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A COMPARISON OF NONVERBAL AND PARAVERBAL BEHAVIORS IN SIMULATED AND VIRTUAL PATIENT ENCOUNTERS

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ABSTRACT

The present study assessed whether trainees display similar nonverbal and paraverbal behaviors when interacting with a simulated (SP) and virtual patient (VP). Sixty second slices of time following four interactions were rated for the presence and frequency of three nonverbal and paraverbal behaviors. Results revealed that students exhibited fewer behaviors in the VP interaction, possibly due to differences social inhibition or fidelity between the two formats.

Keywords: Nonverbal, Paraverbal, Simulated Patient (SP), Virtual Patient (VP), Thin Slice

INTRODUCTION

Research has consistently found associations between nonverbal communication and patient outcomes (Henry et al., 2012). Nonverbal displays of empathy, such as smiling, are associated with patient satisfaction (Lorié et al., 2017). As a result, our team is developing Mpathic-IBCH, a virtual reality simulation system that uses simulated virtual patients (VP) to identify and train medical students on specific nonverbal and paraverbal behaviors associated with discrepancies in health outcomes for patients. Training students using a VP offers several benefits, such as efficiency, standardization, accessibility (Saleh, 2010), and potentially less social inhibition than with humans. However, research on whether interactions with a VP elicit similar nonverbal and paraverbal behaviors from students when interacting with a human simulated patient (SP) is lacking. Thus, the present study represents an initial attempt to assess whether trainees display similar nonverbal and paraverbal behaviors when interacting with a SP compared to a VP.

MATERIALS AND METHODS

Thirty-two students from the Yale Schools of Medicine, Nursing, and Physician Associate program participated in two simulated patient encounters, one with a SP and one with a VP. The SP interaction concerned a patient seeking to establish care with a new primary healthcare provider. The VP interaction involved a patient meeting with a new provider to discuss their pain medication. Because the content of the interactions varied slightly between the SP and VP encounters, a subset of empathetic and triggering statements was selected from each encounter for comparison.

Nonverbal and paraverbal behaviors were recorded on video and raters assessed segments of the interactions with thin slice coding, where a 60-second “slice” of time following an interaction was rated for the presence and frequency of the behaviors (Murphy, 2005). This approach was used because it is an efficient and reliable method for assessing communication behaviors. Thin slices were coded for two empathetic or triggering statements within each interaction from the beginning of the statement until either one minute had lapsed or the SP/VP asked the next question. Coding was conducted by one undergraduate and two graduate psychology students. The coding criteria were established and refined among the raters on a sample of three interactions over three sessions until an acceptable level of reliability was attained for the three behaviors ($r > .82$). The raters then independently coded the remaining interactions. Paired t-tests were conducted to compare nonverbal and paraverbal behaviors between the SP and VP encounters.

The following nonverbal and paraverbal behaviors were examined; talk time, laughter, and continuers. These behaviors were selected because of their association with nonverbal displays of

empathy in a clinical setting (Lorié et al., 2017). Talk time was measured as the portion of time a person spoke, recorded in seconds, excluding prolonged silences longer than one second. Laughter was measured as any vocalization or movement of the face or body that expressed amusement or exaltation. Continuers were measured as indicators of listening (e.g., uh-huh, mhm, head nod) that occurred during or shortly after the other person was speaking. Extremely subtle head movements were excluded, and simultaneous nonverbal and verbal continuers were counted as a single continuer. Each nonverbal and paraverbal was coded Yes=1, No=0; If yes, how often.

RESULTS AND DISCUSSION

Comparisons of the students' nonverbal and paraverbal behaviors between conditions were significantly higher when interacting with a SP than a VP (see Table 1). Specifically, for both empathetic and triggering statements, students were observed talking and laughing significantly more often and using significantly more continuers when interacting with a SP than with a VP.

Table 1. Comparison of nonverbal and paraverbal behaviors in SP and VP interactions.

Nonverbal/Paraverbal Behavior by Statement Type	SP Interaction		VP Interaction		<i>t</i> (32)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Empathetic							
Talk Time	36.75	7.00	6.22	1.57	23.99	<.001	4.24
Laughter	0.44	0.50	0.05	0.19	4.13	<.001	0.73
Continuers	1.48	1.19	0.31	0.59	5.10	<.001	0.90
Triggering							
Talk Time	35.81	8.58	1.56	0.93	22.48	<.001	3.97
Laughter	0.17	0.30	0.00	0.00	3.23	.003	0.57
Continuers	1.72	1.17	0.17	0.33	7.21	<.001	1.27

CONCLUSION

This research compared nonverbal and paraverbal behaviours in interactions with SPs and VPs. The results showed that interactions with SPs evoked more nonverbal and paraverbal responses than interactions with VPs. It is possible that these differences occurred because the trainees felt less socially inhibited with the VP; however, the results may also reflect differences in fidelity between the formats and the interactions. Additional research is needed to determine the characteristics of VPs that are required to elicit similar patterns of nonverbal communication in student interactions to make them more comparable to SPs for training purposes.

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