeting, 22 of 34 remembered its content accurately, and 24 of 34 thought it was valuable. [9] There was one resident who did not find the meeting valuable. Most participants agreed that the meeting confirmed that certain feelings of ineptitude during residency are common, and that the majority experience them;" that it

"encouraged us to continue sharing experiences with each other;" and "learning from [the inevitable adverse experiences] is more important than convincing yourself that you are not good." Students frequently requested follow-up sessions

Table-1: Non-interventions and interventions analyzed.

Category	Group; mean score		
	Non-intervention	Intervention	p value
Rounds			
Total score	29.2	29.6	0.95
No success	4.3	4.5	0.89
Angry	4.3	4.4	0.90
Not capable	5.5	5.2	0.64
Ashamed	5.6	5.9	0.69
Avoid	4.6	5.1	0.44
Read	0.8	0.9	0.80
Hate job	4.1	3.9	0.84
Operating room			
Total score	26.6	26.1	0.94
No success	4.3	4.8	0.45
Angry	3.8	4.2	0.46
Not capable	5.0	4.9	0.89
Ashamed	5.5	5.4	0.96
Avoid	3.9	3.1	0.23
Read	2.3	2.2	0.99
Hate job	3.7	3.4	0.53

Table 2: Analyses of collapsed groups

Category	Group Mean score		
	Rounds	Operating room	p value
Total score	29.4	26.4	0.002
No success	4.4	4.6	0.37
Angry	4.4	4.0	0.20
Not capable	5.3	4.9	0.048
Ashamed	5.7	5.5	0.055
Avoid	4.9	3.5	0.002
Read	0.9	2.3	0.007
Hate job	4.0	3.5	0.009

DISCUSSION

Compared to ORs, residents have more adverse learning attitudes after rounds. Two hours of orientation didn't improve their attitude toward learning. It damaged their self-esteem and motivated them to read more.

An informal and hidden curriculum are also part of training culture. [10] A surgical residency provides structured learning opportunities. Informal learning is nonstructured, opportunistic, and personal. The informal curriculum plays a key role in surgery, where it imparts clinical wisdom and places trainee knowledge and skills in context. Although crucial to surgical training, this informal curriculum also transmits behavior, beliefs, and attitudes. [11] Hidden curriculums are determined by institutional values and by surgical educators and allied health professionals working with trainees.

Negative learning experiences may worsen stereotype threat even if a perceived gap in knowledge or experience occurs. The hidden curriculum, according to Gofton and Regehr perpetuates negative stereotypes in particular. There's a perception that orthopedic surgeons need a lot of strength. [12] The informal curriculum may discourage women from participating in surgical procedures, being the first assistant in the operating room, or being involved in surgical operations. There's also evidence that women are discouraged by orthopedic doctors' lifestyles. [13] Among other findings, Logel and colleagues [14] found that women’s performance is undercut by interacting with sexist men in domain.

During surgery rotations, perceived discrimination and sexual harassment may contribute to a lower medical student selection of orthopedic surgery. [15] The daily culture of surgery provides ample opportunities for stereotypical threats and disidentification because of persistent under-representation of certain minorities. Although much attention has been paid to women, research indicates that anyone who self-identifies with a stereotype is at risk of stereotype threat.2 Stereotype threat can have a substantial impact on learning, so potential mitigation strategies are needed.

Stereotype threat can be reduced by blurring group differences. In their study [16] found that women could answer more math questions correctly when they focused on similarities between sexes. A brief assignment for African American students to write about positive group membership reinforced their self-worth by 40% thereby reducing the racial achievement gap, found Cohen and colleagues [17]. Psychological threats involve performance-inhibiting threats that can be reduced when subsequent performance improves, thus leading to performance improvement or sustainment. A stereotype threat lesson can also help women do better on math tests. It is also possible for optimistic teachers to convince students that they can succeed by offering them successful performance challenges. This will reinforce the belief that success depends solely on innate abilities and reduce the belief that innate abilities determine success. In addition, if participants are informed that membership in specific subgroups is not related to task ability, then stereotype threat can be eliminated in the test of leadership aspirations of women.[18–20]

A junior resident orientation session was developed as a result of these simple interventions. A presentation was given on the likelihood of residents' success. Residents also had the opportunity to discuss how their training experiences were similar to the senior surgeon's experience during orientation. Finally, to blur group differences and allow for self-affirming revelations, residents discussed their recent positive and negative experiences on teaching rounds and in the OR. Our brief intervention by a senior staff member failed to reduce orthopedic residents' negative experiences during rounds or in the operating room despite many elements of previously successful strategies. In light of the fact that most study participants regarded orientation as valuable to their training, it might be possible to increase the frequency and/or enhance the content of these sessions in order to have a greater impact. The majority of previous stereotype threat studies focused on a single exam condition. In the future, repeated long-term exposure will be a key component of interventions.

Between the two training components assessed, stereotype threat scores about rounds were significantly higher. According to Schmader and colleagues [21], stereotypes decrease working memory and increase physiological stress. During situations such as interviews and public speaking, these pathways may play a significant role. Research on stereotype threat in orthopedic surgery training needs to focus on rounds. Our study found that learners internalize their perceived poor performance, but not anger toward the teacher. Educators and residents themselves must understand the powerful psychological effects and how these messages influence the training environment.1 In addition to teaching techniques, educators must pay close attention to residents' responses to learning experiences. The best way to transmit information isn't necessarily by grilling during rounds.

CONCLUSION

As a result of perceived poor performance, particularly during rounds, residents experience low self-esteem. This threat could not be reduced overall with a simple orientation designed to reduce stereotypical threats. For future research, qualitative methods will be necessary in order to understand residents' experiences and consider longer-term interventions.

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