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## **SOCIAL SURROGATE USE IN THOSE EXPOSED TO TRAUMA: I GET BY WITH A LITTLE HELP FROM MY (FICTIONAL) FRIENDS**

SHIRA GABRIEL AND JENNIFER P. READ

*University at Buffalo, The State University of New York*

ARIANA F. YOUNG

*California Lutheran University*

RACHEL L. BACHRACH

*University at Buffalo, The State University of New York*

JORDAN D. TROISI

*Sewanee: The University of the South*

Traumatic events bring an increased need for social connection but paradoxically can make relationships more difficult. The current research examines the unique role social surrogates such as favorite TV shows, books, and celebrities may play in fulfilling the social needs of people who have experienced trauma. Across two studies we predicted and found that experiencing traumatic events is associated with higher interest in using social surrogates. Furthermore, individuals who have experienced trauma without developing PTSD are able to effectively use social surrogates to combat social isolation. However, perhaps because PTSD symptoms often are associated with impaired social functioning, those with PTSD actually feel worse after social surrogate use. Implications for trauma, PTSD, social surrogates, and social self research are discussed.

*Keywords:* social surrogates, well-being, social self, post-traumatic stress disorder, trauma

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Address correspondence to Dr. Shira Gabriel, Department of Psychology, University at Buffalo, The State University of New York, 207 Park Hall, Buffalo, NY 14260; E-mail: sgabriel@buffalo.edu.

"Times are hard and friends are few."

—Paul O'Grady

Ironically, the times when one needs friends most can also be the times when friends are hardest to find, toughest to reach out to, and most likely to disappoint (e.g., Banou, Hobfoll, & Trochelman, 2009; Downey, Freitas, Michaelis, & Khouri, 1998; Keefer, Landau, Rothschild, & Sullivan, 2012; Murray, Holmes, MacDonald, & Ellsworth, 1998). The current research examines how individuals in difficult times—those who have experienced traumatic events—may be drawn to nontraditional means to fill their social needs. We propose exposure to trauma will increase interest in social surrogates (i.e., symbolic social targets with whom one feels a social bond, like celebrities, TV shows, or books). Furthermore, in light of evidence showing social impairment in those with PTSD, but not necessarily with trauma, we posit that among those exposed to trauma, the presence of posttraumatic stress disorder symptoms will be negatively associated with the successful use of social surrogates to fill social needs.

## **SOCIAL SURROGATES**

The need to belong is pervasive, potent, and comprehensive. Humans require the experience of inclusion and connectedness with others much the same way they require food and drink, sleep, shelter, and safety (Baumeister & Leary, 1995; Williams, 2007). In addition, the same affective system that serves other basic needs also serves the need to belong. When we feel connected to others, we feel good. When our needs are thwarted, we feel bad (Frijda, 1988). We therefore strive to maintain a sense of connection and fulfill this basic need.

Accumulating evidence suggests that humans can fulfill the need for social connection not only through actual relationships, but also through symbolic bonds called social surrogates (e.g., Derrick, Gabriel, & Hugenberg, 2009; Gabriel & Young, 2011; Troisi & Gabriel, 2011). Social surrogates fall under three basic categories: parasocial relationships are specific media figures with whom people have one-sided psychological bonds, such as favorite celebrities or fictional characters (e.g., Derrick, Gabriel, & Tippin, 2008; Young, Gabriel, & Hollar, 2013; Young, Gabriel,

& Sechrist, 2012); social worlds are narratives in which people immerse themselves, like favorite books, movies, and TV shows (e.g., Derrick et al., 2009; Gabriel & Young, 2011); and reminders of others are nonhuman entities which serve to remind one of real social relationships, such as pictures of friends, comfort foods from one's childhood, and Facebook status updates (e.g., Troisi & Gabriel, 2011). Although the three different kinds of social surrogates differ in some ways, they also share common, important features. Specifically, they are all symbolic social connections (as opposed to real, tactile relationships) and they have all been linked to the fulfillment of social needs and to protecting individuals from the harm associated with feelings of rejection, isolation, and loneliness.

Social surrogates can be important for social connections because research on close relationships has found that people who need the benefits of close relationships the most—those who are psychologically vulnerable and at risk of the negative effects of isolation and rejection—are often the least able to obtain the benefits of social support and interaction (e.g., Murray, Holmes, Griffin, Bellavia, & Rose, 2001; Murray, Holmes, MacDonald, & Ellsworth, 1998). At those times social surrogates may be especially helpful because they offer the social benefits of real relationships with much lower risks of rejection.

Research suggests that individuals with dispositional concerns about social acceptance can feel better about themselves via social surrogates. For example, low self-esteem people, who dispositionally worry about rejection from others, are able to feel more confident in themselves through parasocial bonds (Derrick et al., 2008). Specifically, people with low self-esteem are likely to have favorite celebrities who are similar to their ideals for themselves and like those celebrities due to that similarity. By thinking about their favorite celebrities, low self-esteem individuals can significantly reduce their self-discrepancies. In other words, when low self-esteem individuals think about their favorite celebrities they experience subtle shifts in their self-concepts leading them to feel more similar to the celebrities. Those shifts to be more similar to the celebrities make them feel more similar to their ideal selves (Derrick et al., 2008). In summary, parasocial bonds provide a

means to bolster the self for people who are chronically vulnerable to rejection.

Social surrogates can also help people who are situationally vulnerable to isolation and rejection. In other words, when people feel isolated, rejected, or vulnerable due to a temporary rejection or conflict with close others, social surrogates can restore a feeling of well-being. Immersion in narratives, such as books, movies, or TV shows can lead to a feeling of belonging in the social worlds presented in the narratives and can bolster feelings of social connection (Gabriel & Young, 2011). Thus, the social world provided by narratives has the power to protect against rejection and social isolation (Derrick et al., 2009). For example, participants who recall a rejection threat in the lab suffer lower self-esteem, more negative mood, and high feelings of rejection. However, if that threat to belonging is partnered with an opportunity to think about their favorite television show, the negative effects of rejection are completely eliminated (Derrick et al., 2009; Study 3). In addition, when people are feeling rejected, they are particularly drawn to their favorite TV shows. Specifically, participants who experienced a threat to their relationships increased the amount of time they spent thinking and writing about their favorite television shows (Derrick et al., 2009; Study 2).

Reminders of others are also particularly attractive to people who have suffered from rejection and social isolation. Comfort foods are social surrogates that derive their emotional power from their connections to existing relationships. In other words, comfort foods gain their emotional power by reminding us of the people who fed them to us (Triosi & Gabriel, 2011). As long as our bonds with our primary caregivers were positive, these reminders of others can provide comfort to people feeling rejected. For example, research found that participants who were securely attached (and thus had positive associations with primary relationship partners) were able to use comfort food to reduce the effects of a belongingness threat on feelings of loneliness. In addition, when their sense of social connection was threatened, comfort foods became more attractive to securely attached participants (Troisi, Gabriel, Derrick, & Geisler, 2015).

In summary, while it is a relatively new area of study within the field of psychology, the accumulating evidence suggests that

social surrogates are especially attractive to individuals who experience social suffering and can play an important and useful role in combatting the negative effects of rejection and social isolation. Social surrogates in the form of reminders of others, fictional social worlds into which we can enter at will, and parasocial bonds with well-known figures are all of particular interest to people who have either dispositional or situational threats to belonging. The current research is interested in examining whether social surrogates will also be particularly attractive to individuals who have experienced psychological trauma.

## TRAUMA

Trauma exposure among college students is unfortunately common (Marx & Sloan, 2003; Read, Ouimette, White, Colder, & Farrow, 2011; Ullman & Filipas, 2005); so too are psychological sequelae following such exposure, including posttraumatic stress disorder symptoms (PTSD; Lauterbach & Vrana, 2001; Read et al., 2011; Smyth, Hockemeyer, Heron, Wonderlich, & Pennebaker, 2008). In this population, trauma and related symptoms can lead to myriad deleterious outcomes, including academic impairment (Bachrach & Read, 2012), re-victimization (Walsh et al., 2012), health-risk behaviors (Read et al., 2013; Widome et al., 2011), poor physical and psychological health (Flood, McDevitt-Murphy, Weathers, Eakin, & Benson, 2009; Rutter, Weatherill, Krill, Orazem, & Taft, 2013), and alcohol or other drug misuse (McDevitt-Murphy et al., 2010; Read et al., 2012).

A large literature highlights the critical role that social support and interpersonal connection may play in post-trauma adaptation. For example, support from and connectedness to others is linked to better psychological outcomes following trauma including fewer PTSD symptoms (Brewin, Andrews, & Valentine, 2000; Guay, Billette, & Marchand, 2006; Meyer et al., 2012; Pietrzak et al., 2010) and can facilitate resolution of PTSD symptoms over time (Brewin et al., 2000; Ozer, Best, Lipsey, & Weiss, 2003; Ullman, 1999).

Yet paradoxically, trauma exposure and especially posttraumatic stress symptoms can serve as barriers to seeking out such

support or to using existing social resources. Research on close relationships has found that people who need the benefits of close relationships the most—those who are psychologically vulnerable and at risk—are often the least able to obtain the benefits of social support and interaction (e.g., Keefer et al., 2012; Murray, Holmes, & Collins, 2006; Murray, Holmes, & Griffin, 2000; Murray et al., 1998; Murray, Rose, Bellavia, Holmes, & Kusche, 2002). Furthermore, the difficulty trusting others, fear of harm or rejection, and the global sense of vulnerability that frequently follow a traumatic event can lead individuals to avoid or have challenges in close interpersonal relationships, to experience a diminution of social resources, and to engage in poor social problem-solving behavior (Banou et al., 2009; Downey et al., 1998).

PTSD symptoms in particular may confer unique risk for social isolation and loss of social support. For example, a large body of research has found that those who develop PTSD may have difficulty effectively using social support resources in the wake of trauma (King, Taft, King, Hammond, & Stone, 2006; Riggs, Byrne, Weathers, & Litz, 1998; Woodward et al., 2013) and that the failure to use these resources may in fact differentiate those who develop PTSD from those who do not (e.g., Babcock, Roseman, Green, & Ross, 2008; Cluver, Fincham, & Seedat, 2009; Hyman, Gold, & Cott, 2003; Weiss, Garvert, & Cloitre, 2015). Moreover, a sense of detachment or distance from others is among the hallmark features of PTSD (American Psychiatric Association, 2000, 2013) and serves as a barrier both to reaching out to others and achieving feelings of connection from social interaction even when it occurs. Thus, the literature would suggest that, whereas it would be expected that people would seek out social connection in the wake of trauma, the presence of PTSD symptoms would impede or deter success in forming and maintaining the social connections that could otherwise help to ameliorate their distress.

However, some social connections may be less challenging and pose less psychological risk, and thus be more appealing to those with posttraumatic distress. The psychological power of social surrogates in combination with their relative safety may make them especially attractive to people who are in search of safe

social connections (Derrick et al., 2008; Horton & Wohl, 1956; Keefer et al., 2012; Putnam, 2000). Yet, the extent to which the impairment observed in social relationships in people with PTSD extends to other forms of reaching out for social connectedness (i.e., social surrogacy) is unknown. Thus, our first prediction is that because they need social connection but are especially hesitant to take interpersonal risks, people who have experienced trauma will be particularly attracted to social surrogates as a means of social connection (Hypothesis 1).

Based on the trauma, PTSD, and social support literature, we expect that the use of social surrogates and the emotional experience of such use may differ for those who have PTSD versus those who do not—even those who have been exposed to a trauma. Specifically, we predict that although all people who have experienced trauma (both with PTSD and without) will have increased interest in social surrogates (Hypothesis 1), only some will effectively use social surrogates to buffer against negative emotions. Because successful use of supportive others is a key protective factor against the development and maintenance of PTSD symptoms (Brewin et al., 2000; Guay et al., 2006; Meyer et al., 2012; Pietrzak et al., 2010; Ozer et al., 2003; Ullman, 1999), effective use of social surrogates to alleviate negative emotions should be associated with a lack of PTSD symptoms following trauma. Therefore, we predict that among those who have experienced traumatic events, the ability to use social surrogates to alleviate negative social emotions will be associated with fewer posttraumatic stress symptoms (Hypothesis 2).

Furthermore, the literature suggests that those who are most psychologically vulnerable not only derive fewer benefits from social activities and interactions, but are also made more insecure by their bonds (Murray et al., 2001). Thus, it is possible that, among individuals with PTSD, efforts to engage with social surrogates may lead not to comfort, but ironically, to an even greater sense of separation and distance (Hypothesis 3). Therefore, we also examine the hypothesis that social surrogate use may lead individuals with PTSD to feel even more socially isolated than those with no trauma exposure, and also than those with trauma but without PTSD.

## OVERVIEW OF THE PRESENT RESEARCH

We conducted two studies to examine our hypotheses. Study 1 used correlational methodology to examine whether people who had experienced trauma would be more likely than those who had not experienced trauma to seek social surrogates when feeling lonely. We predicted that all participants who had experienced trauma (both those with PTSD and those without) would report greater interest in turning to social surrogates when lonely than those who had not experienced such an event (Hypothesis 1). Study 2 utilized an experimental method and examined social surrogate use across three groups of college students who differed on level of trauma exposure and posttraumatic stress symptoms: (1) those with no trauma exposure, (2) those with trauma exposure but without PTSD, and (3) those with both trauma exposure and PTSD. We predicted that social surrogates would increase well-being for participants who had experienced a traumatic event but did not have PTSD (Hypothesis 2), but would decrease well-being for people who had experienced both trauma and PTSD (Hypothesis 3).

### STUDY 1

#### METHOD

*Participants.* One thousand one hundred ninety nine undergraduates (49% female; 66% Caucasian) participated in exchange for credit in an introductory psychology course.

*Procedure and Materials.* Participation occurred in mass testing sessions (in class) as part of a larger questionnaire, most of which was irrelevant to the current study. Participants completed the Social Surrogate Use Questionnaire, which assesses the degree to which individuals are drawn to social surrogates when feeling lonely (Gabriel, Valenti, Young, & Derrick, in preparation). Specifically, participants indicated the likelihood from 1 (not at all likely) to 5 (extremely likely) that they would seek out 16 different social surrogate activities when feeling lonely ( $\alpha = .86$ ), such as: read books, watch TV shows, watch movies, look up celebrities online (read about or look at pictures), eat comfort foods,

look at pictures of friends and/or family, and read old letters, personal emails, or saved online conversations.

Both exposure to traumatic events and associated posttraumatic stress symptoms were assessed. To assess lifetime trauma exposure, participants completed a self-report measure (see Read et al., 2011) that was based on the Traumatic Life Events Questionnaire (Kubany et al., 2000) and Traumatic Events Questionnaire (Vrana & Lauterbach, 1994). Seven items queried about exposure to: (1) accident/natural disaster/fire; (2) combat; (3) sudden unexpected death of a loved one; (4) life-threatening illness (to self or loved one); (5) physical assault (to self or witnessing violence between others); (6) sexual assault; or (7) other event that was life-threatening, caused serious injury, or extreme distress. A follow-up question assessed subjective responses (i.e., fear, helplessness, or horror) to each endorsed event, as this is consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR) definition of trauma exposure (American Psychiatric Association, 2000). Each of the seven items was assessed dichotomously (yes/no) and thus possible scores ranged from 0–7, with higher scores reflecting greater trauma exposure.

Post-traumatic stress was assessed using the PTSD Checklist-Civilian Version, a reliable and well-validated measure of the 17 DSM IV-TR PTSD symptoms (PCL-C; Weathers, Huska, & Keane, 1991; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL-C has been shown to correspond strongly to gold-standard interview measures of PTSD (Andrykowski, Cordova, Studts, & Miller, 1998; Lang, Laffaye, Satz, Dresselhaus, & Stein, 2003). This measure asks participants to rate how much they have been bothered, from 0 (not at all) to 4 (extremely), by each DSM IV-TR PTSD symptom in the past month.

Following Blanchard, Jones-Alexander, Buckley, and Forneris (1996), empirically validated diagnostic threshold cut-scores were created for all items on the PCL-C. This involved dichotomously scoring each item as either 1 or a 0 based on the severity rating that the participant assigns to the 5-point Likert-type response scale. Items rated as 3 or 4 (depending on the item) or higher are scored as a 1. All other ratings are scored as a 0. This scoring produces a clinically meaningful symptom count. Using

this approach, each of the 17 items was dichotomously scored to reflect whether that symptom was present or absent. This scoring method also allows for a calculation of PTSD based on endorsement (0/1) of diagnostic criteria (i.e., 1 re-experiencing symptom, 3 avoidance/numbing symptoms, 2 arousal symptoms), consistent with the DSM-IV-TR (American Psychiatric Association, 2000). Higher scores reflect greater PTSD symptoms ( $\alpha = .88$ ).

In addition, participants indicated their need to belong (Need to Belong Scale,  $\alpha = .80$ ; Leary, Kelly, Cottrell, & Schreindorfer, 2013), self-esteem (Rosenberg Self-Esteem Scale,  $\alpha = .89$ ; Rosenberg, 1965), attachment style (Relationship Questionnaire; Bartholomew & Horowitz, 1991), and experience of current (past 2 weeks) and lifetime depressive symptoms (Patient Health Questionnaire-9,  $\alpha \geq .88$ ; Kroenke, Spitzer, & Williams, 2001).

## RESULTS AND DISCUSSION

We predicted that participants who had experienced traumatic events would report greater interest in social surrogates when lonely than those who had not experienced trauma (Hypothesis 1). To test this hypothesis, we conducted a one-way Analysis of Variance (ANOVA) with PTSD Status (no-trauma, trauma-no-PTSD, and trauma-PTSD) as the independent variable and social surrogate interest as the dependent variable. Results revealed a significant main effect of PTSD Status,  $F(2, 1197) = 20.17, p < .001, \eta^2 = .03$ . As predicted, participants who had experienced a traumatic event and had clinically significant PTSD symptoms ( $M = 3.03$ ) reported being more interested in social surrogates when lonely as compared to those who had not experienced a traumatic event ( $M = 2.68$ ),  $t(1197) = 6.35, p < .001, d = .37$ . Also as predicted, participants with trauma exposure but no clinically significant PTSD symptoms ( $M = 2.82$ ) were more interested in social surrogates when lonely than those who had not experienced a traumatic event,  $t(1197) = 3.09, p = .002, d = .18$ . Finally, among participants with trauma history, those with clinically significant PTSD symptoms were more drawn to social surrogates when lonely as compared to trauma-exposed individuals with-

out PTSD symptoms,  $t(1197) = 4.05, p < .001, d = .23$ . Although not predicted, this suggests that the more intense the suffering, the more appealing the social surrogates. In summary, the data are consistent with the hypothesis that interest in social surrogates seemed to be influenced by trauma and PTSD symptoms.

Based on the pattern of means observed above, we also examined whether greater posttraumatic distress would predict level of social surrogate interest (Broman-Fulks et al., 2006; Ruscio, Ruscio, & Keane, 2002). Accordingly, a continuous measure of severity of PTSD was computed by summing participants' PCL-C scores. As predicted, severity of PTSD was correlated with interest in social surrogates when lonely  $r = .187, p < .001$ . In addition, we wanted to isolate the unique predictive power of PTSD by examining it in concert with other related constructs. Thus, we conducted a multiple regression analysis with PTSD severity, as well as need to belong, self-esteem, attachment style (secure, preoccupied, dismissing, and fearful), and experience of current (past 2 weeks) and lifetime depressive symptoms as predictors. When entered simultaneously into the model, depression symptoms over the last 2 weeks, self-esteem, and preoccupied attachment all predicted desire to engage with social surrogates when lonely. Yet the strongest predictor of social surrogate interest was severity of PTSD symptoms,  $\beta = .191, p < .001, sr^2 = .03$ . Thus, even when accounting for depression, self-esteem, and attachment style, PTSD still predicted desire to use social surrogates when feeling lonely.

In summary, Study 1 provides support for Hypotheses 1: people with trauma exposure (both those with PTSD symptoms and those without) reported that they would turn to social surrogates more when feeling lonely than those who had never experienced trauma. Social surrogate use also differed based on PTSD diagnostic status (i.e., trauma exposed versus those with significant PTSD symptoms), and severity of PTSD symptoms was associated with desire to engage with social surrogates when lonely. This effect remained even when controlling for depression symptoms, self-esteem, and attachment style. This suggests that there is something unique about individuals who have experienced a

traumatic event and subsequent post-trauma symptoms, as they tend to be drawn to social surrogates when lonely.

Using an experimental paradigm, Study 2 examined Hypotheses 2 and 3: that social surrogate use would aid people with a trauma history (but without PTSD) yet harm those with both trauma exposure and PTSD. Study 2 also addressed a limitation of Study 1. Specifically, because in Study 1, participants were only asked about attraction to social surrogates when lonely, it was impossible to ascertain from the data whether it was loneliness in particular that led participants to desire social surrogates, or whether PTSD increased interest in social surrogates for other reasons. In other words, it is possible that the effects had nothing to do with social surrogates as a social salve for negative social emotions, but instead might have been a product of a general desire by those with PTSD to engage in these types of passive activities. To isolate the specific link between negative emotional state and social surrogacy use, Study 2 also included a questionnaire asking participants to what extent various emotions led them to want to engage with social surrogates. We predicted that increased interest in social surrogates would be uniquely associated with negative emotions related to social isolation (i.e., sadness and loneliness) and not more broadly with other strong emotions such as happiness, boredom, or anger.

In addition, although the effects in Study 1 were as predicted and were consistent across multiple variables, the effect sizes were small. We suspect that this may have been due to the questionnaire nature of the research, which led to both a self-report assessment of trauma and PTSD (which typically contains more error than the gold-standard interview assessment of these constructs), and to asking participants to reflect on their memories for how social surrogates led them to feel (rather than a more accurate direct examining of their reactions). To address this issue, in Study 2 we used a more powerful assessment tool, a structured clinical interview, to assess trauma exposure and PTSD symptomology and a more powerful direct examination of the effects of social surrogates on well-being, assessing these effects in real time following a social surrogate manipulation.

## STUDY 2

### METHOD

*Participants.* As part of a larger experimental study of PTSD and cognitive processes in college students, 55 undergraduates (38% female; 75% Caucasian) participated in exchange for course credit or payment. Participants were recruited from the introductory psychology subject pool and via advertisements posted around the community. A detailed description of data collection procedures for this larger project is described in previous published work (see Merrill, Vermont, Bachrach, & Read, 2013). Thus, here we report only those methodological procedures pertinent to the current study.

*Procedure and Materials.* Participants were recruited based on their status in one of three same PTSD symptom groups as in Study 1: (1) No-Trauma, (2) Trauma-No-PTSD, and (3) Trauma-PTSD. In this study, PTSD status was based on DSM-IV TR criteria (American Psychiatric Association, 2000), and determined using a structured clinical interview (Clinician Administered PTSD Scale; Blake et al., 1995) conducted in a separate assessment session by doctoral-level clinicians. Those with at least one symptom in each symptom cluster (re-experiencing, avoidance, numbing) were included in the Trauma-PTSD group. Interviews were recorded and inter-rater reliability was conducted between interviewers and by a senior clinician at a separate site (Kappa = .88). Among those with trauma, sudden death of a loved one was the most commonly reported event ( $n = 34, 47.2\%$ ), followed by life threat (e.g., serious illness) to loved one ( $n = 26, 36.1\%$ ). The other most common trauma types were interpersonal victimization, including sexual assault ( $n = 15, 27.3\%$ ), and threat of physical violence ( $n = 11, 15.3\%$ ), or actual physical assault ( $n = 9, 12.5\%$ ). During an initial screening session (where various demographic variables were collected), participants were also given a questionnaire designed to assess how much feeling: lonely, sad, happy, content, angry, and bored led them to want to engage with social surrogates (e.g., When you are bored, how much do you want to read old letters, personal emails, or saved online conversations?).

During the main experimental session, all participants completed a task that was unrelated to the current paper and then were randomly assigned to write an essay about a social surrogate or a control topic (Derrick et al., 2009). In the social surrogate condition, participants were asked to write about their favorite movie, TV show, or book; they were allowed to pick whichever type of surrogate they preferred. Across all PTSD groups, about half the participants chose to write about a TV show with most of the others choosing a movie and the small remainder choosing a book. Previous research has suggested that describing the characters, setting, and plot of the movie/TV show/book is enough to re-create the experience of engaging with a social surrogate (e.g., Derrick et al., 2009). In the control condition, participants listed and described all the items in their bedroom. Participants wrote for as long as they liked before proceeding. Writing time ranged from approximately 1 to 5.8 minutes (mean = 2.89) and did not differ by condition. Previous research suggested this would be sufficient enough time to prime social surrogates (Derrick et al., 2009). Next, participants completed a number of items, some unrelated to the current study, that included a State Social Belonging Scale with items adopted from the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980), the Social Connectedness Scale (Lee & Robbins, 1995), and the Relatedness Need-Satisfaction Measure (Sheldon, Abad, & Hinsch, 2011). For example, participants indicated their agreement from 1 (strongly disagree) to 7 (strongly agree) to statements such as "I feel connected to others" and "I feel like no one really knows me well" (reverse-scored).

## RESULTS AND DISCUSSION

A factor analysis and scree plot of the State Social Belonging Scale revealed one factor above the inflection point (Eigen value 3.65) with good reliability ( $\alpha = .83$ ). The mean of these items was taken as a measure of perceived social connection.

We first examined a question generated from our Study 1 findings: is the increased desire for social surrogates after trauma exposure specifically related to emotions relevant to social iso-

lation? To examine this, we ran six one-way ANOVAs testing whether participants in the three PTSD groups (No-Trauma, Trauma-No-PTSD, and Trauma-PTSD) differed in how much the six emotions were associated with their desire to engage with social surrogates. As predicted, only sadness and loneliness differentially associated with the desire for social surrogates. Results revealed a significant effect for PTSD Status on desire for social surrogates when sad,  $F(2,51) = 5.35, p = .008, \eta^2 = .17$ . As compared to participants who had not experienced trauma ( $M = 1.70$ ), those who had trauma and no PTSD symptoms ( $M = 2.3$ ) and those who had both trauma and PTSD symptoms ( $M = 2.83$ ) were more drawn to social surrogates when sad,  $t(51) = 1.81; p = .05, d = .51$  and  $t(51) = 4.97; p = .003, d = 1.40$ , respectively. Also as predicted, there was a significant effect for PTSD Status on desire for social surrogates when lonely,  $F(2,51) = 3.127, p = .05, \eta^2 = .11$ . As compared to participants who had not experienced trauma ( $M = 2.10$ ), those who had trauma and PTSD symptoms ( $M = 3.04$ ) were more drawn to social surrogates when lonely,  $t(51) = 4.97, p = .003, d = 1.40$ . Though not significant, participants with trauma but no PTSD symptoms showed a similar pattern of results ( $M = 2.40$ ). Interestingly, people were not more likely to report being drawn to social surrogates when lonely ( $M = 2.36$ ) and sad ( $M = 2.12$ ) as compared to when bored ( $M = 2.58$ ) or happy ( $M = 2.51$ ), but it was only the social isolation emotions that were differentially predictive based on traumatic history. In summary, only emotions related to social isolation predicted increased interest in social surrogates for participants with a traumatic history.

Next, we tested our main predictions for Study 2: social surrogates increase well-being for participants who had experienced trauma but no PTSD (Hypothesis 2) but decrease well-being for participants with PTSD (Hypothesis 3). To test our hypotheses, we conducted a 2 (Essay Condition: social surrogate, control)  $\times$  3 (PTSD Status: no-trauma, trauma-no-PTSD, trauma-PTSD) between-subjects ANOVA with feelings of social connection as our dependent variable. As predicted, results revealed a significant Essay Condition  $\times$  PTSD Status interaction,  $F(2,49) = 6.75, p = .003, \eta^2 = .22$  (see Figure 1). Simple effects tests showed that

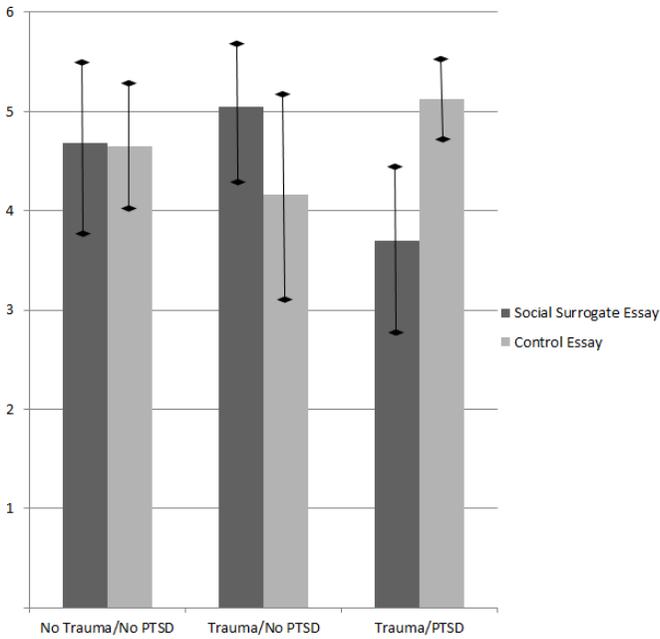


FIGURE 1. Effects of social surrogacy essay condition and PTSD status on feelings of social connection.

participants who had experienced trauma, but did not have significant PTSD symptoms felt more socially connected after writing about their social surrogate relative to the control activity,  $t(49) = 2.12$ ;  $p = .04$ ,  $d = .61$ . Conversely, but also as predicted, participants with PTSD felt less socially connected after writing about the social surrogate relative to the control activity,  $t(49) = 3.00$ ,  $p = .004$ ,  $d = .86$ . Participants who had not experienced trauma were unaffected by the social surrogate writing ( $p > .9$ ). This is consistent with work suggesting that, within non-clinical populations, the effects of social surrogates are usually seen only when social needs are made salient (Derrick et al., 2009).

In summary, Study 2 provided support for Hypotheses 2 and 3: participants who had experienced trauma but had not developed PTSD demonstrated improvements to their sense of psychological well-being after engaging with a social surrogate (Hypothesis 2), whereas those who had experienced trauma and had developed PTSD reported decrements to their well-being following social surrogate use (Hypothesis 3). Study 2 also sug-

gests that increased interest in social surrogates among those with PTSD is linked specifically to emotions of social isolation and not to boredom or other emotional states.

## GENERAL DISCUSSION

There is no shortage of research demonstrating the very serious effects that trauma can have on the human psyche and the need for people experiencing trauma to feel social connections in order to heal. The current work is unique and greatly adds to what is known by being the first to examine the ways in which people who have experienced trauma may use social surrogates as a low-risk means of seeking social connection. Indeed, this research builds on existing work suggesting that people may seek out symbolic social targets in the wake of feelings of risk, loneliness, and uncertainty (e.g., Derrick et al., 2009; Gabriel et al., in preparation; Gabriel & Young, 2011; Keefer et al., 2012; Troisi & Gabriel, 2011). It also explores the extent to which social surrogate use and its psychological effects may differ based on trauma history and PTSD symptoms. Study 1 supported our first hypothesis: participants who had experienced trauma were more likely to report being drawn to social surrogates when lonely; the more PTSD symptoms, the more interested they were in social surrogates. This was true even when controlling for other related constructs, including depression, self-esteem, and attachment style. In addition, data from Study 2 suggest that the relationship between PTSD and attraction to social surrogates is specific to emotions related to social isolation.

Importantly, supporting our second and third hypotheses, Study 2 also found that participants who had experienced trauma but did not suffer from PTSD felt more socially connected after thinking about a social surrogate, whereas trauma-exposed participants with PTSD symptoms actually felt worse. This suggests that while some people, despite a history of trauma, are able to effectively use social surrogates to fill social needs, those with posttraumatic stress face yet another challenge when attempting to seek out others (King et al., 2006; Riggs et al., 1998; Woodward et al., 2013). Although the current paper does not seek to address the mechanism behind this relationship, several

possibilities present themselves. It could be, for example, that an ability to form meaningful symbolic relationships is protective after traumatic events. Thus, the very characteristics that may have posed risk for the development of posttraumatic distress may also be a barrier to ameliorating this distress through social connection. Alternatively, it may be that the sense of disconnection and emotional numbness that are characteristic in those with PTSD prohibit these individuals from achieving a sense of connectedness even when they seek it. These questions are intriguing and point to several directions for future inquiry.

Finally, this research greatly expands on what is known about the efficacy of social surrogates for filling belongingness needs and gives the first suggestions, to our knowledge, both that social surrogates play a role in dealing with mental illness and that they can sometimes have surprisingly deleterious effects on well-being. The current research adds to the growing body of work that suggests social needs can be met with great flexibility and that even seemingly nonsocial behaviors can be used by humans in deeply social and important ways.

Further research will be necessary to address limitations of the current work. For example, this study was conducted within the context of a larger experimental study of PTSD in college students. Though there is no reason to believe that processes observed here would be limited only to college populations, replication of these findings with other samples, including clinical samples, will be an important next step in this line of research. Further, experimental work will be necessary to bolster the findings that were correlational in nature, as such designs will allow for experimental control of potentially confounding variables. Finally, future research should examine the clinical applications of this work. Although the small effect sizes in Study 1 suggest limited clinical significance, the much larger effects found in the experimental Study 2 are more promising. Further work will be necessary to examine the applicability to a clinical setting.

## CONCLUSION

When circumstances seem bleakest, our very social species can benefit from turning to other people, but can also be harmed by the rejection and pain that interactions might bring. Social surrogates offer the promise of social connection without risk, a promise that may be especially appealing to those who have experienced trauma and posttraumatic distress. The current research suggests that, for some individuals, social surrogates can be an effective antidote for those looking to reach out when experiencing difficult feelings. Yet for others, such as those with posttraumatic stress, social surrogates may be another unfortunate reminder of one's isolation.

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