Keeping it Light: Perceptions of Humor Styles in Robot-Mediated Conflict

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ABSTRACT

A 2 (mediator: human, robot) $\times$ 3 (humor styles: affiliative, aggressive, self-defeating) factorial experiment was conducted to test participant perceptions of robot-enacted humor in conflict mitigation. Participants watched brief video vignettes of roommate conflict in which either a robot or human employed humor. Funniness ratings did not differ significantly between conditions of humor style or mediator. However, participants perceived affiliative and aggressive humor employed by a robot as less appropriate than when used by a human.

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1 INTRODUCTION

Conflict is an inevitability of teamwork, and all team conflict is emotionally charged to some degree. However, it is how team members manage conflict and its emotional dynamics that have important ramifications for goal achievement and relational maintenance [1]. Conflict predominated by negative affect has detrimental effects on constructive interactions, leading to behaviors of incivility, aggression, and other destructive strategies [2]. Therefore, teams must find ways to regulate emotions, both individually and across the group. However, not all teams possess the skills to regulate emotions effectively. Nor do they all have access to mediation professionals who can help facilitate conflict. For this reason, we believe a robot could help fulfill this need by employing common conflict mitigation strategies that off-load some of the regulation responsibilities to the robot. The purpose of this study is to explore one common strategy, humor, and to test how witnesses to conflict perceive different forms of humor when it is performed by either a robot or a human.

Teams engage in a variety of conflict mitigation strategies. We chose humor due to its common use throughout interpersonal and group conflict to address difficult issues and alleviate tension [3]. Previous research suggests humor effectively redirects the interaction toward other topical talk, providing a necessary break from negative conflict episodes [4][5]. There is an opportunity for robots to help mediate conflict using humor to break tension, especially when partners or groups have difficulty self-mediating.

Robot-enacted humor has been previously studied, but those studies generally lack a contextual use for the humor. They tend to present humor in isolation of context or social meaning. For example, a study exposing participants to isolated jokes found that people generally rate humans as funnier than robots [6]. However, humor exists in numerous forms, none of which are created equally. An additional finding from this study showed that robots using disparaging or aggressive humor forms tend to elicit less disgust compared to humans. Although people find humans funnier, robots may be uniquely positioned to leverage humor in different ways. In the context of conflict mitigation, what works for robots may not work for humans. The following sections detail an exploratory study of robot-enacted humor in conflict. We seek to extend understanding of how different humor styles influence perceptions in HRI. We add contextual relevance to this line of research by studying humor as a conflict mitigation strategy.

2 METHOD

2.1 Participants

548 participants (52.6% male ($n = 289$), 47.2% female ($n = 259$)) were recruited from Amazon Mechanical Turk. The mean age of participants was 38.18 years (median age = 35). Participants received \$0.33 compensation.

2.2 Procedure

Participants were randomly assigned to 1 of 6 conditions representing 3 forms of humor (affiliative, aggressive, self-defeating; see Table 1 for sample stimuli) and 2 third-party mediators (human, robot; see Figure 1). They watched a 2-minute video featuring roommate conflict. As the conflict escalated, a third-party told a joke related to the ongoing conflict. At the joke's conclusion, participants rated the joke's funniness and appropriateness as a conflict mediation tool. We also collected

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ratings of friendliness and aggressiveness, which validated expected ratings for each humor style stimuli.

Humor Style	Sample Stimulus
Affiliative	If you need any help checking grammar on your homework, let me know. Rule #1 – double negatives are a big No-No.
Aggressive	Calculus is a pretty hard class. Even between the two of you, are you sure you have enough fingers and toes to keep up?
Self-Defeating	I took a calculus class once. Talk about brutal. I still haven't figured out how to turn the graphing calculator on.

Table 1. Three forms of humor stimuli, each responding to a roommate conflict about sharing homework.

2.3 Measures

Participants responded to two single-item measures of funniness and appropriateness. Participants rated each item on a scale of 1-7. 1 indicated the humor was not funny or was inappropriate; 7 indicated the humor was perceived as very funny or appropriate.

Figure 1. Comparison of robot and human joke teller

3 RESULTS

A 2 X 3 (mediator X humor style) factorial ANOVA testing perceived funniness yielded no significant main effects of the two independent variables, $F(1, 543) = 1.707, p = .192, \eta^2 .003$, $F(2, 543) = .472, p = .624, \eta^2 .002$, respectively. Nor was there an interaction effect of the IV's, $F(2, 543) = .010, p = .990, \eta^2 .000$.

A second factorial ANOVA testing perceived appropriateness of the humor indicated a significant main effect of the joke teller on ratings of appropriateness, $F(1, 543) = 4.470, p = .035, \eta^2 .008$ and a significant interaction effect, $F(2, 543) = 3.003, p = .050, \eta^2 .011$ of the two IV's on appropriateness. In both the affiliative and aggressive humor conditions, raters found human-enacted humor more appropriate than the robot-enacted humor (see Figure 2).

4 DISCUSSION

Ratings of funniness were not significantly different between conditions, but people perceived human-enacted humor as more appropriate than robot-enacted humor in these simulated conflicts. Appropriateness only differed in affiliative and aggressive conditions. Relational implications of each humor

style may explain this finding. Aggressive humor implies superiority of the joke teller. Even affiliative forms of humor suggest a degree of equality. These relative hierarchies between robots and humans may negatively drive appropriateness ratings during serious situations, like conflict. Conversely, self-defeating jokes position the teller as inferior, leveraging humor while also avoiding potentially unfavorable human-robot hierarchies. However, this humor style can include greatly varying degrees of disparagement. Future research should study to what degree robots can leverage self-deprecating humor, both in conflict and other HRI situations.

Figure 2. Ratings of humor appropriateness based on joke teller (Error bars represent the standard error of the mean)

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