

A multi-study examination of attachment and implicit theories of relationships in ghosting experiences

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Abstract

Ghosting is a dissolution strategy where the initiator ends all communication with the other person, ignoring attempts to reestablish the interaction. We examined the associations between attachment (i.e., anxiety/avoidance) and ghosting, and replicated previous work on implicit theories of relationships (i.e., growth/destiny) and ghosting. Study 1 ($N = 165$) was an exploratory analysis of attachment and ghosting experiences, with those previously ghosted by a romantic partner reporting higher anxiety than those not previously ghosted by a romantic partner. Those who had ghosted a partner reported more avoidance than those who had not previously ghosted a partner. Study 2 ($N = 247$) was a pre-registered replication of Study 1 and replication of ghosting and implicit theories. Study 3 was pre-registered and replicated the findings from Studies 1 and 2 with a substantially larger sample ($N = 863$). Specifically, individuals who had been ghosted or had both ghosted and been ghosted reported significantly higher anxiety than those who had ghosted or had no prior ghosting experience. Individuals who had ghosted or had both ghosted and been ghosted reported significantly higher avoidance than those with no prior ghosting experience. Similarly, individuals who had ghosted or

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had both ghosted and been ghosted reported significantly higher destiny beliefs than those who had been ghosted or had no prior experience with ghosting. Finally, a meta-analysis across the three studies examined the strength of the associations between ghosting experiences and attachment. Taken together, these studies consistently demonstrate an association between attachment anxiety and being ghosted, as well as destiny beliefs and ghosting a romantic partner.

Keywords

Attachment, ghosting, implicit theories, relationship termination, romantic relationships

Ghosting is often perceived as an unacceptable relationship termination strategy, but a large proportion of individuals have experienced ghosting in a romantic context (Freedman et al., 2019; Koessler et al., 2019b; LeFebvre et al., 2019; Timmermans et al., 2020). Yet less is known about individual differences in ghosting experiences. Attachment orientation is an important individual difference associated with romantic relationship quality (Mikulincer & Shaver, 2007; Simpson, 1990) and reactions to relationship dissolution (Halpern-Meekin et al., 2012; Madey & Jilek, 2012) but has yet to be explored in the context of ghosting. Another individual difference associated with ghosting is implicit theories of relationships (i.e., destiny and growth beliefs; Freedman et al., 2019). The present studies attempt to extend our understanding of individual differences in ghosting by examining attachment, and replicate prior results linking implicit theories of relationships and ghosting experiences.

Attachment and romantic relationships

Attachment theory is arguably the most common perspective in the study of romantic relationships (Mikulincer & Shaver, 2007), with attachment process central to thoughts, emotions, and behaviors experienced in relationships (Collins & Allard, 2001). Individual differences in attachment are typically understood as separate continuous dimensions of anxiety and avoidance (Crowell et al., 2016), or model of self and other (Bartholomew & Horowitz, 1991), with anxiety reflecting negative self-views in relationships and avoidance characterized by negative views of others. Attachment theory has been applied across many facets of relationship experiences (Cassidy & Shaver, 2008) including romantic relationship stability and experiences during and after romantic termination. Specifically, individuals with secure attachments (i.e., low anxiety and avoidance) tend to have higher quality relationships (Mikulincer & Shaver, 2007; Simpson, 1990) and are more likely to remain in their romantic relationships compared to those with insecure attachments (Feeney & Noller, 1992; Le et al., 2010; Mikulincer & Shaver, 2007).

Attachment is also associated with the relationship termination strategy that individuals choose. For example, individuals with higher avoidance and higher anxiety perceive using technology to terminate relationships as more acceptable (Weisskirch & Delevi, 2012). Similarly, individuals with higher avoidance are also more likely to use

indirect termination strategies (e.g., avoidance/withdrawal, distant/mediated communication; Collins & Gillath, 2012). Those with higher anxiety, though, are more likely to be broken up with via technology (Weisskrich & Delevi, 2012) and engage in termination strategies that facilitate churning (i.e., breaking up and getting back together; Collins & Gillath, 2012; Davis et al., 2003).

Ghosting

There are multiple strategies couples can take to dissolve their relationships (Baxter, 1982; Collins & Gillath, 2012; Sprecher et al., 2010). Ghosting is a relationship dissolution strategy that is a modern-day manifestation of avoidance/withdrawal. Ghosting has been defined as unilaterally dissolving a relationship by cutting off communication (Freedman et al., 2019; Koessler et al., 2019b; LeFebvre, 2017). Although avoidance/withdrawal has been recognized as a dissolution strategy for some time (Baxter, 1982), ghosting often occurs via the ceasing of technology-mediated communication (e.g., not texting, unfriending, blocking on social media; LeFebvre, 2017).

Testimonials have revealed that ghosting has occurred at all points in relationships: after years of being together, while getting to know someone, or even after first connecting (Engle, 2019). Ghosting seems to be particularly common, though, on dating apps (De Wiele & Campbell, 2019; Timmermans et al., 2020) and among emerging adults. For example, two-thirds of college students report having been an initiator of ghosting (i.e., ghoster) and three-quarters had been the recipient (i.e., ghostee) within romantic relationships (Koessler et al., 2019b). On the other hand, samples with broader age ranges report lower percentages; approximately one-fifth of participants had been a ghoster within romantic relationships and one-quarter had been a ghostee (Freedman et al., 2019). However, because ghosting tends to be viewed negatively, these reports may underestimate actual rates (LeFebvre, 2017).

Individuals perceive a variety of motives for ghosting (Koessler et al., 2019a, 2019b; LeFebvre et al., 2019, 2020; Manning et al., 2019; Timmermans et al., 2020). Ghosting may be a favorable dissolution strategy for some: ghosters experience less distress than individuals who engage in more direct dissolution strategies (Koessler et al., 2019a). However, ghostees experience similar amounts of distress as their counterparts who were broken up with more directly (Koessler et al., 2019a). Furthermore, in response to ghosting, ghostees experience uncertainty and have acknowledged both effective and ineffective responses to being ghosted (LeFebvre & Fan, 2020; Timmermans et al., 2020). Continual experiences of ghosting can also be problematic. Recurrent ghostees in a single year who have also been breadcrumbing (i.e., a prospective romantic partner engaged in intermittent conversations to keep them interested but with no intention of progressing the relationship) report less life satisfaction and more helplessness and loneliness than those who were not also breadcrumbing (Navarro et al., 2020).

Implicit theories of relationships are associated with the likelihood of relationship dissolution (Le et al., 2010), as well as individuals' perceptions of the acceptability of ghosting, intentions to engage in ghosting, and prior usage of ghosting to dissolve relationships (Freedman et al., 2019). Specifically, stronger destiny beliefs

(i.e., relationships either work or they do not, similar to a soulmate; Franiuk et al., 2002; Knee, 1998) are associated with an increased likelihood of breaking up (Le et al., 2010) and an increased perception of acceptability of ghosting, regardless of relationship length (Freedman et al., 2019). On the other hand, stronger growth beliefs (i.e., relationships develop over time and improve by overcoming conflict; Franiuk et al., 2002; Knee, 1998) are associated with reduced perceptions of ghosting's acceptability, especially in long-term relationships (Freedman et al., 2019). However, whereas destiny is associated with ghosting intentions regardless of relationship length, growth is inconsistently associated with intentions (Freedman et al., 2019). Furthermore, destiny is associated with previous ghosting experience, especially as a ghoster (Freedman et al., 2019).

The present studies

In the present research we examine the associations between attachment and ghosting in romantic relationships and aim to replicate the results linking implicit theories of relationships and romantic ghosting (Freedman et al., 2019). There are many individual differences that could be examined, but we chose attachment orientation, given its integral link to relationship stability and association with dissolution strategies. Furthermore, some results from Freedman et al. (2019) on the association between implicit theories of relationships and ghosting were inconsistent across the two studies (e.g., associations with growth mindsets), and it is important to further probe those findings in a new set of studies. Study 1 is an exploratory study examining associations between attachment and ghosting experiences. In Study 2, a pre-registered set of analyses test whether the findings from Freedman et al. (2019) replicate and again explore ghosting and attachment. Study 3 is a pre-registered study with a significantly larger sample to permit more nuanced analyses of individual differences in attachment and implicit theories of relationships based on ghosting experiences. Finally, we conduct an internal meta-analysis on the associations between ghosting experiences and attachment.

Study 1

As described above, individuals with higher avoidance are more likely to engage in indirect relationship dissolution strategies (Collins & Gillath, 2012), and ghosting is an extreme version of the indirect dissolution strategy of withdrawal/avoidance (Baxter, 1982). Additionally, those higher in anxiety are more likely to be broken up with through the use of technology (Weisskrich & Delevi, 2012), and ghosting is thought to be prevalent because of the reliance on technology in relationship processes (LeFebvre, 2017). Therefore, Study 1 was designed to explore whether attachment anxiety and avoidance are associated with participants' prior experience with ghosting in romantic relationships.¹ It was expected that both attachment anxiety and avoidance would be associated with participants' prior experience with ghosting but no directional a priori hypotheses were posited.

Table 1. Study 1 participants' endorsement of what it means to ghost.

What it means to ghost someone	Percentage
Not responding to texts	98.2%
Not responding to phone calls	96.4%
Not contacting via texts	81.2%
Avoiding talking face-to-face	79.4%
Not contacting via phone calls	78.8%
Blocking the person on social media	76.4%
Unfriending or unfollowing the person on social media	75.2%
Failing to acknowledge person in public	70.3%
Cutting of contact with mutual friends	67.3%
Gossiping about them	9.7%
Bullying	6.7%

Method

Participants

A convenience sample of participants was recruited from a Psychology Department subject pool at the third author's institution using SONA systems. A total of 188 participants began the study and the following exclusion criteria were set after collecting the data but before analysis: participants were excluded if they initiated the online survey but did not complete it ($n = 4$), or took less than 3 minutes ($n = 15$) or more than an hour ($n = 4$) to complete it. The resulting analytic sample consisted of 165 participants (53.3% men, 46.7% women; $M_{age} = 19.34$, $SD = 1.20$; 60.6% first year students, 24.2% sophomores, 9.7% juniors, 5.5% seniors; 3.0% African American, 17.6% Asian American/Asian, 67.3% Caucasian/White, 7.9% Hispanic, 4.2% Other).

Measures

Data are from a larger study, only those measures used in the present analyses are described. All materials and corresponding data are on Open Science Framework (OSF; link).

Ghosting. Participants began by indicating whether they had heard of ghosting (Yes/No). If they selected, "No," then they were presented with the description of ghosting from the popular press: "Ghosting is 'ending a romantic relationship by cutting off all contact and ignoring the former partner's attempts to reach out' (Safronova, 2015)." This popular press description was used due to the timing of the study's conceptualization (i.e., prior to the Koessler et al., 2019b pre-print with a posited definition) and for ease of understanding among the participants. All participants then selected as many behaviors as they believed ghosting consisted of (see Table 1). Next, participants indicated how long ghosting typically lasts: permanently, temporarily, or depends on the situation. Finally, participants checked whether they had been ghosted by a romantic partner or ghosted a romantic partner.

Table 2. Participants' experiences with ghosting across the studies.

Ghosting Experiences	Study 1 (N = 165)		Study 2 (N = 247)		Study 3 (N = 863)	
	n	%	n	%	n	%
Ghosted by a partner	47	28.5%	116	47.0%	322	37.3%
Ghosted a partner	63	38.2%	96	38.9%	225	26.1%

Attachment. Participants completed the 36-item Experiences in Close Relationships Scale (Brennan et al., 1998) for how they generally feel in romantic relationships on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Average scores were calculated for anxiety ($\alpha = .91$) and avoidance ($\alpha = .94$).

Demographics. Participants provided demographic information, answering questions about their age, gender, year in college, and race/ethnicity.

Procedure

The study was approved by the third author's Institutional Review Board. After reviewing the study's information on SONA, participants completed measures assessing their experiences with ghosting, attachment, and demographics, and then received course credit. On average, it took 7.65 minutes ($SD = 6.38$) to complete the online study.

Results

Perceptions of ghosting and experiences

Most of participants (84.2%) had heard of ghosting and agreed on the meaning of ghosting (Table 1).² Additionally, a majority of participants indicated that how long ghosting lasts depends on the situation (96.4%), rather than perceiving it as always permanent (2.4%) or always temporary (1.2%). Participants reported more experience as a ghoster than as a ghostee (Table 2). Few participants (17.0%) had experience as both a ghostee and a ghoster, whereas 50.3% had no prior ghosting experience within romantic relationships.

Attachment and ghosting

Independent samples *t*-tests³ were conducted to compare attachment anxiety and avoidance of those who had been a ghostee to those who had not, as well as of those who had been a ghoster to those who had not (see Table 3). Ghostees reported more anxiety than those who had not previously been ghosted (see Figure 1), and ghosters reported more avoidance than those who had not previously ghosted (see Figure 2). There was a medium effect size for both significant results. No other comparisons were significant.

Table 3. Differences in attachment and implicit theories of relationships based on ghosting experience.

	Ghostee, M (SD)	Non-Ghostee, M (SD)	t	g	95% CI	Ghoster, M (SD)	Non-Ghoster, M (SD)	t	g	95% CI
Study 1										
Anxiety	4.00 (1.01)	3.52 (1.00)	2.78**	.48	.14, .83	3.56 (0.97)	3.72 (1.06)	-0.99	.16	-.49, .16
Avoidance	3.11 (0.97)	3.21 (1.13)	-0.55	.09	-.47, .27	3.47 (1.04)	3.00 (1.08)	2.73**	.44	.13, .80
Study 2										
Anxiety	4.44 (1.09)	3.82 (1.28)	4.09***	.52	.32, .92	4.19 (1.16)	4.06 (1.28)	0.81	.11	-.19, .45
Avoidance	2.77 (1.04)	2.69 (1.16)	0.55	.07	-.20, .36	2.88 (1.03)	2.64 (1.14)	1.71	.22	-.04, .53
Growth	5.24 (0.64)	5.33 (0.81)	-0.96	.12	-.27, .09	5.24 (0.61)	5.32 (.80)	-0.83	.11	-.27, .11
Destiny	3.68 (1.01)	3.69 (1.21)	-0.05	.01	-.29, .27	3.87 (1.08)	3.57 (1.12)	2.13*	.28	.02, .59

Note. *t*-tests were conducted to compare the attachment or implicit theories of relationships of those who had been a ghostee to those who had not, as well as of those who had been a ghoster to those who had not. The *df* for each *t*-test in Study 1 was 163, the *df* for each in Study 2 was 245. Effect size was calculated using Hedges' *g* given the unequal subsample sizes. **p* < .05, ***p* < .01, ****p* < .001.

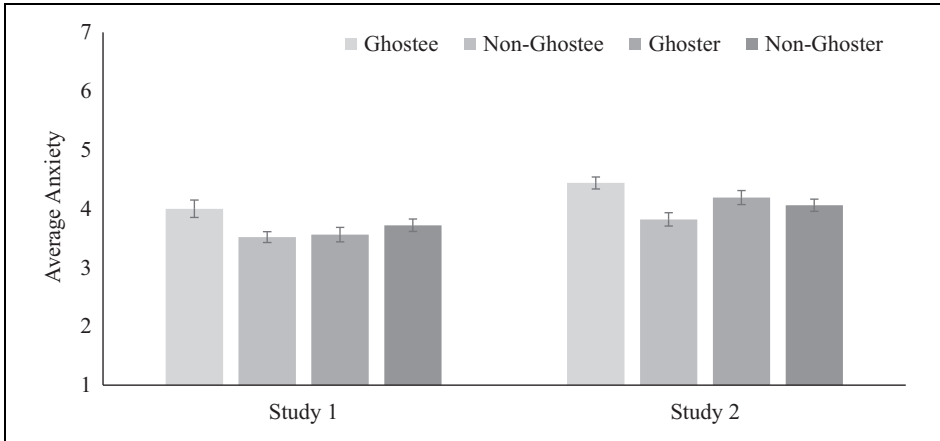


Figure 1. Comparisons of attachment anxiety based on ghosting experience. *Note.* Participants are represented twice for each study (i.e., whether or not they were a ghostee *and* whether or not they were a ghoster). Higher scores indicate more attachment anxiety. Error bars denote standard error.

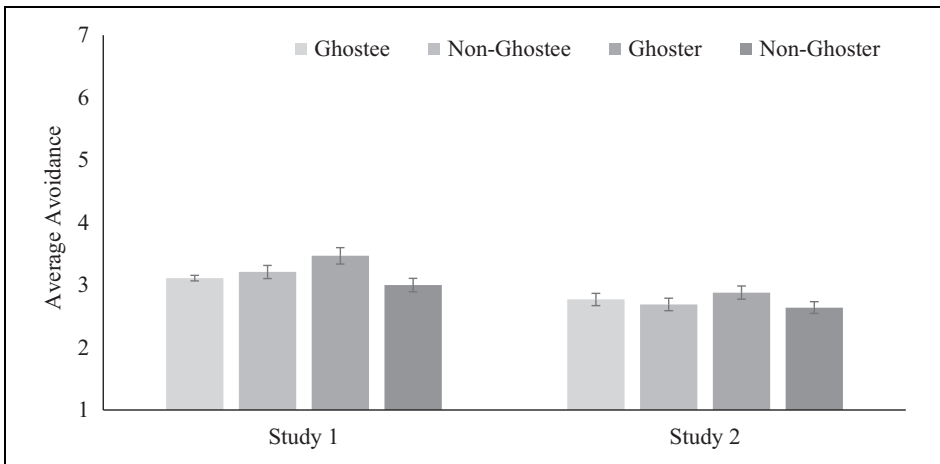


Figure 2. Comparisons of attachment avoidance based on ghosting experience. *Note.* Participants are represented twice for each study (i.e., whether or not they were a ghostee *and* whether or not they were a ghoster). Higher scores indicate more attachment avoidance. Error bars denote standard error.

Discussion

These analyses replicated prior work showing that a majority of college students are familiar with the term “ghosting,” they tend to agree about what ghosting entails, and have had direct experiences with ghosting. This sample’s reported rates of ghosting experience within romantic relationships are higher than those reported by Freedman

et al. (2019), but lower than the rates reported by LeFebvre et al. (2019) in their sampling of college students purposely selected because of their awareness of the term and by Koessler et al. (2019b) in their sample of MTurk workers, in which participants were aware that ghosting was the focus of their survey. Moreover, differences in attachment were found for ghosting experiences with romantic partners. Specifically, those who had been ghosted reported higher anxiety, whereas those who had ghosted reported higher avoidance. However, one limitation is that participants who indicated that they had heard of ghosting were not given a definition of ghosting. Given the agreement among participants as to what it means to ghost someone, it seems that participants were responding to the questions with similar conceptualizations of the construct. A second limitation is that the sample was restricted to a subject pool of college students at a single Midwestern university, and the results may not be generalizable to a broader sample of adults.

Study 2

As a part of a larger project on ghosting in romantic relationships, the analyses reported in Study 2 are an attempt to replicate the associations between individuals' ghosting experience and attachment from Study 1 and replicate past research on ghosting (i.e., Freedman et al., 2019). Study 2 tested the following pre-registered hypotheses: (1) Individuals higher in destiny beliefs will be more likely to report having ghosted before compared to those lower in destiny beliefs, (2) Individuals higher in growth beliefs will be less likely to report having ghosted before compared to those lower in growth beliefs. In addition, we explored whether ghosting role (i.e., ghoster, ghostee) was associated with attachment anxiety and avoidance in a broader sample of adults.

Method

Participants

The target sample size was 280 participants, based on a power analysis conducted in G*Power for the larger project. Participants between the ages of 18 and 100, residing in the United States, and with an approval rating of 85 or above were recruited from Prolific. Of the participants who began the study ($N = 273$), participants were excluded from analyses if they failed the attention check question ($n = 11$) or did not answer it ($n = 12$), or indicated that we should not use their data ($n = 3$). Therefore, the analytic sample consists of 247 participants ($M_{\text{age}} = 33.17$ years, $SD = 11.14$; 49.4% men, 49% women, 1.6% nonbinary; 47.4% heterosexual, 23.9% gay, 23.9% lesbian, 2.8% bisexual, 1.6% nonbinary and attracted to women, 0.4% asexual; 40.3% single, 7.0% casually dating, 16.1% seriously dating, 5.5% engaged, 28.2% married or long-term committed relationship, 2.9% chose not to answer; 6.9% African American/Black, 7.3% Asian American/Asian, 73.7% Caucasian/White, 5.3% Hispanic/Latino, 0.4% Native American, 4.9% Multiple races/ethnicities, 1.2% Other, 0.4% chose not to answer).

Materials

Data are from a larger study, only those measures used in these analyses are described.

Attachment. Participants completed the 12-item Experiences in Close Relationships—short form (Wei et al., 2007) based on how they generally feel in romantic relationships. Questions within the measure were presented in a randomized order and answered on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Average scores were calculated for anxiety ($\alpha = .80$) and avoidance ($\alpha = .83$).

Implicit theories of relationships. Participants completed the 22-item Implicit Theories of Relationships Scale (Knee, 1998) on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Questions were presented in a randomized order. Average scores were calculated for destiny ($\alpha = .91$) and growth ($\alpha = .81$) beliefs.

Demographics and ghosting experience. Participants provided information about their country of residence, age, gender, race/ethnicity, and relationship status. Additionally, they checked all that applied regarding their ghosting experience: I have ghosted a romantic partner/someone I was interested in romantically, I have been ghosted by a romantic partner/someone I was interested in romantically, and I have never ghosted nor been ghosted in a romantic context. Separate variables were then calculated to indicate whether the participant had previously been ghosted by a partner (Yes/No) or ghosted a partner (Yes/No).

Procedure

The project was approved by the second author's Institutional Review Board. The hypotheses, methodology, target sample size, and power analysis were pre-registered at OSF, and the data associated with these analyses are also shared on OSF (link). Adult participants, residing in the United States were recruited from Prolific. One attention check occurred in the demographic section.⁴ Additionally, at the end of the project, participants were asked whether their data should be used⁵ and asked to select Yes or No. Participants were compensated with \$2.17 and, on average, it took 9.68 minutes ($SD = 5.03$) to complete the survey. Participants who failed the attention check, indicated we should not use their data, or did not answer one of those two questions were removed from analyses.

Results

Experience with ghosting

Contrary to Study 1, but replicating Freedman et al. (2019), participants were more likely to report experience as a ghostee than as a ghoster (see Table 2). Additionally, 25.1% had been both a ghostee and ghoster; 39.3% had no prior experience with ghosting in romantic relationships.

Attachment

Independent samples *t*-tests compared anxiety and avoidance of those who had been a ghostee to those who had not, as well as of those who had been a ghoster to those who

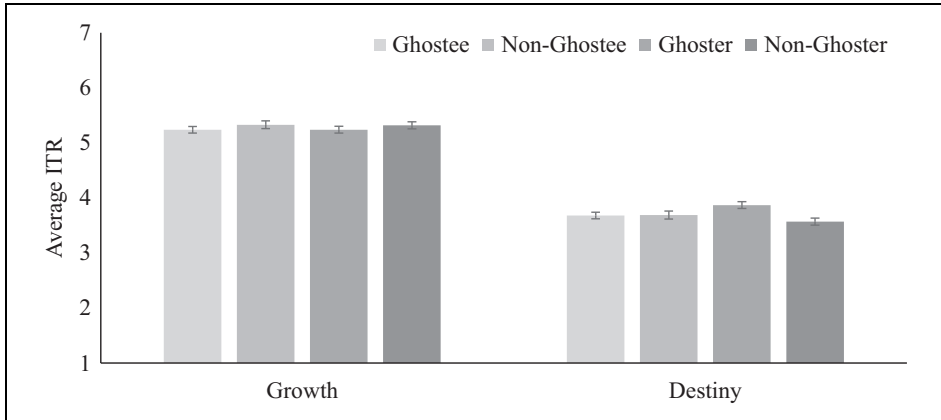


Figure 3. Study 2's comparisons of growth and destiny beliefs based on ghosting experience. *Note.* Participants are represented twice for each variable (i.e., whether or not they were a ghostee and whether or not they were a ghoster). ITR = Implicit theories of relationships. Higher scores indicate stronger growth and destiny beliefs. Error bars denote standard error.

had not (see Table 3). Several findings were consistent with Study 1: ghostees reported significantly more anxiety than those who had not been ghosted (see Figure 1) with a medium effect size, there was no significant difference in avoidance between ghostees and those who had not been ghosted (see Figure 2), and there was no significant difference in anxiety between ghosters and those who had not ghosted (see Figure 1). Unlike Study 1, there was no significant difference in avoidance between ghosters and those who had not ghosted (see Figure 2).

Implicit theories of relationships

Independent samples *t*-tests compared the implicit theories of those who had been a ghostee to those who had not, as well as of those who had been a ghoster to those who had not (see Table 3). As predicted and replicating Freedman et al. (2019), ghosters had higher destiny beliefs than those who had not ghosted (see Figure 3) with a small effect size. Contrary to predictions but consistent with Freedman et al. (2019), there was not a significant difference in participants' growth beliefs between ghosters and those who had not ghosted (see Figure 3). Exploratory analyses were also consistent with Freedman et al. (2019): there was no significant difference in participants' growth beliefs between ghostees and those who had not been ghosted (see Figure 3), and there was no significant difference in participants' destiny beliefs between ghostees and those who had not been ghosted (see Figure 3).

Discussion

Study 2 replicated the findings from Study 1 that ghostees reported higher levels of attachment anxiety than those who had not previously been ghosted. However, Study 2

did not replicate the findings from Study 1 that ghosters report higher levels of attachment avoidance than those who had not previously ghosted. Ghosters also reported higher destiny beliefs, which replicated prior work on implicit theories of relationships (Freedman et al., 2019). However, there was no difference in growth beliefs, contradicting a finding in Freedman et al. (2019). Taken together, Study 2 adds further evidence to the idea that attachment anxiety and destiny beliefs may be associated with ghosting experiences, but provides inconsistent results regarding attachment avoidance, growth beliefs, and ghosting.

Prior research has predominately sampled heterosexual participants, so Study 2 purposely sought to sample a similar proportion of lesbian and gay participants. However, Studies 1 and 2 both had relatively small samples and not all participants were provided a definition for ghosting. Further, not all variables were normally distributed, but *t*-tests are robust to violations of normality and nonparametric Mann-Whitney tests verified our pattern of results. It is important to note, though, that some of the participants who indicated they had been ghosted had also ghosted someone else (and vice versa). Thus, in Study 3, we recruited a larger sample, provided participants with a definition of ghosting, and examined four distinct ghosting experiences.

Study 3

As a part of a larger project, Study 3 was designed to replicate the associations between ghosting experience, attachment, and implicit theories of relationships but with a significantly larger sample, and hypotheses about both attachment and implicit theories of relationship were pre-registered. With a larger sample, we had the power to conduct more fine-grained analyses and compared those who had *only* been ghosted by a romantic partner (i.e., ghostee), those who *only* had ghosted a romantic partner (i.e., ghoster), those who had both been ghosted by and ghosted a romantic partner (i.e., both), and those who had neither been ghosted by nor ghosted a romantic partner (i.e., neither). The present study tested the following pre-registered hypotheses: (1) Ghosters will have higher avoidance attachment than those who have neither ghosted nor been ghosted⁶; (2) Ghostees will have higher anxious attachment than those who have neither ghosted nor been ghosted; and (3) Ghosters and Ghostees will have higher destiny scores than those who have neither ghosted nor been ghosted.

Method

Participants

The desired sample size was 945 participants, based on a power analysis conducted in G*Power for the larger project. Participants between the ages of 18 and 100, residing in the United States, with an approval rating of 85 or above were recruited from Prolific. Participants were excluded from the analyses based on the following pre-registered exclusion criteria: failing ($n = 41$) or skipping ($n = 39$) the first attention check, failing ($n = 32$) or skipping ($n = 49$) the second attention check, or indicating that we should not use their data ($n = 13$) or not responding to that question ($n = 39$). The analytic

sample consisted of 863 participants ($M_{\text{age}} = 33.35$, $SD = 11.63$; 50.9% men, 47.5% women, 1.3% who identified as another gender, 0.3% who did not report gender; 74.6% heterosexual, 11.5% bisexual, 5.9% gay, 5.0% lesbian, 1.9% asexual, 1.0% other; 42.1% single, 6.6% casually dating, 15.3% seriously dating, 2.5% engaged, 33.4% married or long-term committed relationship, 0.1% chose not to answer; 7.8% African American, 8.4% Asian American/Asian, 68.4% Caucasian, 6.2% Hispanic/Latino, 0.4% Native American, 6.4% Multiracial, 2.3% other responses).

Materials

Data are from a larger study, only those measures used in these analyses are described.

Ghosting experiences. Participants began by indicating whether they had heard of ghosting, “as a method for ending a romantic relationship.” Regardless of their response, a broad description of ghosting was then shown to participants: “For the purposes of this survey, ghosting is defined as the following: ‘When one ends a romantic relationship or friendship by cutting off all contact (including social media) and ignoring attempts to reach out.’” Next, participations were asked to indicate whether they (a) have been ghosted but have not ghosted a romantic partner, (b) have ghosted a romantic partner but have not been ghosted, (c) have ghosted a romantic partner AND been ghosted, or (d) have never ghosted a romantic partner or been ghosted.

Attachment. Participants completed the same attachment measure (Wei et al., 2007) as Study 2, with the questions randomized, and average scores were calculated for anxiety ($\alpha = .82$) and avoidance ($\alpha = .76$).

Implicit theories of relationships. Participants completed the same implicit theories of relationships measure (Knee, 1998) as Study 2, with the questions randomized, and average scores were calculated for destiny ($\alpha = .92$) and growth ($\alpha = .83$) beliefs.

Demographics. Participants provided information about their age, gender, race/ethnicity, sexual orientation, relationship status, education level, country of residence, and political orientation.

Procedure

The study was approved by the first author’s Institutional Review Board and they provided a waiver of consent. The project’s hypotheses, methodology, target sample size, and power analysis were pre-registered on OSF, where data associated with these analyses are also shared (link). Adult participants, residing in the United States were recruited from Prolific. Two attention check questions were integrated into the survey.⁷ Participants were also asked whether we should use their data, with the same phrasing as used in Study 2. Participants were compensated \$1.19, and, on average, the study took 11 minutes to complete. Participants who failed either of the attention checks, indicated

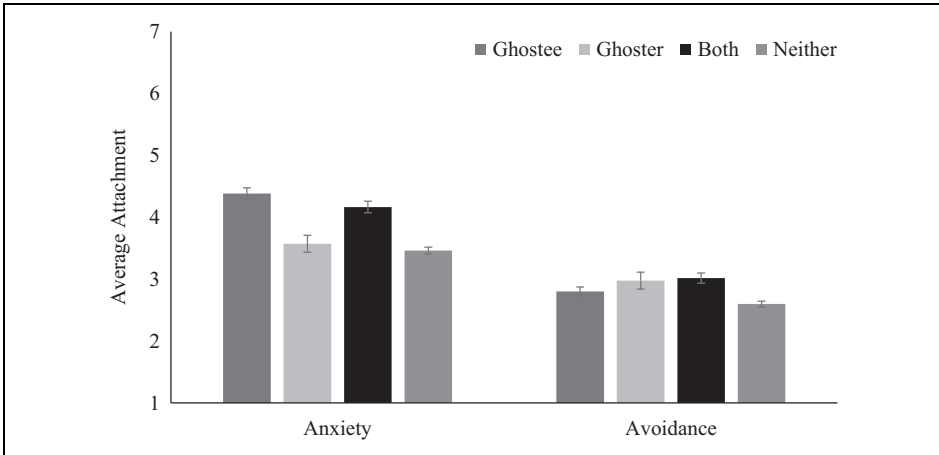


Figure 4. Study 3's comparisons of attachment based on ghosting experience. *Note.* Participants are reflected in one of the four groups (i.e., only ghostee, only ghoster, both, or neither) for each variable. Higher scores indicate more attachment anxiety and avoidance. Error bars denote standard error.

their data should not be used, or did not answer one or more of those three questions were excluded from analyses.

Results

Knowledge of and experience with ghosting

Most of the participants (85.5%) reported that they had heard of ghosting.⁸ Replicating Freedman et al. (2019) and Study 2, participants were more likely to report experience as a ghostee than as a ghoster (see Table 2). Just over half (54.0%) indicated no prior experience with ghosting. For those with prior ghosting experience, 19.8% reported only being a ghostee, 8.6% reported only being a ghoster, and 17.5% reported being both a ghostee and a ghoster.

Attachment

The 4 (ghosting experience: ghostee, ghoster, both, neither) X 2 (attachment: anxiety, avoidance) MANOVA⁹ with Bonferroni-corrected estimated marginal means was significant (Wilk's $\lambda = .88$, $F(6, 1714) = 18.11$, $p < .001$, $\eta_p^2 = .06$); there was a significant difference in anxiety based on ghosting experience and a significant difference in avoidance based on ghosting experience (see Figure 4 and Table 4). As predicted, ghostees reported higher anxiety ($M = 4.39$, $SD = 1.19$) than those with no ghosting experience ($M = 3.46$, $SD = 1.20$). Exploratory analyses revealed that ghostees also reported higher anxiety than ghosters ($M = 3.57$, $SD = 1.18$). Additionally, individuals who had been both a ghostee and ghoster ($M = 4.17$, $SD = 1.16$) reported higher anxiety than ghosters and those with no ghosting experience. There were medium to large effect

Table 4. Study 3's differences in attachment based on ghosting experience.

		<i>F</i>	<i>df</i>	η_p^2	<i>M</i> -diff	<i>g</i>	95% CI
4 (Ghosting Experience) X 2 (Attachment Quality) MANOVA							
<i>Anxiety</i>		31.70***	3, 858	.10			
Ghostee	Ghoster				.81***	.69	.30, 1.26
	Both				.22	.19	-.13, .57
	Neither				.92***	.77	.64, 1.20
Ghoster	Both				-.59**	.51	-1.04, -.15
	Neither				.11	.09	-.29, .50
Both	Neither				.70***	.59	.41, 1.00
<i>Avoidance</i>		8.32***	3, 858	.03			
Ghostee	Ghoster				-.17	.17	-.54, .20
	Both				-.22	.22	-.52, .08
	Neither				.20	.21	-.04, .44
Ghoster	Both				-.04	.04	-.42, .34
	Neither				.38*	.36	.04, .71
Both	Neither				.42***	.41	.17, .67
4 (Ghosting Experience) X 2 (Implicit Theories) MANOVA							
<i>Growth</i>		2.86*	3, 858	.01			
Ghostee	Ghoster				.29*	.39	.02, .56
	Both				.12	.18	-.09, .35
	Neither				.13	.18	-.04, .31
Ghoster	Both				-.16	.22	-.44, .12
	Neither				-.16	.21	-.40, .09
Both	Neither				.00	.00	-.18, .19
<i>Destiny</i>		7.40***	3, 858	.03			
Ghostee	Ghoster				-.31	.28	-.72, .11
	Both				-.17	.15	-.50, .16
	Neither				.20	.17	-.06, .47
Ghoster	Both				.14	.13	-.28, .56
	Neither				.51**	.43	.14, .89
Both	Neither				.37**	.32	.09, .65

Note. A 4 (ghosting experience) X 2 (attachment or implicit theories of relationship) MANOVA was conducted with Bonferroni-corrected marginal mean comparisons. Effect size was calculated using Hedges' *g* given the unequal subsample sizes. * $p < .05$, ** $p < .01$, *** $p < .001$.

sizes for these significant results. As predicted, ghosters reported higher avoidance ($M = 2.98$, $SD = 1.19$) than individuals with no ghosting experience ($M = 2.60$, $SD = 1.02$). Additionally, exploratory analyses revealed that individuals with no ghosting experience reported lower avoidance than those who had been both a ghostee and ghoster ($M = 3.02$, $SD = 1.01$). There was a small to medium effect size for both significant results. There were no other significant differences.

Implicit theories of relationships

The 4 (ghosting experience) X 2 (implicit theories: destiny and growth) MANOVA¹⁰ with Bonferroni-corrected estimated marginal means was significant (Wilk's $\lambda = .97$,

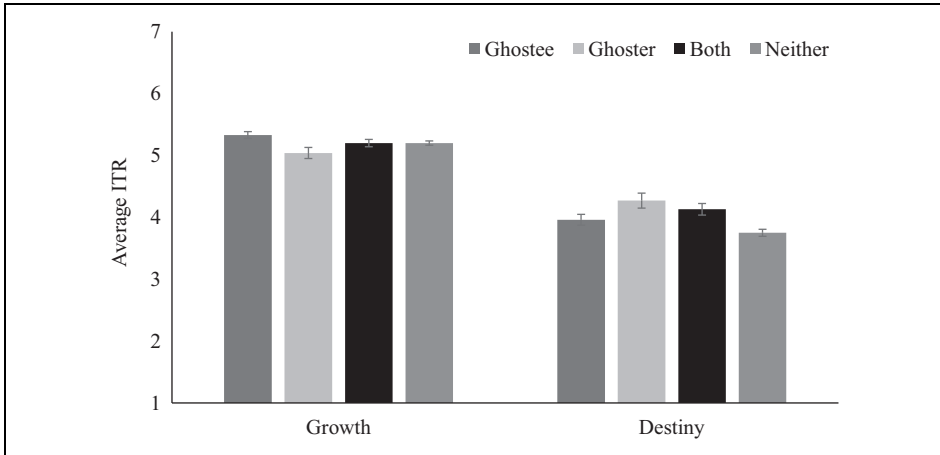


Figure 5. Study 3's comparisons of implicit theories of relationships based on ghosting experience. Note. Participants are reflected in one of the four groups (i.e., only ghostee, only ghoster, both, or neither) for each variable. ITR = Implicit theories of relationships. Higher scores indicate stronger growth and destiny beliefs. Error bars denote standard error.

$F(6, 1714) = 5.08, p < .001, \eta_p^2 = .02$); such that there was a significant difference in destiny beliefs based on ghosting experience and a significant difference in growth beliefs based on ghosting experience (see Figure 5 and Table 4). As predicted, ghosters reported higher destiny beliefs ($M = 4.27, SD = 1.04$) than those with no ghosting experience ($M = 3.75, SD = 1.12$) with a small to medium effect size. Contrary to predictions, there was not a significant difference between the destiny beliefs of ghostees ($M = 3.96, SD = 1.15$) and those with no ghosting experience. Exploratory analyses revealed that individuals who had been both a ghostee and ghoster had higher destiny beliefs ($M = 4.13, SD = 1.15$) than those with no ghosting experience. Additional exploratory analyses on growth beliefs revealed that ghostees ($M = 5.33, SD = .72$) reported higher growth beliefs than ghosters ($M = 5.04, SD = .77$). There was a small to medium effect size for both significant results. There were no other significant differences in growth beliefs (both $M = 5.20, SD = .73$; neither $M = 5.20, SD = .75$).

Discussion

Study 3 replicated the finding that ghostees reported higher levels of anxiety than those with no prior ghosting experience, as well as demonstrated that they report higher anxiety than ghosters. Additionally, avoidance was higher for ghosters than those with no prior ghosting experience, and exploratory analyses indicated that individuals with no prior ghosting experience reported lower avoidance than those who had been both a ghostee and ghoster. The associations between ghosting experience and avoidance lent additional support to the results of Study 1 and emphasizes the value of comparing four groups of ghosting experiences (i.e., ghostees, ghosters, both, neither) to separate those

who have been on both sides of the ghosting experience, rather than comparing those who had been ghosted or not and those who had ghosted or not.

In terms of implicit theories of relationships and elaborating upon Freedman et al. (2019) findings, ghosters and individuals having experienced both roles reported higher destiny beliefs than individuals having no prior ghosting experience. The results related to growth beliefs did not replicate Freedman et al. (2019), but it may be because the present analyses compared four groups (i.e., ghostees, ghosters, both, neither) rather than only comparing those who had been ghosted or not and those who had ghosted or not. Taken together, Studies 1, 2, and 3 indicate that one's ghosting role may be associated with attachment anxiety but less so with avoidance and that destiny beliefs are also associated with engaging in ghosting (i.e., being a ghoster).

Internal meta-analysis

To examine the consistency of associations between anxiety and ghosting and avoidance and ghosting, a meta-analysis was conducted across Studies 1, 2, and 3. Specifically, we conducted a meta-analysis on whether ghosters and ghostees had different levels of anxiety and avoidance across the three studies.

Method

The meta-analysis was conducted using the metafor package in R (Viechtbauer, 2010; Version 1 9-9). We ran two random effects models using standardized mean difference as the effect size to examine differences in anxiety and avoidance based on ghostee and ghoster status.

Results

For anxiety, there was a small but significant difference depending on ghosting role across the three studies ($d = .24$, $SE = .07$, $Z = 3.42$, $p < .001$, 95% $CI [.10, .37]$; see Figure 6), such that ghostees reported higher levels of anxiety than ghosters across the three studies. For avoidance, there was no significant difference in ghosting role across the three studies ($d = -.13$, $SE = .07$, $Z = -1.91$, $p = .0563$, 95% $CI [-.27, .00]$; see Figure 7).

Discussion

The meta-analysis indicated that across the three studies in this paper, ghostees tended to have higher attachment anxiety than ghosters. This result aligns with Weisskrich and Delevi's (2012) findings that individuals higher in anxiety are more likely to have their relationship dissolved through the use of technology. However, the internal meta-analysis did not show a consistent difference in attachment avoidance between ghostees and ghosters. This finding contradicts Collins and Gillath's (2012) finding that individuals higher in avoidance are more likely to use indirect termination strategies like ghosting.

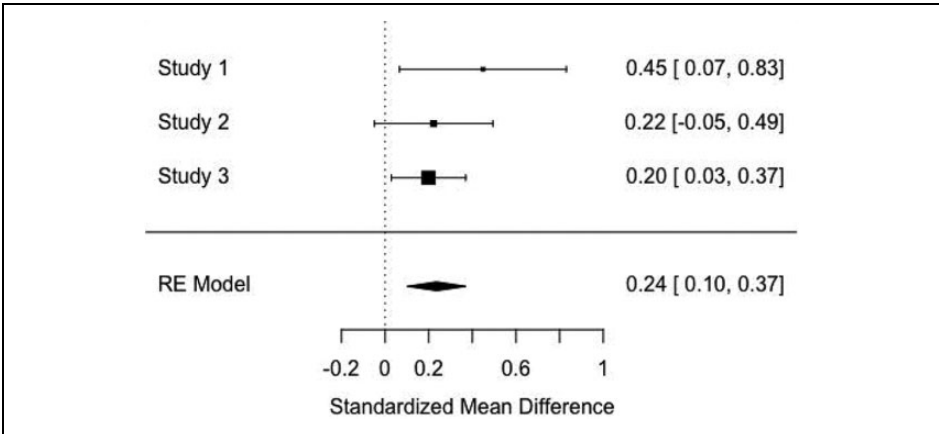


Figure 6. Ghostees have more attachment anxiety than ghosters.

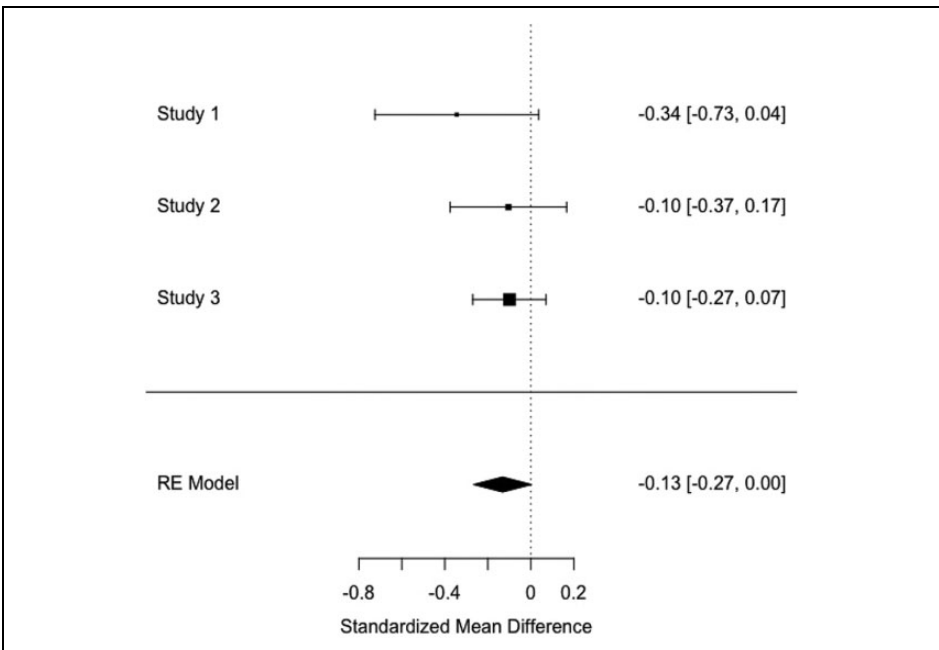


Figure 7. No differences in attachment avoidance between ghostees and ghosters.

General discussion

A growing amount of research has focused on the relationship dissolution strategy of ghosting. Prior research has sought to define ghosting (Koessler et al., 2019b; LeFebvre et al., 2019), explore rates and perceptions of ghosting (Freedman et al., 2019; LeFebvre, 2017), understand motivations for using ghosting (Koessler et al., 2019a, 2019b;

LeFebvre et al., 2019, 2020), describe reactions to ghosting experiences (LeFebvre & Fan, 2020; Manning et al., 2019, Timmermans et al., 2020), and has begun to explore individual differences in ghostees and ghosters (Freedman et al., 2019; Navarro et al., 2020). This set of studies had two purposes: (1) to broaden the research on individual differences in ghosting by examining the association between ghosting experiences and attachment, and (2) to replicate prior research on individual differences that had demonstrated an association between ghosting experiences and implicit theories of relationships. A multi-study, open-science approach was taken to ensure transparency in the methodologies and replicability in the results.

In Studies 1 and 2, ghostees reported more anxiety than individuals who had not previously been ghosted. In Study 3, we compared individuals who had only been ghosted to those who had only ghosted, those who had both previously been ghosted and ghosted, and those who had no prior experience with ghosting. Analyses demonstrated that individuals who had only ever been ghosted by a romantic partner reported more anxiety than those who had only ever ghosted and those with no prior experience with ghosting. Additionally, individuals who had both previously been ghosted by and previously ghosted a romantic partner reported more anxiety than those who had only ever ghosted and those with no prior experience with ghosting. These results extend research demonstrating that individuals higher in anxiety are more likely to have their relationships terminated using technology (Weisskrich & Delevi, 2012), and compliment unpublished data on ghosting and attachment (Koessler, 2018).

Extrapolating from Collins and Gillath's (2012) research, it was expected that individuals who had previously ghosted would report more avoidance than those who had not. Study 1 did demonstrate this association, but it was not replicated in Study 2. Study 3's analyses, though, revealed that individuals with no prior experience with ghosting reported significantly less avoidance than those who had only ever ghosted and those who had both previously been ghosted by and ghosted a romantic partner. However, the meta-analysis did not demonstrate a consistent pattern of results related to attachment avoidance.

The cross-sectional nature of these studies does not permit postulating as to whether the experience of ghosting changes attachment or whether individuals' attachment contributes to the strategy taken by their former romantic partner to break up with them. However, prior research suggests that both could be true. For example, being broken up with can alter attachment (Ruvolo et al., 2001), and given the unilateral nature of ghosting (Koessler et al., 2019b; LeFebvre et al., 2019) as well as the distress and uncertainty that tends to follow (Koessler et al., 2019a; LeFebvre & Fan, 2020; Timmermans et al., 2020), it is plausible that being ghosted could alter individuals' attachment. On the other hand, the use of ghosting has been tied to the increased use of technology in relationships (Koessler et al., 2019b; LeFebvre, 2017), and individuals with more anxiety are more likely to be broken up with through technology (Weisskrich & Delevi, 2012).

Freedman et al. (2019) reported that individuals with higher destiny beliefs were also more likely to perceive ghosting to be acceptable, intend to engage in ghosting, and more likely to have ghosted before. Study 2 replicated this association and Study 3 provided a more nuanced understanding of the association. Analyses revealed that individuals with

no prior experience with ghosting reported significantly lower destiny beliefs than those who had only ever ghosted and those who had both previously been ghosted by and previously ghosted a romantic partner.

Limitations and future directions

Although this series of studies demonstrated a clear path from exploratory research to pre-registered research, there are a few limitations that must be acknowledged. First, not all studies defined ghosting to all participants. Therefore, some studies relied on participants' personal definitions of ghosting, rather than providing an objective definition to all. Additionally, the studies did not ask about participants' prior relationship history. As such, it is possible that some participants may have never been in a romantic relationship and/or had a romantic relationship end. However, most individuals have had a romantic relationship by the time they are in their mid-20s (Boisvert & Poulin, 2016; Rauer et al., 2013; Watkins & Beckmeyer, 2020), and most individuals have experienced a romantic relationship dissolution (Eastwick et al., 2008). Furthermore, the studies did not ask about the recency (i.e., how long ago the experience occurred) or cumulative number of participants' ghosting experiences (i.e., how many ghosting experiences individuals have had). Additionally, we recognize that these findings may not generalize to individuals outside of the United States. Lastly, like all of the research conducted to date on ghosting experiences, these studies are cross-sectional. As such, we can only acknowledge associations and differences between individuals based on their ghosting experience(s); we are unable to assert whether attachment or implicit theories of relationship contributed to the likelihood of ghosting/being ghosted, or the reverse—if their ghosting experience altered their attachment or implicit theories of relationships.

We recommend that future scholars examining ghosting experiences provide a definition to all participants in their studies and account for possible variability in participants' relationship histories in general and as it pertains to ghosting. Additionally, we encourage scholars to conduct longitudinal studies or experiments that manipulate attachment and implicit theories of relationships to provide insight into the directionality of the associations, to consider moderators (e.g., participant gender), and to recruit for broader diversity within their sample—with regard to race, education, sexuality, and nationality.

Conclusion

This work contributes to a growing body of research on individual differences in ghosting experiences. Through three studies and an internal meta-analysis, we demonstrated that individuals who have been ghosted by a romantic partner (i.e., ghostees) are more likely to have higher attachment anxiety than those who have not been ghosted. Furthermore, ghosting experience was not consistently associated with attachment avoidance. Additionally, we replicated Freedman et al. (2019), demonstrating that individuals who have ghosted a romantic partner (i.e., ghosters) are more likely to have higher destiny beliefs than those who have not ghosted a romantic partner.


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Open research statement

As part of IARR's encouragement of open research practices, the authors have provided the following information: Study 1 was not pre-registered, Study 2 was pre-registered, Study 3 was pre-registered, and the internal meta-analysis was not pre-registered. The aspects of Study 2 and Study 3 that were pre-registered were hypotheses, target sample size, exclusion criteria, power analysis, and methodology. The registrations were submitted to OSF. The data used in the research are available. The data from Study 1 can be obtained at https://osf.io/6dg2r/?view_only=ac8f02f3c70d478686ffdb4c15773acb, Study 2 at https://osf.io/3g8v6/?view_only=40f72934409e4705b1133cdb59adb258, and Study 3 at https://osf.io/tscd8/?view_only=a5c40c21b1784a2aa30bedd80aa180b8, or by emailing dpowell@roanoke.edu. The materials used in the research are also available. The materials can be obtained at the same links or by emailing: dpowell@roanoke.edu.

Notes

1. Study 1 also explored whether attachment anxiety and avoidance are associated with participants' prior experience with ghosting (i.e., ghostee and ghoster) in friendships. The rationale, data, and results can be found on OSF (link).
2. Chi-squared analyses were conducted to examine differences in participants' perceptions of what ghosting means based on whether they had previously heard of ghosting or not. Most of the analyses were not significant. However, although a majority endorsed that ghosting included no phone calls, no texting, unfriending/unfollowing, and blocking on social media, participants who had not heard of ghosting were more likely to endorse those behaviors than those who had heard of ghosting (χ^2 's > 4.35, p 's ranging from .004 to .037).
3. No statistical assumptions of t -tests were violated.
4. Attention check wording: "In order to facilitate our research we are interested in knowing certain factors about you. Specifically, we are interested in whether you actually take the time to read the directions; if you do not read the instructions and then you answer questions, we will have trouble interpreting the data. So, in order to demonstrate that you have read the instructions, please click on 'I have read the instructions' at the bottom of the list of states in order to proceed. Do not click on the state you are from." and states were listed in alphabetical order within a dropdown box and the expected answer was at the bottom of the list.
5. Phrasing: "*It is very important that we have high-quality data, and the accuracy of responses will directly impact our research findings, so if you feel that we should not use your data for any reason, click 'no' below, and we will remove your responses from the study with no*

penalty to you - you'll still be paid! It's just important that we have truthful and accurate responses here. Thank you for your time. Should we use your data from this study?"

6. Hypothesis 1 sought to replicate Collins and Gillath (2012) since Studies 1 and 2 demonstrated contradictory results.
7. The first attention check was embedded in a set of questions and asked participants to move a drag bar to 90%. The second attention check occurred in the demographic section and was phrased the same way as in Study 2.
8. All participants, regardless of their prior knowledge of ghosting, were retained for analyses because they were presented with a definition of ghosting prior to asking about their experience with ghosting.
9. Kolmogorov-Smirnov tests revealed non-normality in the distributions of avoidance for the four subgroups, and in the distribution of anxiety for those who had neither ghosted nor been ghosted. Levene's test revealed heterogeneity of variances for avoidance. Box's test was not significant. Nonparametric Kruskal-Wallis tests verified the pattern of results reported in the text.
10. Kolmogorov-Smirnov tests revealed non-normality in the distributions of growth for the subgroups except only ghostee, and in the distribution of destiny for the only ghostee subgroup. Levene's test revealed homogeneity of variances and Box's test were not significant. Additionally, nonparametric Kruskal-Wallis tests verified the pattern of results reported in the text.

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