



## Rejection sensitivity and suicide ideation among psychiatric inpatients: An integration of two theoretical models



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### ABSTRACT

Rejection is a direct threat to an individual's need to belong that has serious consequences for mental health. Rejection sensitivity may explain why some individuals are more likely to perceive rejection in social situations and experience subsequent psychological distress. The current study examined suicide ideation among psychiatric inpatients ( $N = 103$ ) through the lenses of the rejection sensitivity model and the interpersonal theory of suicide. We hypothesized that rejection sensitivity would be indirectly associated with suicide ideation (i.e., a cognitive-affective reaction to social rejection) through greater perceptions of rejection (i.e., thwarted belongingness and perceived burdensomeness, constructs from the interpersonal theory of suicide), in parallel. Results from bootstrapped parallel mediation regression procedures indicated that the relation between rejection sensitivity and suicide ideation was significantly indirectly associated through the additive effect of thwarted belongingness and perceived burdensomeness, such that greater rejection sensitivity was associated with greater thwarted belongingness and perceived burdensomeness and subsequently greater suicide ideation. Further, rejection sensitivity was significantly indirectly associated with suicide ideation independently through thwarted belongingness, but not perceived burdensomeness. These findings provide support for the rejection sensitivity model and the interpersonal theory of suicide in an effort to advance our conceptualization of suicide risk among psychiatric inpatients.

### 1. Introduction

Baumeister and Leary (1995) propose that the need to belong with others, the core human motivation that drives individuals to form and maintain stable and caring social relationships, is fundamental to psychological and physical well-being. As such, belongingness is associated with psychological benefits, whereas a lack of belongingness is associated with impaired psychological functioning (e.g., depression, anxiety, hopelessness; see Baumeister and Leary, 1995 for review). Social rejection is a direct threat to an individual's need to belong and self-esteem (e.g., Baumeister and Leary, 1995; Eisenberger et al., 2003; Gerber and Wheeler, 2009; Smith and Williams, 2004; Williams, 1997) and is detrimental to mental health (e.g., Leary, 1990), including suicide risk. In fact, various forms of social rejection have been associated with increased suicide risk (see Van Orden et al., 2010 and World Health Organization [WHO], 2014 for review), including bullying (e.g., Klomek et al., 2010; Mitchell et al., 2016), parental rejection (Campos et al., 2013), and divorce (e.g., Kposowa, 2003). Therefore, improving our understanding of the role of social rejection in the development of suicide risk through thwarted interpersonal needs (e.g.,

thwarted belongingness and perceived burdensomeness) may be important, particularly among psychiatric inpatients given their elevated risk for suicide (e.g., Busch et al., 2003; Combs and Romm, 2007; Neuner et al., 2008). Further, the concept of rejection sensitivity has been proposed to explain why some individuals are more likely to perceive threats to belonging or rejection in social situations and experience greater psychological distress as a result (e.g., Downey and Feldman, 1996; Feldman and Downey, 1994; London et al., 2007). The current study aimed to conceptualize the relation between rejection sensitivity and suicide ideation utilizing two theoretical models, the rejection sensitivity model (Levy et al., 2001) and the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010).

Rejection sensitivity is a disposition or tendency to anxiously expect, readily perceive, and cognitively and emotionally overreact to social rejection even in ambiguous interpersonal situations (Downey and Feldman, 1996; Feldman and Downey, 1994). The rejection sensitivity model (Levy et al., 2001) is a cyclical multi-step model that aims to address the antecedents and consequences of rejection sensitivity. Within this model, rejection experiences are posited to lead to greater rejection sensitivity (path 1), which is subsequently associated with

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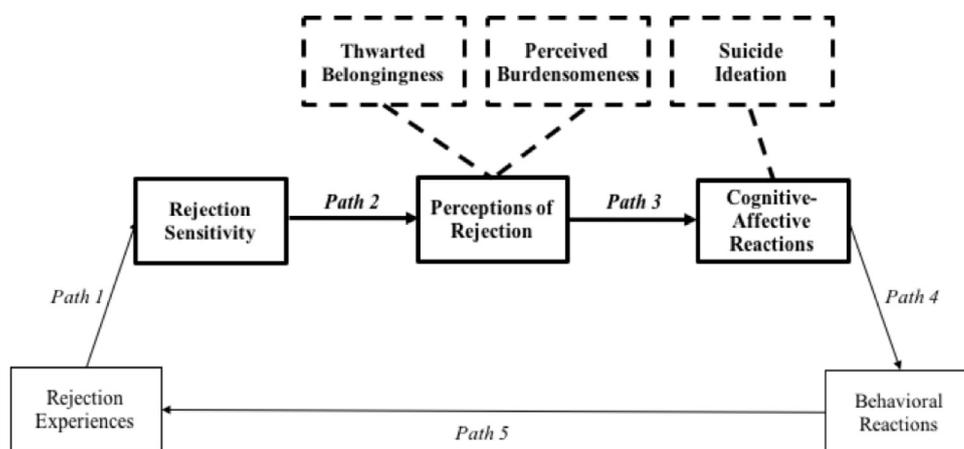


Fig. 1. A conceptual model of the rejection sensitivity model (Levy et al., 2001; solid lines) where the rejection processes and paths considered in the current study are bolded. The dashed-lines indicate the components of the interpersonal theory of suicide (Van Orden et al., 2010) that are congruent with the rejection sensitivity model.

perceptions of rejection (path 2) that evoke cognitive-affective responses (path 3), which lead to behavioral responses (path 4), and in turn increase the likelihood of experiencing future social rejection (path 5). Levy et al. (2001) suggest that any type of social rejection, during any developmental stage of life (i.e., *rejection experiences*), may yield defensive expectations of social rejection. That is, as a result of social rejection, individuals become hypervigilant to threats to belonging and hypersensitive to social rejection (i.e., *rejection sensitivity*) in order to quickly identify potential instances of social rejection. In turn, individuals with greater rejection sensitivity more readily perceive social interactions as rejecting (i.e., *perceptions of rejection*), which then elicit *cognitive-affective reactions* (e.g., emotional pain, anger, blaming oneself or others). Subsequently, an individual with greater rejection sensitivity will likely engage in maladaptive *behavioral reactions* (e.g., aggression, social isolation, depressed affect, and self-injury), which may increase the likelihood of future rejection experiences, in turn, perpetuating this cycle.

Support for the rejection sensitivity model has been accumulating; however, the mediational role of perceptions of rejection between rejection sensitivity and cognitive-affective reactions (paths 2 and 3) has not been examined within the context of suicide risk. Research has indicated greater rejection sensitivity is associated with an array of internalizing symptoms (e.g., social anxiety, loneliness, depressive symptoms; Downey et al., 1998; Levy et al., 2001; Meyer et al., 2005; Sandstrom et al., 2003). However, it is unclear whether rejection sensitivity is associated with other negative cognitive-affective reactions, such as suicide ideation, and more importantly, which perceptions of rejection may act as intervening variables in the relation between rejection sensitivity and suicide ideation.

The interpersonal theory of suicide contains variables associated with perceptions of rejection, which this theory posits are necessary and sufficient predictors of suicide ideation. Specifically, the interpersonal theory of suicide suggests that thwarted belongingness (indicated by sense of loneliness and a perceived lack of reciprocally caring relationships) and perceived burdensomeness (indicated by feelings of liability and self-hate) are key proximal predictors of suicide ideation (Joiner, 2005; Van Orden et al., 2010). Specifically, desire for death is posited to occur when thwarted belongingness or perceived burdensomeness are experienced independently, whereas suicide ideation develops when thwarted belongingness and perceived burdensomeness are experienced simultaneously and are perceived as permanent states (Van Orden et al., 2010).

Research supports the role of social rejection in the development of suicide ideation utilizing the framework of the interpersonal theory of suicide (e.g., Campos and Holden, 2015; Mitchell et al., 2016). A cross-sectional study among undergraduate students found that depressive symptoms and perceived burdensomeness serially mediated the association between the retrospective intensity of being cyberbullied (i.e., a

form of social rejection) and suicide ideation (Mitchell et al., 2016). Similarly, depressive symptoms and interpersonal needs (measured as a latent variable indicated by thwarted belongingness and perceived burdensomeness scores) mediated the association between retrospective parental rejection and suicide risk (measured as a latent variable indicated by previous suicide ideation and attempts, recent suicide ideation, communicating suicidal thoughts to others, and likelihood of a future suicide attempt; Campos and Holden, 2015). Further, a previous study by Lear et al. (2018) found that rejection sensitivity moderated the association between thwarted belongingness, but not perceived burdensomeness, and psychological pain; however, this study did not examine the sequential order of the rejection sensitivity model or the relation between rejection sensitivity and suicide ideation. Although these studies provide initial support for the consideration of the mediating role of thwarted belongingness and perceived burdensomeness in the relation between social rejection and suicide ideation, they do not consider the role of *rejection sensitivity* or the framework of the rejection sensitivity model, which may better explain why social rejection is associated with suicide ideation.

To date, no study has examined the relation between rejection sensitivity and suicide ideation through the lenses of the rejection sensitivity model and the interpersonal theory of suicide. When considering these two theoretical models together, thwarted belongingness and perceived burdensomeness could be conceptualized as perceptions of rejection that elicit cognitive-affective reactions (e.g., suicide ideation; see Fig. 1). Thwarted belongingness (e.g., “These days, I often feel disconnected from other people;” “These days, I often feel like an outsider in social gatherings”) and perceived burdensomeness (e.g., “These days, people in my life would be happier without me;” “These days, I think the people in my life wish they could be rid of me”), as captured by the Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012), reflect perceptions or beliefs that social interactions and relationships are rejecting. Thus, individuals with greater rejection sensitivity may be more likely to perceive their social interactions to be characterized by a lack of belonging and perceived burden on others, which in turn may result in suicide ideation. Hence, there is a need for research that directly tests the association between rejection sensitivity and suicide ideation, while considering the unique and additive intervening roles of thwarted belongingness and perceived burdensomeness among individuals who are at elevated risk for suicide (i.e., psychiatric inpatients). The current study aimed to address this gap in the literature by testing the association between rejection sensitivity, thwarted belongingness, perceived burdensomeness, and suicide ideation. We hypothesized that rejection sensitivity would be indirectly associated with suicide ideation (i.e., a cognitive-affective reaction) through greater thwarted belongingness and perceived burdensomeness (i.e., perceptions of rejection), in parallel.

## 2. Method

### 2.1. Participants

Participants were 103 adult psychiatric inpatients ( $M_{\text{age}} = 35.00$ ,  $SD_{\text{age}} = 14.79$ ) in the southwest United States. The sample consisted of 56 men (54.4%), 46 women (44.7%), and 1 transgender individual (female to male; 1%). The majority of the sample identified as non-Hispanic ( $n = 71$ , 68.5%) followed by Hispanic ( $n = 30$ , 29.1%), and 2 participants (1.9%) did not indicate an ethnicity. Additionally, most of the sample identified as White or Caucasian ( $n = 84$ , 81.6%), followed by “other” = 7, 6.8%), Black or African American ( $n = 5$ , 4.9%), American Indian or Native American ( $n = 3$ , 2.9%), and Asian or Asian American ( $n = 1$ , 1.0%); 3 participants (2.9%) did not indicate a race. The majority of the sample identified as heterosexual ( $n = 89$ , 86.4%) followed by bisexual ( $n = 6$ , 5.8%), gay/lesbian ( $n = 5$ , 4.9%), and “other” ( $n = 2$ , 2%); 1 participant did not indicate a sexual orientation (1%). In regards to relationship status, 50.5% ( $n = 52$ ) identified as single (i.e., never married), 22.3% ( $n = 23$ ) identified as married, 9.7% ( $n = 10$ ) identified as divorced, 8.7% ( $n = 9$ ) identified as being in a romantic relationship, 5.8% ( $n = 6$ ) identified as separated, 1.9% ( $n = 2$ ) identified as partnered/common law, and 1.0% ( $n = 1$ ) identified as widowed. Although data on reason for admission was not collected, 52.4% ( $n = 54$ ) reported at least one previous suicide attempt, 38.8% ( $n = 40$ ) reported previous non-suicidal self-injury, and 49.5% ( $n = 51$ ) of participants reported a psychiatric hospitalization prior to their current admission.

### 2.2. Measures

#### 2.2.1. Demographic and clinical information questionnaire

Participants were asked to provide basic demographic information (e.g., age, gender, ethnicity) and information pertaining to suicide risk and self-injury (e.g., suicide attempt history [frequency, temporal sequence, lethality/medical attention], non-suicidal self-injury, number and temporal sequence of previous psychiatric hospitalizations).

#### 2.2.2. Interpersonal needs questionnaire (INQ)

The INQ (Van Orden et al., 2012) is a 15-item self-report assessment of recent feelings of thwarted belongingness (9 items) and perceived burdensomeness (6 items). Participants rate each item on a 7-point ordinal response scale ranging from 1 (*Not at all true for me*) to 7 (*Very true for me*), with higher scores indicating greater feelings of thwarted belongingness and perceived burdensomeness. Initial validation of the INQ has demonstrated acceptable convergent and discriminant validity and concurrent validity with suicide ideation (e.g., Van Orden et al., 2012). Within psychiatric inpatient samples, the INQ demonstrated excellent internal consistency for the thwarted belongingness subscale (Cronbach's alpha = 0.81–0.88) and perceived burdensomeness subscale (Cronbach's alpha = 0.89–0.94; e.g., Cero et al., 2015; Mitchell et al., 2017; Monteith et al., 2013). In the current study, the Cronbach's alpha was 0.83 for the thwarted belongingness subscale and 0.94 for the perceived burdensomeness subscale.

#### 2.2.3. Beck scale for suicide ideation (BSS)

The BSS (Beck and Steer, 1991) is a 21-item self-report assessment of suicide ideation, intent, and plans over the past week, as well as previous suicide attempts. Participants rate each item on a 3-point ordinal response scale ranging from 0 to 2, with higher scores indicating greater suicide ideation. A total score for the BSS is calculated by summing the first 19 items. The BSS has demonstrated adequate convergent validity with a clinician-rated assessment of suicide ideation in a psychiatric inpatient sample (Beck et al., 1988). In addition, the BSS has demonstrated excellent internal consistency in several psychiatric inpatient samples (Cronbach's alpha = 0.85–0.96; Cero et al., 2015; Monteith et al., 2013; Pimintí et al., 2002). In the current study, the

Cronbach's alpha was 0.96.

#### 2.2.4. Rejection sensitivity questionnaire—adult version (A-RSQ)

The A-RSQ (Berenson et al., 2009) is a self-report assessment of rejection sensitivity. Participants are asked to consider 9 interpersonal situations (e.g., “You approach a close friend to talk after doing or saying something that seriously upset him/her.”) and rate their rejection concern on a scale of 1 (*Very Unconcerned*) to 6 (*Very Concerned*) and their rejection expectancy on a scale of 1 (*Very Unlikely*) to 6 (*Very Likely*) for each situation. Rejection sensitivity scores are calculated by multiplying the ratings of rejection concern by ratings of rejection expectancy for each interpersonal situation, which are then averaged across situations (Berenson et al., 2009; Downey and Feldman, 1996). The A-RSQ has demonstrated adequate convergent and discriminant validity (Berenson et al., 2009) and internal consistency (Cronbach's alpha = 0.89; Berenson et al., 2011). In the current study, the Cronbach's alpha was 0.85 for the rejection concern items, 0.81 for the rejection expectancy items, and 0.82 for the items combined. The current study utilized the rejection sensitivity score, using all items.

#### 2.2.5. Center for epidemiological studies depression scale (CES-D)

The CES-D (Radloff, 1977) is a 20-item self-report questionnaire that assesses depressive feelings and behaviors during the past week. Participants respond on a frequency-based 4-point ordinal response scale (0 = *Rarely or none of the time [less than 1 day]*, 1 = *Some or a little of the time [1–2 days]*, 2 = *Occasionally or a moderate amount of the time [3–4 days]*, 3 = *Most or all of the time [5–7 days]*) with higher scores indicating more severe depressive symptoms. The CES-D demonstrated strong construct reliability in the general population (Radloff, 1977). In the current study, the Cronbach's alpha was 0.83.

### 2.3. Procedures

All procedures were conducted in accordance with the university and hospital approved Institutional Review Board protocols. Participants were recruited individually from an acute psychiatric inpatient unit and asked to complete a battery of self-report assessments in a private room. After the study procedures were explained, participants were asked a series of brief questions about the study to assess their capacity to provide consent prior to providing informed consent and completing self-report assessments. The demographic questionnaire was presented first, followed by the other assessments in a counter-balanced order. Participants were not compensated for their participation and could discontinue at any time without penalty.

### 2.4. Data analytic strategy and preparation

All analyses were conducted using SPSS version 25 with the PROCESS macro (Hayes, 2013). A parallel mediation approach (Model 4; Hayes, 2013) was used to test the hypothesis that rejection sensitivity would be indirectly associated with suicide ideation through thwarted belongingness and perceived burdensomeness, in parallel. We used 10,000 bootstrapped samples to construct bias corrected 95% confidence intervals. Confidence intervals not containing zero indicate statistically significant indirect effects (Hayes, 2013). To test the additive intervening role of thwarted belongingness and perceived burdensomeness, as proposed by the interpersonal theory of suicide, the total indirect effect (i.e., the mediating effect of a set of predictors between the predictor and the criterion variable; Preacher and Hayes, 2008) was calculated. Additionally, to test the unique intervening roles of thwarted belongingness and perceived burdensomeness, the specific indirect effects (i.e., the effect of one mediator between the predictor and the criterion variable when adjusting for the other mediator(s); Preacher and Hayes, 2008) were calculated. Of note, this statistical analysis procedure does not require a significant direct path from the predictor to the criterion variable prior to examining indirect

**Table 1**  
Descriptive statistics and correlations.

	1	2	3	4	5	6
1. INQ-TB	–					
2. INQ-PB	0.54**	–				
3. A-RSQ	0.39**	0.35**	–			
4. BSS	0.48**	0.37**	0.31**	–		
5. Age	0.04	.03	–0.02	–0.23*	–	
6. Gender	0.11	.19	0.27**	0.26**	–0.09	–
<i>M</i>	31.14	19.58	9.71	8.71	35.00	–
<i>SD</i>	11.17	11.29	9.49	9.51	14.79	–
Minimum	9.00	6.00	4.10	0.00	18.00	–
Maximum	63.00	42.00	25.44	37.00	75.00	–

Note. INQ-TB: interpersonal needs questionnaire-thwarted belongingness subscale score; INQ-PB: interpersonal needs questionnaire-perceived burdensomeness subscale score; BSS: Beck scale for suicide ideation total score; A-RSQ: rejection sensitivity questionnaire-adult version rejection sensitivity total score. Point-biserial correlations reported for gender. \* $p < 0.05$ ; \*\* $p < 0.01$ .

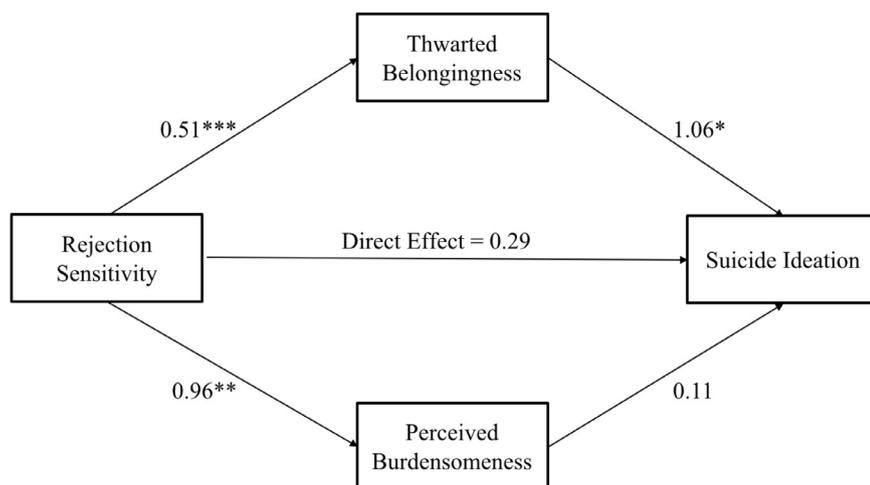
effects (Hayes, 2013), as opposed to prior mediation procedures (e.g., Baron and Kenny, 1986). Additionally, completely standardized indirect effects ( $ab_{cs}$ ) were calculated to demonstrate effects sizes as recommended by Preacher and Kelley (2011).

Prior to the following analyses, outliers were adjusted to a score within  $\pm 3.29$  standard deviations from the mean for each variable (Tabachnick and Fidell, 2013), although this analysis does not require variables to be normally distributed (Hayes, 2013). Further, expectation-maximization was used to impute missing data given Little's missing completely at random (MCAR) indicated the missing data were MCAR ( $\chi^2 [27, N = 103] = 31.51, p = 0.251$ ; Tabachnick and Fidell, 2007).

### 3. Results

#### 3.1. Primary analyses

Bivariate correlations and descriptive statistics are presented in Table 1. The hypothesis that rejection sensitivity would be indirectly associated with suicide ideation through thwarted belongingness and perceived burdensomeness, in parallel, was partially supported,  $F(3, 99) = 11.49, R^2 = 0.26, p < 0.001$  (see Fig. 2). Specifically, the total indirect effect of thwarted belongingness and perceived burdensomeness in the relation between rejection sensitivity and suicide ideation was significant ( $ab_{cs} = 0.19, 95\% \text{ CI} = 0.07, 0.30$ ). There was also a significant specific indirect effect between rejection sensitivity and suicide ideation through thwarted belongingness ( $ab_{cs} = 0.14, 95\% \text{ CI} = 0.04, 0.24$ ), such that there was a significant positive association



**Fig. 2.** The intervening effects of thwarted belongingness and perceived burdensomeness in parallel on the relation between rejection sensitivity and suicide ideation. Unstandardized path coefficients are reported. Thwarted belongingness as a mediator: 95% CI = 0.04, 0.24; Perceived burdensomeness as a mediator: 95% CI = –0.03, 0.14; total indirect effect of thwarted belongingness and perceived burdensomeness as mediators: 95% CI = 0.07, 0.30; total model summary:  $F(3, 99) = 11.49, R^2 = 0.26, p < 0.001$ . \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

between rejection sensitivity and thwarted belongingness ( $b = 0.51, 95\% \text{ CI} = 0.33, 0.68$ ), and between thwarted belongingness and suicide ideation ( $b = 1.06, 95\% \text{ CI} = 0.57, 1.56$ ). Further, the specific indirect effect between rejection sensitivity and suicide ideation through perceived burdensomeness was not significant ( $ab_{cs} = 0.05, 95\% \text{ CI} = -0.03, 0.14$ ), such that there was a significant positive association between rejection sensitivity and perceived burdensomeness ( $b = 0.96, 95\% \text{ CI} = 0.45, 1.47$ ), but the association between perceived burdensomeness and suicide ideation was not significant ( $b = 0.11, 95\% \text{ CI} = -0.06, 0.29$ ). There was not a significant direct effect of rejection sensitivity on suicide ideation ( $b = 0.29, 95\% \text{ CI} = -0.15, 0.73$ ).

#### 3.2. Alternative models

The hypothesized parallel mediation model was also conducted adjusting for depressive symptoms. This did not change the trends or patterns of statistical significance of the results. Rejection sensitivity was indirectly associated with suicide ideation through thwarted belongingness and perceived burdensomeness, in parallel, while adjusting for depressive symptoms,  $F(2, 100) = 11.68, R^2 = 0.19, p < 0.001$ . Specifically, the total indirect effect of thwarted belongingness and perceived burdensomeness in the relation between rejection sensitivity and suicide ideation was significant ( $ab_{cs} = 0.17, 95\% \text{ CI} = 0.06, 0.28$ ). There was also a significant specific indirect effect between rejection sensitivity and suicide ideation through thwarted belongingness ( $ab_{cs} = 0.13, 95\% \text{ CI} = 0.03, 0.23$ ). However, the specific indirect effect between rejection sensitivity and suicide ideation through perceived burdensomeness was not significant ( $ab_{cs} = 0.04, 95\% \text{ CI} = -0.02, 0.12$ ). There was also not a significant direct effect of rejection sensitivity on suicide ideation ( $b = 0.29, 95\% \text{ CI} = -0.15, 0.73$ ). Given that including depressive symptoms as a covariate in the model did not impact the significance and pattern of our findings and the conceptual and statistical issues that can arise when covarying depression out of suicide ideation (Mitchell et al., 2017; Rogers et al., 2016), we retained our originally hypothesized model. Specifically, partialling leads to difficulty with interpretation of raw scores (Lynam et al., 2006) and clinical outcomes become unclear given the conceptual leap it requires to understand what remains in an outcome (e.g., suicide ideation) when aspects of that outcome are removed due to partialling on a covariate (e.g., depression; Rogers et al., 2016).

Additionally, considering the non-significant specific indirect effect of perceived burdensomeness and the potential statistical and clinical implications that arise due to multicollinearity in multiple predictor models with thwarted belongingness and perceived burdensomeness (Mitchell et al., 2017), perceived burdensomeness was tested within a single mediator model. Notably, the indirect effect between rejection

sensitivity and suicide ideation through perceived burdensomeness was significant ( $ab_{cs} = 0.10$ , 95% CI = 0.02, 0.21), such that there was a significant positive association between rejection sensitivity and perceived burdensomeness ( $b = 0.96$ , 95% CI = 0.45, 1.47) and between perceived burdensomeness and suicide ideation ( $b = 0.25$ , 95% CI = 0.09, 0.41). Contrary to the results of the hypothesized model, this model suggests perceived burdensomeness may also be important in the relation between rejection sensitivity and suicide ideation when thwarted belongingness is not included in the model, which is consistent with previous research that supports the clinical utility of both thwarted belongingness and perceived burdensomeness as predictors of suicide ideation (Mitchell et al., 2017).

Lastly, given the cross-sectional nature of the current study, alternative orders of the predictor variables were considered to provide support for the sequence of the tested associations. The alternative hypothesis that thwarted belongingness would be indirectly associated with suicide ideation through rejection sensitivity, adjusting for perceived burdensomeness, was not supported,  $F(2, 100) = 10.98$ ,  $R^2 = 0.18$ ,  $p < 0.001$ . Specifically, the indirect effect of rejection sensitivity in the relation between thwarted belongingness and suicide ideation was not significant ( $ab_{cs} = 0.04$ , 95% CI = -0.01, 0.15). There was a significant direct effect of thwarted belongingness on suicide ideation ( $b = 0.30$ , 95% CI = 0.13, 0.48). Additionally, the alternative hypothesis that perceived burdensomeness would be indirectly associated with suicide ideation through rejection sensitivity, adjusting for thwarted belongingness, was not supported,  $F(2, 100) = 10.98$ ,  $R^2 = 0.18$ ,  $p < 0.001$ . Specifically, the indirect effect of rejection sensitivity in the relation between perceived burdensomeness and suicide ideation was not significant ( $ab_{cs} = 0.03$ , 95% CI = -0.03, 0.08). There was not a significant direct effect of perceived burdensomeness on suicide ideation ( $b = 0.11$ , 95% CI = -0.06, 0.29). These models suggest that thwarted belongingness and perceived burdensomeness may be more proximal to suicide ideation than rejection sensitivity and supports the sequence of the variables in the hypothesized model.

#### 4. Discussion

Social rejection is a direct threat to an individual's fundamental need to belong (e.g., Baumeister and Leary, 1995; Williams, 1997). Social rejection (e.g., cyberbullying, parental rejection) has been associated with suicide risk as conceptualized through the interpersonal theory of suicide (e.g., Campos and Holden, 2015; Mitchell et al., 2016). Greater rejection sensitivity has been associated with more impaired psychological functioning (Downey et al., 1998; Levy et al., 2001; Sandstrom et al., 2003) and may be associated with suicide ideation. However, no research to date has examined the relation between rejection sensitivity and suicide ideation. The current study is the first, to our knowledge, to examine the relation between rejection sensitivity and suicide ideation utilizing two theoretical models, the rejection sensitivity model and the interpersonal theory of suicide. Specifically, we hypothesized that rejection sensitivity would be indirectly associated with suicide ideation (i.e., a cognitive-affective reaction) through greater thwarted belongingness and perceived burdensomeness (i.e., perceptions of rejection), in parallel.

Our hypothesis was partially supported, as the results of the current study indicated rejection sensitivity was indirectly associated with suicide ideation through the additive effect of thwarted belongingness and perceived burdensomeness, in parallel. That is, greater rejection sensitivity was associated with greater thwarted belongingness and perceived burdensomeness and subsequent suicide ideation. Additionally, rejection sensitivity was indirectly associated with suicide ideation independently through thwarted belongingness, but not perceived burdensomeness. Our findings are consistent with the rejection sensitivity model (Levy et al., 2001) and previous findings that rejection sensitivity was positively associated with cognitive-affective responses (e.g., Downey and Feldman, 1996; Meyer et al., 2005). Specifically, the

current findings indicated rejection sensitivity is associated with suicide ideation (i.e., a cognitive-affective response) through thwarted interpersonal needs (i.e., thwarted belongingness and perceived burdensomeness) and thwarted belongingness. These findings highlight the important intervening role of specific types of perceptions of rejection (i.e., thwarted belongingness and perceived burdensomeness) and demonstrates the utility of the rejection sensitivity model when applied to suicide ideation in a high-risk sample of psychiatric inpatients. Given previous research has not found significant direct effects of rejection sensitivity on suicide ideation among college students (Chesin and Jeglic, 2016), the current findings suggest it may be important to consider the indirect effects of perceptions of rejection to clarify the relation between rejection sensitivity and suicide ideation among various samples.

Similarly, the current findings are consistent with the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010), which proposes that when thwarted belongingness and perceived burdensomeness are experienced simultaneously and believed to be permanent, suicide ideation develops, whereas when thwarted belongingness or perceived burdensomeness are experienced independently they are posited to lead to a desire for death. Although previous research has examined the interaction between thwarted belongingness and perceived burdensomeness (Ma et al., 2016), numerous studies have not found evidence for a significant interaction and of the studies with significant interactions the effect sizes have been shown to be relatively small (Chu et al., 2017; Ma et al., 2016) and therefore may not be clinically meaningful. Van Orden et al. (2010) hypothesized, "...the simultaneous presence of thwarted belongingness, perceived burdensomeness, and hopelessness about one's interpersonal connections is a proximal and sufficient cause of suicidal desire" (p. 589). Based on this definition and the empirical literature, the argument that there is something unique about a combination of thwarted belongingness and perceived burdensomeness (i.e., interaction), as opposed to the mere simultaneous presence of predictors, is not clearly theoretically or empirically supported. Further, previous studies have examined thwarted belongingness and perceived burdensomeness as simultaneous predictors (e.g., Roush et al., 2017).

The current study suggests that rejection sensitivity and suicide ideation are indirectly associated through thwarted belongingness and the additive effect of thwarted belongingness and perceived burdensomeness, despite hopelessness not being included in the model. However, the specific indirect effect of perceived burdensomeness was not significant in predicting suicide ideation when accounting for thwarted belongingness. This is especially important to note, given the recent literature on the interpersonal theory of suicide highlights the particular importance of perceived burdensomeness and suicide ideation (Chu et al., 2017; Ma et al., 2016) and extensive literature on caregiver burden (e.g., Baronet, 1999; Östman and Hansson, 2004) that may suggest elevated rates of perceived burdensomeness among psychiatric inpatients. However, as Chu et al. (2017) also suggests, the relation between thwarted belongingness may be stronger among certain populations. These findings suggest that within the context of rejection sensitivity, thwarted belongingness may be more operative in the link with suicide ideation among psychiatric inpatients. One possible explanation for this pattern of results may be that within the framework of the rejection sensitivity model, rejection sensitivity is a significant predictor of loneliness (Watson and Nesdale, 2012), which is a primary indicator of thwarted belongingness but not perceived burdensomeness (Van Orden et al., 2010). Considering the conceptual overlap between loneliness and thwarted belongingness, which are frequent experiences among psychiatric inpatients (You et al., 2011), psychiatric inpatients experiencing greater rejection sensitivity may be more likely to perceive a lack of reciprocal caring relationships and experience feelings of loneliness (indicators of thwarted belongingness) compared to feelings of self-hatred and liability (indicators of perceived burdensomeness). Alternatively, statistical effects related to highly correlated predictors

(Lynam et al., 2006) may have impacted the pattern of results found in the current study, as strong correlations were found between rejection sensitivity, thwarted belongingness, perceived burdensomeness, and suicide ideation. This may have contributed to a reduction in the potential strength of the specific indirect effects and direct effects from perceived burdensomeness to suicide ideation due to shared variance in the predictors when predicting the criterion (i.e., suicide ideation). This is partially supported by the alternative model we tested in which rejection sensitivity was associated with suicide ideation through perceived burdensomeness when tested independently (i.e., without including thwarted belongingness as a covariate). Although a high correlation between thwarted belongingness and perceived burdensomeness often conceals the association between thwarted belongingness or perceived burdensomeness and suicide ideation in multiple predictor models, research suggests both thwarted belongingness and perceived burdensomeness, independently, are clinically meaningful (Mitchell et al., 2017).

The results of the current study also provide a more nuanced understanding of the relation between rejection sensitivity and suicide ideation among a high-risk sample of psychiatric inpatients, which provides initial support for the integration of the rejection sensitivity model and the interpersonal theory of suicide. Given this is one of the first studies to combine the theoretical underpinnings of the rejection sensitivity model and the interpersonal theory of suicide, we aimed to test portions of each respective model. As an important next step in improving our understanding of suicide by further integrating these models, future studies should assess behavioral reactions that follow cognitive-affective reactions in response to perceptions of rejection that may be associated with suicidal behaviors (e.g., history of suicide attempts, self-aggression, social isolation). Additionally, future research should examine the role of hopelessness considering its hypothesized importance relative to the development of suicide ideation; however, the current study suggests the simultaneous presence of thwarted belongingness and perceived burdensomeness in the absence of hopelessness is associated with suicide ideation. Future studies may also consider whether the rejection sensitivity model complements other theories of suicide, such as the three-step theory (Klonsky and May, 2015) and the integrated motivational-volitional model of suicidal behavior (IMV; Dhingra et al., 2015). For example, the IMV highlights feelings of defeat and humiliation, which may also be considered perceptions of rejection within the rejection sensitivity model.

The current findings have relevant implications for suicide risk assessment and treatment. Previous research suggests that multiple forms of social rejection are associated with increased suicide risk (Van Orden et al., 2010; WHO, 2014), which may be important for suicide risk assessment. However, the current findings suggest it may be advantageous for clinicians to assess for rejection sensitivity and thwarted interpersonal needs within a comprehensive suicide risk assessment, as these factors may be modifiable and serve as important treatment targets. A more thorough assessment of rejection sensitivity may be particularly useful since this appears to be associated with the additive effect of thwarted belongingness and perceived burdensomeness, which is posited as a theoretical driver of suicide ideation (Van Orden et al., 2010) and is associated with suicide ideation in the current study. Early assessment of rejection sensitivity and intervention may be especially important considering the cyclical nature of the rejection sensitivity model, which would suggest repeated experiences of suicide ideation and relevant behavioral responses. Furthermore, cognitive therapy techniques, such as cognitive reappraisal of social situations in which those with greater rejection sensitivity would more readily perceive rejection (i.e., thwarted belongingness and perceived burdensomeness) may also be helpful to prevent the development of suicide ideation and subsequent behavioral responses that would increase the likelihood of future rejection. Additionally, previous research suggests that interventions aimed at altering attentional responses may reduce anxiety (Hakamata et al., 2010), improve emotion regulation (Wadlinger and

Isaacowitz, 2008), and reduce vigilance and responsiveness to social threat (Dandeneau et al., 2007); therefore, these interventions may be useful in reducing rejection sensitivity to reduce risk for suicide ideation through thwarted belongingness and perceived burdensomeness. Specifically, inhibition training may be a useful behavioral intervention that can be incorporated into cognitive behavioral therapy in order to alter one's perceptions of rejection associated with greater rejection sensitivity. This is supported by previous behavioral research by Dandeneau and Baldwin (2004), that found inhibition training, wherein participants were trained to inhibit responses to rejection cues by continuously identifying inclusion cues in the context of rejection cues, decreased attentional bias toward negative social information.

Although promising, our findings should be viewed in the context of limitations that may inform future research. The current study utilized a cross-sectional design precluding determination of causality or temporal relations between variables. However, the alternative models testing the association between thwarted belongingness and perceived burdensomeness and suicide ideation through rejection sensitivity were not significant, which suggests that thwarted belongingness and the additive effect of thwarted belongingness and perceived burdensomeness may be more proximal to suicide ideation than rejection sensitivity and supports the sequence of the variables in our hypothesized model. Given that the rejection sensitivity model depicts antecedents and consequences of rejection sensitivity that are reciprocal in nature (Levy et al., 2001), future studies should consider the use of experimental or longitudinal designs. For example, ecological momentary assessment procedures could improve the temporal specificity in the assessment of perceptions of rejection and cognitive-affective responses to social rejection associated with suicide ideation. Further, participants in the current study were psychiatric inpatients recruited from the southwestern United States; therefore, the findings may not be generalizable to non-inpatient samples in other geographic regions. An additional limitation is the lack of psychiatric diagnoses for the current sample. Given the current study utilized an inpatient sample that may have elevated rates of borderline personality disorder which has been associated with greater rejection sensitivity (Gardner et al., 2010; Staebler et al., 2011), the current findings may reflect the association between rejection sensitivity and suicide ideation among a sample with higher rejection sensitivity. It may be especially important for future studies to consider examining the role of rejection sensitivity in the development of suicide risk in other samples with elevated rates of suicide ideation and behaviors and greater rejection sensitivity, such as individuals with eating disorders (Cardi et al., 2013) or borderline personality disorder (Staebler et al., 2011). Research should also consider characteristics (e.g., personality traits, attachment styles) that may moderate the indirect relation between rejection sensitivity and suicide ideation through thwarted interpersonal needs.

The current study is the first to examine the relation between rejection sensitivity and suicide ideation considering two theoretical models, the rejection sensitivity model and interpersonal theory of suicide. Moreover, this study provides evidence for the consideration of rejection sensitivity and thwarted interpersonal needs in the context of suicide risk assessment and treatment among those with greater rejection sensitivity. The findings of the current study provide initial support for the integration of the rejection sensitivity model and the interpersonal theory of suicide, which may advance our conceptualization of suicide risk.

#### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2018.12.009](https://doi.org/10.1016/j.psychres.2018.12.009).

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