






The phantom pain of ghosting: Multi-Day experiments comparing the reactions to ghosting and rejection[☆]

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ABSTRACT

Research on how individuals respond to ghosting, defined as unilaterally ending a relationship without providing explanations and ignoring communication attempts, has primarily relied on retrospective and imaginative methodologies. The present research introduced a novel multi-day daily diary experimental paradigm to examine the psychological consequences of ghosting compared to rejection. In Study 1, participants ($N = 46$) engaged in 15-min daily chat interactions with a confederate on predetermined topics over six days. On the fourth day, the confederate either stopped responding (ghosting), explicitly communicated the intention to end the interaction (rejection), or continued the conversation (control). Mixed-model analyses revealed that ghosting and rejection impacted similar constructs, including emotions, basic psychological needs, perception of the other, and behavioral intentions, but in distinct ways. Trend analysis indicated that ghosting elicited a slower and more prolonged negative response. Study 2 ($N = 90$) extended the design over nine days and included confederates of the same or opposite gender. Findings essentially replicated those of Study 1. While gender did not emerge as a meaningful factor, the differential reactions to ghosting and rejection persisted. These findings suggest that while both experiences are distressing, ghosting has more enduring adverse effects. We argue that the uncertainty and lack of closure associated with ghosting appear to hinder coping, prolonging psychological distress. This work seeks to advance our understanding of the similarities and specificities between ghosting and other forms of relationship dissolution.

1. Introduction

Digital platforms and social media have revolutionized interpersonal communication, giving rise to social phenomena that have captured public attention and sparked scholarly interest. One such phenomenon is *ghosting*—the practice, often mediated by technology, of unilaterally ending a relationship without providing explanations and ignoring any communication attempt (Kay & Courtice, 2022; LeFebvre, 2017; Pancani et al., 2021). The person who disappears is referred to as the *ghoster*, while the target is known as the *ghostee* (LeFebvre et al., 2019).

Ghosting can be conceptualized both as a relationship dissolution strategy and as a form of ostracism (i.e., being ignored; Riva & Eck, 2016), as it involves terminating a relationship by ignoring the other person permanently (Campaioli et al., 2022; Pancani et al., 2021;

Schokkenbroek et al., 2025). It appears across various interpersonal relationships, including romantic, friendship, and professional contexts. Studies indicate that 28.5–47.0 % of participants reported having been ghosted before in a romantic context (Powell et al., 2021) and approximately 38.6 % in a friendship context (Freedman et al., 2019). The incidence of ghosting seems exceptionally high among users of dating apps, with an estimated percentage of 85.0 % (Timmermans et al., 2020), highlighting the role of digital platforms in this phenomenon.

The scientific attention to ghosting has been increasing since 2017, with several studies investigating its antecedents and consequences and showing its detrimental effects (e.g., Freedman et al., 2019; LeFebvre et al., 2019; Pancani et al., 2022; Timmermans et al., 2020). Still, the existing research has relied primarily on retrospective methodologies, which are highly subjected to memory-related biases (Fredrickson,

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2000; Robinson & Clore, 2002) and fail to capture the temporal dynamics of reactions to ghosting.

Therefore, the aim of the present research is twofold and concerns both methodological and theoretical advancements in the study of ghosting. First, we introduced a novel multi-day paradigm developed to experimentally manipulate ghosting and examine its consequences over time while employing a controlled and ecologically valid approach. Second, we investigated the potential similarities and differences between ghosting and direct rejection. Thus, this study intended to address the following research questions: (1) How do the psychological consequences of ghosting unfold over time? (2) How do they compare to those of direct rejection and inclusion?

As highlighted by the relationship dissolution and social exclusion theories, while both ghosting and rejection involve the termination of a relationship, they differ in the explicitness of communication and the presence of closure. As a result, ghosting, characterized by silence and ambiguity, may evoke distinct psychological and social responses compared to rejection, which involves explicit communication of disinterest or relationship termination. Therefore, pursuing these goals would result in methodological and theoretical advancements for the ghosting and social exclusion literature.

2. Literature review

2.1. Current approaches to investigating the response to ghosting

Till now, scholars have relied on participants' recollections of their past experiences (or rarely, imagined scenarios) to study the response to ghosting. Retrospective methodologies allow for good external validity but threaten internal validity due to the differences between the recalled experiences. The most effective way to address this limitation is through experimental methodology, which allows for greater control over the experience examined. As noted above, ghosting can be conceptualized as a form of ostracism. The social exclusion literature has long identified several research paradigms used to induce ostracism experimentally and study its effects (see Wirth, 2016). The most common is Cyberball, an online ball-tossing game where the participant is either included or excluded to different degrees by computer-programmed avatars (Williams et al., 2000; Williams & Jarvis, 2006). Another interesting method is the chatroom or text messages paradigm proposed in the early 2000s by Williams et al. (2002) and Smith and Williams (2004). In these studies, ostracism was operationalized as a cessation of responses by two confederates in a brief, group-chat setting. While this setup partially resembles what is now called ghosting, it has seen limited adoption in more recent research.

Retrospective methodologies are further limited by their vulnerability to memory-related biases, which become more pronounced as the time between the event and the recollection increases (see Schwarz, 2007). When asked to recall and report the intensity of subjective experiences, such as emotions, feelings, and thoughts, humans tend to rely on their episodic memory and compensate for its gaps using related information from the semantic memory, namely situation-specific or identity-related beliefs (Robinson & Clore, 2002). Therefore, the information obtained from these reports only partially reflects the respondent's response to ghosting since it also mirrors post-hoc cognitive processes. Similarly, these methods fail to reliably capture the dynamic nature of individuals' responses over time. Reports of change (i.e., when participants are asked to report how something changed over time to compensate for the lack of longitudinal data), indeed, are hardly reliable since they are biased by theory-driven inferences, which are particularly problematic when the context suggests an applicable theory (Schwarz, 2007). After an acute adverse event, the human negative reaction tends to decrease over time, like a wound healing; thus, we can infer that after ghosting, people must have felt hurt and then gradually better.

The study of ostracism has recognized the importance of focusing on the temporal dynamics starting from the Temporal Need Threat Model,

which delineates three consecutive phases that individuals subjected to exclusion undergo: the reflexive, reflective, and resignation stages (Williams, 2009). When individuals detect ostracism, they exhibit a pain response entailing negative emotions and the threat to the following primary psychological needs: the need to belong, the need to maintain a reasonable level of self-esteem, the need to perceive some degree of control over one's social interactions, and the need to feel that one's existence is recognized as meaningful and deserving of attention (reflexive stage). Subsequently, they attempt strategies to reestablish ideal levels of the threatened need(s), mainly prosocial, antisocial, and solitude-seeking behaviors (reflective stage). Finally, if ostracism persists, it can lead to feelings of alienation, depression, helplessness, and unworthiness (resignation stage; Riva et al., 2017). Pancani et al. (2021) proposed the only conceptualization so far (based on a qualitative study) that has tried to glimpse the temporal evolution of the response to ghosting compared to rejection. After the event detection, they identified a first stage characterized by surprise and confusion, a second stage where guilt, anger, and sadness arise, and a third stage that entails acceptance. However, the model accounts for the differences between the reaction to ghosting and rejection, based on retrospective qualitative data and, thus, considers the stages' content more than the time component.

For these reasons, we argue that the optimal way to advance the understanding of the response to ghosting is by manipulating ghosting experimentally and then capturing data regarding the reactions in real time to reduce the biases in participants' answers as much as possible.

2.2. Comparing ghosting and rejection as forms of social disconnection

When contemplating the unilateral termination of an interpersonal relationship, individuals can openly communicate their decision to the ex-partner or stop their communications. The extent to which the initiator shares the wish to leave the relationship with the non-initiator is called "directedness" within the relationship dissolution literature (LeFebvre, 2017). Openly confronting the other person (i.e., rejection) is thus recognized as a direct strategy. On the other hand, eluding the interaction, as seen in ghosting, represents an indirect strategy (Collins et al., 2023; LeFebvre, 2017), which would be classified as an *avoidance/withdrawal* or *behavioral de-escalation* strategy in the classical dissolution topologies by Baxter (1982) and Cody (1982), respectively. In general, indirect breakup strategies are considered uncompassionate and are associated with heightened distress for the non-initiator after the breakup (Collins & Gillath, 2012; Sprecher et al., 2010), although, interestingly, recent research suggests that ghosting is not always driven by self-oriented motives. Instead, ghosters may act out of concern for the ghostee's well-being—a point underscored by Park and Klein (2024), who show that ghostees often underestimate the prosocial motives behind ghosting.

Another perspective that can shed light on the dynamics of interpersonal disconnection is the social exclusion framework. Social exclusion, defined as keeping someone apart from others, either physically or emotionally, is exemplified by two core experiences: ostracism, the act of ignoring someone, and rejection, the explicit and direct disapproval of one's presence (Riva & Eck, 2016). In the social exclusion field, existing theories present differing views on the distinctiveness of ostracism and rejection. While some theories, like the multimotive model of rejection (Richman & Leary, 2009) and neuroscientific theories (e.g., Lieberman & Eisenberger, 2006), posit common underlying factors between the two, others argue for qualitative differences despite common outcomes (Riva & Eck, 2016; Wesselmann & Williams, 2017). In particular, Williams's foundational work hypothesized that ostracism would yield more adverse consequences than rejection due to the target's powerlessness and lack of recognition (Williams, 2001; Williams & Nida, 2009). Different studies found supporting evidence showing that being ostracized resulted in a higher threat to fundamental human needs and the desire to engage in an argument to stop the silence, even if this

meant becoming the target of direct negative attention (Sommer et al., 2001; Zadro et al., 2005). Additionally, a significant study revealed that being rejected led to a sense of social loss and more prevention-focused reactions, including withdrawal from social contact; in contrast, ostracism produced a sense of failure to achieve social gain and led to more promotion-focused reactions, including re-engagement in social contact (Molden et al., 2009). As noted, ghosting can be classified as a form of ostracism, although it displays distinctive features such as being typically interpersonal, technology-mediated, and aimed at dissolving a relationship (for a theoretical analysis, see Schokkenbroek et al., 2025). Therefore, comparing the reactions to ghosting and rejection in a methodologically sound way allows us to test these theoretical premises in the context of online relationship dissolution.

Until now, only a few studies have directly compared the consequences of ghosting and rejection with retrospective or imaginative approaches (Leckfor et al., 2023; Fanti et al., 2023; Pancani et al., 2021, 2022). Therefore, examining the potential differential outcomes associated with these two forms of social disconnection with more fine-grained methods seems necessary. First, both ghosting and rejection aim at interrupting a relationship, thus triggering a sense of disconnection from the source and a reduction in the quality of the relationship (Leckfor et al., 2023; Pancani et al., 2022). Furthermore, the experiences of being ignored and rejected elicit significant psychological distress and emotional suffering. In this sense, the immediate reaction to ghosting resembles, at least partially, the one to ostracism. Ghostees report pain and a range of negative emotions, including anger, sadness, surprise, and guilt (Freedman et al., 2022; Fanti et al., 2023; Pancani et al., 2021, 2022; Timmermans et al., 2020). In addition, ghosting generates a sense of confusion arising from the uncertainty of the situation, which does not explicitly signal the end of the relationship, unlike a confrontation, and may be responsible for ghostees' prolonged distress (LeFebvre et al., 2020; Fanti et al., 2023; Pancani et al., 2021; Yap et al., 2021). Moreover, ghosting also seems to threaten the same needs affected by ostracism: belonging, self-esteem, control, and meaningful existence. Compared to rejection, indeed, ghosting engenders greater feelings of exclusion and poses a more substantial threat to the four basic needs (Leckfor et al., 2023; Pancani et al., 2022). Exclusion-driven behaviors accompany this negative affective experience. Social exclusion has been associated with three primary behavioral outcomes: prosocial behaviors aimed at strengthening social connections (e.g., Pickett et al., 2004; Riva et al., 2014; Williams & Sommer, 1997), antisocial or aggressive behaviors directed towards the source of exclusion or towards others (for a review, see Ren et al., 2018), and social withdrawal or solitude-seeking behaviors (Ren et al., 2016). Research on ghosting shows that attempts to communicate with the ghoster are frequently made, likely in the hopes of obtaining some closure or restoring the relationship (LeFebvre & Fan, 2020; Pancani et al., 2021; Timmermans et al., 2020). Rejection may prevent these attempts due to the explicit termination, suggesting limited possibilities of relational repair (Pancani et al., 2021). Moreover, ghosting seems to produce solitude-seeking responses, such as deleting the dating app through which ghosting occurred (Timmermans et al., 2020) or discontinuing dating and accepting remaining single (LeFebvre & Fan, 2020). On the contrary, antisocial intentions appear significantly greater for rejected individuals than ghostees, as the source of exclusion can become the target of their anger (Pancani et al., 2022).

Another aspect that may be worth examining is the perception of the ghoster and their behavior. Rudert, Reutner, et al. (2017) suggested that the sources of ostracism are perceived as cold and incompetent. Moreover, previous studies indicated that ghosting tends to be perceived as more unfair than direct rejection (Pancani et al., 2021, 2022), and indirect relationship dissolution strategies as generally less morally acceptable (Sprecher et al., 2010).

In summary, examining the differences between the reaction to ghosting and rejection in terms of the aforementioned constructs can help advance the understanding of the impact of ghosting as an ostracism phenomenon compared to direct rejection.

3. The present research

The present research employed an experimental daily diary methodology to examine the temporal response to ghosting compared to rejection. Study 1 investigates potential differences in the psychological consequences of ghosting and rejection using a six-day time frame. Building upon this investigation, Study 2 extends the examination to nine days and evaluates the potential impact of the gender composition of the dyads.

Two primary objectives drive our project. Firstly, we aim to develop a new paradigm to study ghosting time-contingently and through direct experience (not recalled or imaginative). Secondly, we seek to assess and compare the response to ghosting and rejection, focusing on their temporal evolution.

Given the limited knowledge about the consequences of ghosting over time and the lack of paradigms capable of inducing a direct ghosting experience, our hypotheses draw upon insights from the social exclusion literature. Considering the classification of ghosting as a form of ostracism discussed above, we anticipated that participants' reactions would align with the Temporal Need Threat Model (Williams, 2009) regarding psychological states and temporal dynamics. Specifically, we hypothesized that ghosting and rejection would evoke negative emotions, threaten four fundamental psychological needs, and trigger specific behavioral inclinations (see preregistered H1 for Study 2). Subsequently, following the model's predictions for the reflective stage, we expected that these reactions would generally diminish over time and return to baseline levels. However, given ghosting's unique association with uncertainty and lack of closure (LeFebvre et al., 2020; Pancani et al., 2021), we predicted that the trajectory of individuals who experienced ghosting would differ from that of those who experienced rejection, showing a slower resolution and more prolonged disruption over time (see preregistered H2 for Study 2).

Additionally, we explored whether the gender composition of the dyad (i.e., whether the participant and confederate were of the same gender) influenced the investigated dynamics by controlling it in Study 1 and then manipulating it in Study 2. While we did not formulate formal hypotheses, we controlled for the gender composition of the dyad given the common practice in relationship science (see, for instance, Aron et al., 1997; Sprecher et al., 2013) and the mixed findings in the literature regarding our phenomena of interest. In the domain of social exclusion, some studies suggest stronger negative reactions when exclusion comes from ingroup members (e.g., Bernstein et al., 2010; Wittenbaum et al., 2010), which may include same-gender sources. In contrast, the relationship dissolution literature has documented gender-based differences in responses to rejection (e.g., Andrighetto et al., 2019; Stratmoen et al., 2018, 2020), although these are often context-dependent and not specific to ghosting. To our knowledge, only one study has examined gender dynamics in ghosting, with inconclusive results (Freedman, Hales, et al., 2022). Given this theoretical ambiguity, we tested for possible effects of gender congruency between participant and confederate in an exploratory manner.

All data and analyses are available in OSF at <https://osf.io/kbf8d/> while the preregistration file of Study 2 is available in OSF at <https://osf.io/deuy3>. All procedures were performed in compliance with relevant laws and institutional guidelines and the local departmental ethical committee approved both studies. The privacy rights of human subjects have been observed, and informed consent was obtained for experimentation with human subjects. For both studies, all measures, manipulations, and exclusions are disclosed, as well as the method of determining the final sample size.

4. Study 1

4.1. Methods

4.1.1. Design and participants

The study employed a 3 (Condition: Ghosting, Rejection, Control) x 6 (Days) mixed design, where the condition was manipulated between subjects while days represented the repeated measurement of the dependent variables. Participants were asked to interact via chat with another person, ostensibly a participant but actually a confederate, for 15 min each day for six consecutive days and fill out a short daily questionnaire about their experience. The experimental manipulation concerned the end of the interactions by ghosting vs. rejection on day 4 or the continuance of the interaction till day 6 in the control condition. Before and after these six days, they were required to complete a longer questionnaire.

Since we planned to conduct mixed ANOVA analyses, we determined our sample size by running an a priori power analysis based on the interaction between time and condition using G*Power. As we aimed for a statistical power of at least $1-\beta = 0.80$ and an alpha error of $\alpha = .05$ and anticipated a medium effect ($f = 0.25$) and a large correlation between time points ($r = 0.50$), a minimal total sample size of 39 participants was required. However, we expected a substantial drop-out due to the burden of the study. Therefore, we aimed to recruit at least 60 individuals. Subsequently, we opted for mixed model analyses. Since the power estimation for mixed models is still debated, we based our power analyses on a mixed ANOVA model. We conducted these analyses both a priori to determine the minimum sample size and as a sensitivity analysis afterward to confirm that our sample size was sufficient to detect the effect size.

Since ghosting appears particularly common among young adults, regardless of gender (LeFebvre et al., 2019), we chose to include people aged 18–35 and balanced the sample for gender.

Participants were recruited through the researchers’ acquaintances, college students’ groups, and a snowball strategy. No money or credit compensation was provided for the participation. Sixty-seven participants took part in the first phase of the experiment. After applying the inclusion criteria (i.e., providing informed consent and participating at all time points), 46 participants were retained in the sample (56.6 % female, 41.3 % male, and one person preferred not to answer; $M_{age} = 23.70$, $SD = 3.02$, $Range = 19\text{--}34$ years). Considering only the analyzed data, 18 participants took part in the control condition, 15 in the ghosting condition, and 13 in the rejection condition.

4.1.2. Materials and procedure

The whole study was conducted online. The questionnaires were created and administered through Qualtrics (<https://www.qualtrics.com>), the introductory call was conducted on Google Meet (<https://meet.google.com>), and the interactions took place via Telegram (<https://web.telegram.org>). The study procedure is described below and summarized in Fig. 1.

The study procedure is described below and summarized in Fig. 1.

T0: Group Video Call, Contacts, and Demographic Information. Participants volunteered to participate in a study about “online interactions.” Their involvement required engaging in conversations via Telegram with another person and completing a brief daily questionnaire about their experience for six consecutive days. Subsequently, they were asked to schedule a group video call with the experimenter and other participants for two primary purposes: 1) to provide a comprehensive explanation of the procedure and 2) to create the impression that participants would be matched with another participant after the call.

During the video call, the experimenter presented a detailed overview of the study procedure and provided instructions on setting up Telegram. Specifically, participants were instructed to conceal their phone numbers and create usernames to protect their privacy while communicating with the experimenter and their chat partner. We decided to use Telegram because, besides preserving participants’ privacy, it allowed for good external validity since it is a widely used messaging software, with more than 700 million active users each month worldwide, and is highly similar to other widespread messaging platforms (We Are Social et al., 2023). After the video call, participants received an email summarizing the provided information and a survey link. This survey collected essential demographic data such as gender, age, marital status, nationality, college course, occupational status, and participants’ Telegram usernames.

The day before the study’s second phase commenced, the experimenter added participants to a one-way Telegram channel to deliver study-related information and daily survey prompts. Additionally, the experimenter privately messaged each participant, disclosing the username of their assigned chat partner. Unbeknownst to the participants, the assigned chat partner was a confederate involved in the study. The confederate always identified as the opposite gender to the participant in order to control for the gender composition of the dyad.

Interaction Days: Chats and Daily Questionnaires. Each morning throughout the six-day study period, participants received a message on the Telegram channel containing a specific conversation topic and the link to the daily questionnaire. The task was to engage in a 15-min chat with their assigned conversation partner, focusing on the designated theme, and subsequently complete the daily questionnaire. The discussion topics were sports, TV shows, future life plans, romantic life, music, and travel. Their order was pseudorandomized by having each confederate follow a unique schedule to prevent it from being a confounding variable. Confederates were trained to keep the conversation within the rails of the day’s topic, to be generally responsive and agreeable, and to

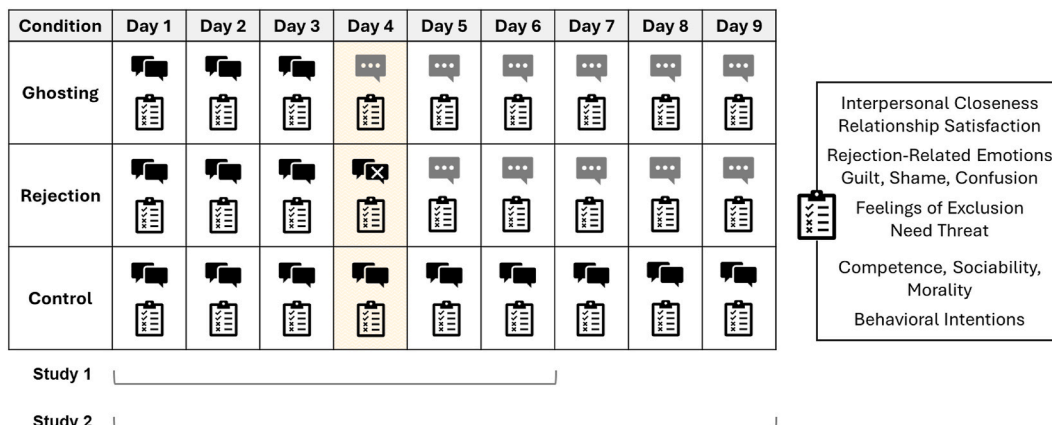


Fig. 1. Procedural flow of study 1 and study 2.

avoid excessive differences in the levels of disclosure possibly influencing the perceived closeness and relationship quality. Besides these guidelines, they were encouraged to interact as they would in real-life situations to increase external validity. All confederates received written guidelines outlining appropriate tone, boundaries for discussion topics, and general conduct to promote consistency. They also maintained regular contact with the lead experimenter, reaching out when unsure how to proceed. In addition, a subset of chat transcripts was reviewed to verify adherence to these instructions. Finally, each confederate participated in all three experimental conditions in a balanced manner, minimizing the potential impact of individual characteristics on our results.

Participants were encouraged to fill out the questionnaire immediately after concluding the conversation or, if this was not feasible, before the end of the day. However, at 9 p.m., participants received a prompt to complete the questionnaire. This once-a-day event-contingent sampling strategy was employed to allow participants to select the conversation time and minimize the study burden.

The daily questionnaire included several measures of the participant's state and impression of the partner that day. First, we assessed the *interpersonal closeness* with the partner using a 7-point pictorial single-item (Inclusion of Other in the Self Scale; Aron et al., 1992). Moreover, we assessed *relationship satisfaction* using a single item: "Thinking about the relationship you had till now with the other person, how do you evaluate the quality of your relationship?". Ratings were provided on a 7-point scale (1 = *completely unsatisfied* to 7 = *completely satisfied*). Then, we measured different *emotions*. We proposed a single item for each of the following clusters of the Rejection-Related Emotion Scale (Buckley et al., 2004): anger ("angry"), happiness ("happy" [reverse-scored item]), pain ("hurt"), anxiety ("anxious"), sadness ("sad"). The scores on these five items were averaged into an overall score of Rejection-Related Emotions (see Table 1 for a measure of reliability). In addition, we measured how much they felt ostracized ("ignored") and rejected ("rejected"). Finally, we also inserted ad-hoc items about guilt ("guilty"), shame ("ashamed"), and confusion ("confused") since they seem to be associated with ghosting (Pancani et al., 2021). All of these items were rated on a 7-point Likert scale ranging from 1 = *not at all* to 7 = *extremely*.

Moreover, the Need Threat Scale (Williams, 2009; Zadro et al., 2004) was adapted to our daily diary design to measure the level of *threat to the four fundamental needs* defined by Williams's (2009) model: belonging ("I felt disconnected from the other person"), self-esteem ("My self-esteem was low"), meaningful existence ("I felt invisible"), and control ("I felt I was not in control of the course of events"). The items were assessed on a 7-point Likert scale (1 = *not at all* to 7 = *extremely*). The scores on these four items were averaged into an overall score of Need Threat (see Table 1 for a measure of reliability). We also

administered three items about morality, sociability, and competence (Brambilla & Leach, 2014; Fiske et al., 2002; Leach et al., 2007). The question was "How did the other person seem today?" and the three items were "intelligent" (competence), "friendly" (sociability), and "honest" (morality). Participants rated these characteristics on a 7-point Likert scale (1 = *not at all* to 7 = *extremely*). Lastly, we examined how much participants would be tempted to enact prosocial or antisocial behaviors if they could interact face-to-face with the other person (Buckley et al., 2004). We included three items describing prosocial (e.g., "smiling at the other person") and three items referring to antisocial intentions (e.g., "intentionally ignoring the other person"). Ratings were provided on a 7-point Likert Scale (1 = *not at all* to 7 = *extremely*).

The Experimental Manipulation. On the fourth day of the study, our confederates implemented the experimental manipulation using a predetermined script. In the ghosting condition, confederates refrained from responding to participants' messages on that day and in the subsequent days. In the rejection condition, confederates explicitly communicated to participants that they no longer wished to engage in further conversation (i.e., "Hi [name], I am not interested in talking with you anymore"). If participants inquired for clarification, the confederate would reiterate the statement and direct them to contact the experimenter for further assistance. In practice, participants did not attempt to continue the conversation after this point, and no further exchanges occurred between confederates and participants. In both the ghosting and rejection conditions, participants often contacted the experimenter, who replied that these experiences could occur and then asked whether they were willing to continue with the study by completing the questionnaires without providing any information regarding the confederate's behavior. In the control condition, the interaction between participants and confederates continued uninterrupted until the sixth and final day of the study.

Final Questionnaire. At the end of the six-day interaction period, participants were provided with a link to a final questionnaire, which ended with a debriefing about the nature of the experiment. We included two manipulation check questions to verify whether participants correctly perceived the nature of the manipulated relationship dissolution. The first was an open-ended question asking how many days they had interacted with their study partner. The second was a multiple-choice question asking, "What happened in the interaction?" The response options were: (1) We chatted every day as expected, (2) The other person told me they no longer wanted to talk to me, and (3) The other person suddenly stopped texting me without giving an explanation. Not being the focus of these studies and this manuscript, the other measures and results from the final questionnaire will be reported in the supplementary materials.

4.2. Analysis plan

As preliminary analyses, a Chi-Square test on the multiple-choice manipulation-check question and one-way ANOVA on the open-ended manipulation-check question were used to assess the effectiveness of our experimental manipulation. Additionally, mixed model analysis was applied to check whether the levels of closeness and quality of the relationship developed before the manipulation differed among the three conditions.

Subsequently, we ran a series of mixed model analyses for repeated measures to evaluate the effect of the manipulation on the dependent variables from Day 4 (i.e., the manipulation day) to Day 6 (i.e., the final day), that is, during the post-manipulation period. Each model included participants as a clustering variable, with condition and time as fixed factors and the average pre-manipulation score on the dependent variable as a covariate. The models estimated fixed effects for condition, time, their interaction, and pre-manipulation levels and included random intercepts for participants. Including the pre-manipulation score allowed us to control for baseline differences in the outcome variables. When there was a significant condition \times time interaction, we

Table 1
Cronbach's alpha values for the scales used in study 1 and study 2.

		Rejection-Related Emotions	Need Threat
Study 1	Day 1	0.43	0.78
	Day 2	0.68	0.84
	Day 3	0.58	0.80
	Day 4	0.78	0.86
	Day 5	0.49	0.83
	Day 6	0.71	0.84
Study 2	Day 1	0.62	0.60
	Day 2	0.60	0.56
	Day 3	0.55	0.70
	Day 4	0.81	0.65
	Day 5	0.74	0.70
	Day 6	0.70	0.74
	Day 7	0.71	0.74
	Day 8	0.68	0.78
	Day 9	0.71	0.73

conducted trend analyses to assess changes over time in the post-manipulation period by modeling linear and quadratic trajectories for each condition. This approach aligns with prior research suggesting that responses to stressful events (Norris et al., 2009) and breakups (Verhallen et al., 2022) may follow nonlinear patterns. When both ghosting and rejection conditions exhibited the same type of trend (e.g., linear), we compared their slopes using t-tests to assess differences in the rate of change. When a trend was significant for one condition but not the other, we interpreted this as a meaningful difference and did not conduct additional slope comparisons. To isolate the immediate effect of the manipulation, we also conducted Bonferroni-corrected post hoc comparisons between Day 3 and Day 4 within each condition.

The dependent variables included interpersonal closeness, relationship satisfaction, emotions, need threat, prosocial and antisocial tendencies, and social perception.

All analyses were conducted using the Jamovi statistical platform (Version 2.6.26; The jamovi project, 2024). General linear and mixed model analyses were performed using the GAMLj3 module (Version 3.6.0; Gallucci, 2019).

4.3. Results

4.3.1. Preliminary analyses

Descriptive statistics computed for each condition are reported in Table 2.

The one-way ANOVA on the reported number of days participants interacted was significant, $F(2) = 1195.93, p < .001, \eta_p^2 = 0.982$. All controls reported chatting for six days, $M = 6.00, SD = 0.00$, while rejected individuals, $M = 3.15, SD = 0.38$ (they received one rejecting message on the fourth day, which led to some variability), and all ghostees, $M = 3.00, SD = 0.00$, for three days.

The Chi-Square test to determine if there was a significant relationship between the condition assigned and the answer to a multiple-choice manipulation check was also significant, $\chi^2(4) = 85.87, p < .001$. Based on adjusted standardized residuals (asr), participants in the ghosting condition were more likely to report that their interaction partner stopped interacting without providing any explanation, $asr = |6.4|$; participants in the rejection condition were more likely to report that

their interaction partner declared they did not want to interact anymore, $asr = |6.4|$; participants in the control condition were more likely to report that they had interacted for the whole period, $asr = |6.8|$.

The effect of the condition in the mixed model analysis conducted to check for significant differences in the levels of closeness before the manipulation was not significant, $F(2, 43) = 0.38, p = .689$, showing that participants in the ghosting ($M = 3.18, SD = 0.36$), rejection ($M = 3.13, SD = 0.38$), and control ($M = 2.80, SD = 0.33$) conditions developed similarly close relationships. Similarly, the effect of the condition in the mixed model analysis conducted to check for significant differences in the levels of relationship satisfaction before the manipulation was not significant, $F(2, 43) = 1.74, p = .188$, showing that participants in the ghosting ($M = 5.16, SD = 0.31$), rejection ($M = 5.28, SD = 0.33$), and control ($M = 4.56, SD = 0.28$) conditions were similarly satisfied by their relationships.

4.3.2. Daily questionnaires

The results of the mixed model analyses for the post-manipulation days, including marginal and conditional R^2 values and F test results, are reported in Table 3. Bonferroni-corrected post hoc comparisons between Day 3 and Day 4 (i.e., the day the manipulation was implemented), as well as trend analyses across Days 4–6 (i.e., the post-manipulation period), are summarized in Table 4 and described below. Corresponding plots are presented in Fig. 2.

Interpersonal Closeness (IOS). Interpersonal closeness significantly decreased immediately after the manipulation in both the ghosting and rejection conditions and remained unchanged over time, indicating an immediate and definitive impact. No change emerged in the control condition.

Relationship Satisfaction. Relationship satisfaction significantly decreased immediately after the manipulation in both the ghosting and rejection conditions and remained unchanged over time, indicating an immediate and definitive impact. No change emerged in the control condition.

Rejection-Related Emotions. Rejection-related emotions significantly increased immediately after the manipulation in both the ghosting and rejection conditions. Over time, Rejection-related emotions followed a nonlinear trajectory, suggesting a relapse, in both the

Table 2
Sociodemographic characteristics of participants in study 1 and study 2.

	Study 1			Study 2					
	Ghosting (n = 15)	Rejection (n = 13)	Control (n = 18)	Ghosting (n = 27)		Rejection (n = 30)		Control (n = 33)	
				SG (n = 14)	OG (n = 13)	SG (n = 16)	OG (n = 14)	SG (n = 17)	OG (n = 16)
Age	23.1 (2.42)	23.8 (3.56)	23.9 (3.17)	25.1 (3.15)	24.15 (2.77)	23.9 (2.03)	24.36 (3.39)	23.7 (2.26)	24.25 (2.57)
Gender									
Woman	7 (46.7 %)	7 (53.8 %)	12 (66.7 %)	7 (50.0 %)	9 (69.2 %)	8 (50.0 %)	8 (57.1 %)	10 (58.8 %)	8 (50.0 %)
Man	8 (53.3 %)	5 (38.5 %)	6 (33.3 %)	7 (50.0 %)	4 (30.8 %)	8 (50.0 %)	6 (57.1 %)	7 (41.2 %)	8 (50.0 %)
Non-binary	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Prefer not to say	0 (0.0 %)	1 (0.08 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Nationality									
Italian	13 (86.7 %)	13 (100 %)	17 (94.4 %)	14 (100.0 %)	13 (100.0 %)	16 (100.0 %)	14 (100.0 %)	17 (100.0 %)	16 (100.0 %)
Other	2 (13.3 %)	0 (0.0 %)	1 (5.56 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Marital Status									
Married or living together	1 (6.7 %)	2 (15.4 %)	3 (16.7 %)	1 (7.1 %)	4 (30.8 %)	1 (6.3 %)	0 (0.0 %)	1 (5.9 %)	1 (6.3 %)
Unmarried	14 (93.3 %)	11 (84.6 %)	14 (77.8 %)	12 (85.5 %)	9 (69.2 %)	15 (93.8 %)	14 (100.0 %)	2 (88.2 %)	15 (93.8 %)
Separated or divorced	0 (0.0 %)	0 (0.0 %)	1 (5.6 %)	1 (7.1 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	1 (5.9 %)	0 (0.0 %)
Widow(er)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
Education									
No college	1 (6.7 %)	1 (7.7 %)	2 (11.1 %)	5 (35.7 %)	3 (23.1 %)	3 (18.8 %)	2 (14.3 %)	3 (17.6 %)	2 (12.5 %)
Some college or degree	14 (93.3 %)	12 (92.3 %)	16 (88.9 %)	9 (64.3 %)	10 (76.9 %)	13 (81.2 %)	12 (85.7 %)	14 (82.4 %)	14 (87.5 %)
Occupational condition									
Worker	5 (33.3 %)	3 (23.1 %)	8 (44.4 %)	14 (100.0 %)	12 (92.3 %)	15 (93.7 %)	13 (92.9 %)	16 (76.2 %)	14 (87.5 %)
Non-worker	10 (66.7 %)	10 (76.9 %)	10 (55.6 %)	0 (0.0 %)	1 (7.7 %)	1 (6.3 %)	1 (7.1 %)	5 (23.8 %)	2 (12.5 %)

Note. Mean (and standard deviation) were reported for continuous variables, while frequency (and percentage) for categorical ones. SG = same gender; OG = opposite gender.

Table 3
Linear mixed model results for study 1.

Outcome Variable	Model Fit	Condition ($df = 2, 42$)		Time ($df = 2, 86$)		Condition \times Time ($df = 4, 86$)		Baseline Variable ($df = 1, 42$)	
	R^2_m (R^2_c)	F	p	F	p	F	p	F	p
Interpersonal Closeness	0.59 (0.76)	50.80	<0.001	2.38	0.099	1.91	0.116	6.93	<0.001
Relationship Satisfaction	0.51 (0.86)	29.05	<0.001	0.30	0.742	0.58	0.676	7.28	0.010
Rejection-Related Emotions	0.47 (0.71)	22.62	<0.001	14.74	<0.001	3.47	0.011	15.21	<0.011
Guilt	0.30 (0.40)	5.27	0.009	12.47	<0.001	8.20	<0.001	1.85	0.181
Shame	0.15 (0.29)	1.12	0.334	1.09	0.342	0.86	0.492	13.92	<0.001
Confusion	0.48 (0.70)	28.39	<0.001	10.86	<0.001	6.12	<0.001	5.30	0.026
Feelings of Exclusion	0.52 (0.85)	29.19	<0.001	3.74	0.028	1.80	0.137	6.76	0.013
Need Threat	0.56 (0.86)	33.32	<0.001	8.14	<0.001	4.89	0.001	9.45	0.004
Competence	0.45 (0.69)	25.45	<0.001	3.58	0.032	2.04	0.096	15.47	<0.001
Sociability	0.56 (0.79)	40.05	<0.001	0.27	0.766	0.82	0.518	7.76	0.008
Morality	0.51 (0.78)	27.26	<0.001	7.52	<0.001	2.52	0.047	15.57	<0.001
Antisocial Intentions	0.60 (0.85)	15.35	<0.001	49.31	<0.001	1.41	0.239	52.04	<0.001

Note. R^2_m = marginal R^2 ; R^2_c = conditional R^2 . df = numerator degrees of freedom, denominator degrees of freedom. All models include the average level of the dependent variable measured before the manipulation (Days 1–3) as a covariate to control for baseline differences (Baseline Variable).

ghosting and rejection conditions. No change emerged in the control condition.

Guilt. Guilt significantly increased immediately after the manipulation in both the ghosting and rejection conditions, with higher levels in the rejection condition, $t(240) = 4.06$, $p = .010$. Over time, guilt declined in the rejection condition but followed a nonlinear trajectory in the ghosting condition, suggesting a relapse. No change emerged in the control condition.

Shame. The levels of shame were only significantly predicted by the pre-manipulation levels of shame.

Confusion. Confusion significantly increased immediately after the manipulation in both the ghosting and rejection conditions. Over time, it declined in the rejection condition but remained unchanged in the ghosting condition, indicating persistent confusion. No change emerged in the control condition.

Feelings of Exclusion. Feelings of exclusion significantly increased immediately after the manipulation in both the ghosting and rejection conditions. An overall decrease over time was detected in the post-manipulation days. The interaction between the condition and time was not significant in the post-manipulation days. However, descriptively, the levels of feelings of exclusion declined in the rejection condition but remained unchanged in the ghosting condition. No change emerged in the control condition.

Need Threat. Need threat significantly increased immediately after the manipulation in both the ghosting and rejection conditions. Over time, it declined in the rejection condition but remained unchanged in the ghosting condition, suggesting persistently threatened needs. No change emerged in the control condition.

Antisocial Intentions. Antisocial intentions significantly increased after the manipulation in both the ghosting and rejection conditions. An increase over time was detected in all conditions, but the interaction between the condition and time was not significant in the post-manipulation days.

Competence. The perception of the other's competence significantly decreased immediately after the manipulation in both the ghosting and rejection conditions. No change emerged in the control condition. The interaction between the condition and time was not significant in the post-manipulation days.

Sociability. The perception of the other's sociability significantly decreased immediately after the manipulation in both the ghosting and rejection conditions. No change emerged in the control condition. The interaction between the condition and time was not significant in the post-manipulation days.

Morality. The perception of the other's morality significantly decreased immediately after the manipulation in both the ghosting and rejection conditions. Over time, it declined more in the ghosting condition but remained unchanged in the rejection condition. No change

emerged in the control condition.

4.3.3. Sensitivity analysis

To verify if our sample allows the detection of the effects, we conducted a sensitivity power analysis in the mixed ANOVA assemblage (i. e., the one originally considered when performing the a priori power analysis) using G*Power. We calculated the analysis on the interaction between time and condition, as this was the effect we aimed to reveal. Given our study design, a large correlation among repeated measures ($ICC = 0.50$), and our final sample size of 46 participants, the study provided 80 % power to detect an effect size of $R^2 = 0.030$, 85 % power to detect an effect size of $R^2 = 0.033$, and 90 % power to detect an effect size of $R^2 = 0.037$, with a 5 % false-positive rate.

4.4. Discussion

Study 1 showed the effectiveness of the newly developed paradigm in generating direct ghosting and rejection experiences. Participants accurately recognized both the duration and nature of their interactions' termination, suggesting that the manipulation was effective in simulating digital exclusion experiences and supporting the internal validity of the paradigm. In the ghosting condition, the lack of a response was not consistently attributed to a specific (e.g., a technical issue), indicating that the paradigm successfully captured the ambiguity and uncertainty characteristic of real-world ghosting (LeFebvre & Fan, 2020; Pancani et al., 2022).

Beyond validating the manipulation, Study 1 offered some initial insights into the similarities and differences between the psychological response to ghosting and rejection. Both forms of exclusion (compared to social inclusion) elicited negative emotions, feelings of exclusion, threats to psychological needs, a worsened perception of the source, and aggressive tendencies, aligning with existing literature on responses to social exclusion (see Wesselmann et al., 2016; Williams, 2009). However, interesting insights emerged from analyzing the outcome trajectories in the post-manipulation days.

While both conditions led to an immediate drop in closeness and satisfaction, these effects remained stable over time, suggesting that participants perceived ghosting and rejection as definitive relationship dissolution events. However, other responses evolved differently.

Specifically, the need threat decreased over time following rejection but remained elevated after ghosting, indicating a slower recovery process. Feelings of exclusion showed a similar descriptive pattern: although the interaction with time was not statistically significant, only the rejection condition showed a decrease over time. Rejection-related emotions followed a nonlinear (quadratic) trend in both conditions, reflecting an initial spike and subsequent relapse. However, confusion and guilt followed divergent trajectories: both declined after rejection,

Table 4
Post-manipulation outcome patterns across experimental conditions for study 1.

Variable	D3-D4 (Post-Hoc)	Linear Trend	Quadratic Trend	Trajectory Description
Interpersonal Closeness				
Ghosting	$t(215) = 6.23, p < .001$	–	–	Immediate & Definitive
Rejection	$t(215) = 6.79, p < .001$	–	–	Immediate & Definitive
Control	$t(215) = -0.48, p = 1.000$	–	–	Stable
Relationship Satisfaction				
Ghosting	$t(215) = 8.32, p < .001$	–	–	Immediate & Definitive
Rejection	$t(215) = 8.76, p < .001$	–	–	Immediate & Definitive
Control	$t(215) = 0.30, p = 1.000$	–	–	Stable
Rejection-Related Emotions				
Ghosting	$t(215) = -7.39, p < .001$	$b = -0.28, SE = 0.14, p = .048$	$b = 0.32, SE = 0.14, p = .028$	Immediate & Relapse
Rejection	$t(215) = -8.82, p < .001$	$b = -0.60, SE = 0.15, p < .001$	$b = 0.56, SE = 0.15, p < .001$	Immediate & Relapse
Control	$t(215) = 0.58, p = 1.000$	$b = -0.08, SE = 0.13, p = .543$	$b = 0.04, SE = 0.13, p = .779$	Stable
Guilt				
Ghosting	$t(215) = -7.39, p < .001^*$	$b = -0.09, SE = 0.26, p = .719$	$b = 0.54, SE = 0.26, p = .040$	Immediate & Relapse
Rejection	$t(215) = -8.82, p < .001^*$	$b = -1.74, SE = 0.28, p < .001$	$b = 0.82, SE = 0.28, p = .005$	Immediate & Recovery
Control	$t(215) = 0.58, p = 1.000$	$b = -0.04, SE = 0.24, p = .869$	$b = -0.11, SE = 0.24, p = .635$	Stable
Shame				
Ghosting	–	–	–	No significant impact
Rejection	–	–	–	No significant impact
Control	–	–	–	No significant impact
Confusion				
Ghosting	$t(215) = -7.97, p < .001$	$b = -0.61, SE = 0.34, p = .075$	$b = 0.03, SE = 0.34, p = .936$	Immediate & Definitive
Rejection	$t(215) = -9.97, p < .001$	$b = -0.60, SE = 0.15, p < .001$	$b = 0.56, SE = 0.15, p < .001$	Immediate & Recovery
Control	$t(215) = 1.19, p = 1.000$	$b = 0.12, SE = 0.31, p = .705$	$b = 0.07, SE = 0.31, p = .827$	Stable
Feelings of Exclusion				
Ghosting	$t(215) = -7.76, p < .001$	–	–	Immediate & Recovery
Rejection	$t(215) = -9.85, p < .001$	–	–	Immediate & Recovery
Control	$t(215) = -0.14, p = 1.000$	–	–	Stable
Need Threat				
Ghosting	$t(215) = -7.51, p < .001$	$b = 0.05, SE = 0.18, p = .792$	$b = 0.11, SE = 0.18, p = .543$	Immediate & Definitive
Rejection	$t(215) = -10.37, p < .001$	$b = -1.02, SE = 0.19, p < .001$	$b = 0.26, SE = 0.19, p = .179$	Immediate & Recovery
Control	$t(215) = 0.05, p = 1.000$	$b = -0.12, SE = 0.16, p = .471$	$b = 0.23, SE = 0.16, p = .167$	Stable
Competence				
Ghosting	$t(215) = 5.49, p < .001$	–	–	Immediate & Definitive
Rejection	$t(215) = 4.47, p = .002$	–	–	Immediate & Definitive
Control	$t(215) = 0.00, p = 1.000$	–	–	Stable
Sociability				
Ghosting	$t(215) = 7.06, p < .001$	–	–	Immediate & Definitive
Rejection	$t(215) = 9.82, p = .002$	–	–	Immediate & Definitive
Control	$t(215) = 0.29, p = 1.000$	–	–	Stable
Morality				
Ghosting	$t(215) = 6.03, p < .001$	$b = -1.18, SE = 0.29, p < .001$	$b = 0.14, SE = 0.29, p = .640$	Gradual
Rejection	$t(215) = 5.80, p = .002$	$b = -0.60, SE = 0.31, p = .058$	$b = 0.53, SE = 0.31, p = .090$	Immediate & Definitive
Control	$t(215) = 0.00, p = 1.000$	$b = -0.04, SE = 0.27, p = .882$	$b = 0.02, SE = 0.27, p = .932$	Stable
Antisocial Intentions				
Ghosting	$t(215) = -2.28, p = .001$	–	–	Gradual
Rejection	$t(215) = -6.98, p < .001$	–	–	Gradual
Control	$t(215) = -1.54, p = 1.000$	–	–	Gradual

Note. D3–D4 (Post-Hoc) reports the results of Bonferroni-corrected pairwise comparisons between Day 3 and Day 4 within each condition. Linear and Quadratic Trend columns report coefficients from polynomial trend analyses examining the trajectory of each outcome over time. “Trajectory Description” provides a qualitative summary of the temporal pattern observed in each condition: Immediate & Definitive = abrupt and lasting change; Immediate & Recovery = initial change followed by a return toward baseline; Immediate & Relapse = initial change followed by reversal; Gradual = progressive change; Stable = no significant change. * $p < .05$ between conditions.

but guilt showed a nonlinear relapse, and confusion remained persistently high after ghosting, suggesting a continued struggle to interpret and cope with the ghosting event.

From a behavioral perspective, antisocial intentions gradually increased in all conditions, possibly reflecting a delayed coping mechanism. However, no significant interaction with the condition emerged, limiting conclusions about differential effects.

Perceptions of the excluder were also affected. All three person perception dimensions (competence, sociability, and morality) declined immediately after exclusion. Over time, however, only morality showed a differential trend: it continued to decline in the ghosting condition but remained stable in the rejection condition, suggesting that ghosting may be judged as more ethically problematic and unfair.

In sum, ghosting and rejection elicited similar immediate reactions across a range of psychological and relational outcomes, reinforcing the idea that both are impactful forms of social exclusion. However,

differences began to emerge in the post-manipulation period. In particular, need threat, confusion, guilt, and morality perception showed slower or more ambiguous recovery patterns in the ghosting condition. These findings suggest that ghosting may lead to more prolonged psychological discomfort, possibly due to its inherent ambiguity and lack of closure. Nevertheless, these differences need further investigation since only a subset of the outcomes followed this pattern.

5. Study 2

Study 1 suggested that whereas the rejection experience was followed by recovery of threatened needs within the study time frame, the distress caused by ghosting remained until the end of the study, at least for a subset of outcomes. Thus, Study 2 was primarily intended to see if this pattern of results from Study 1 was replicable. Moreover, within ethical constraints, we also aimed to detect evidence of the

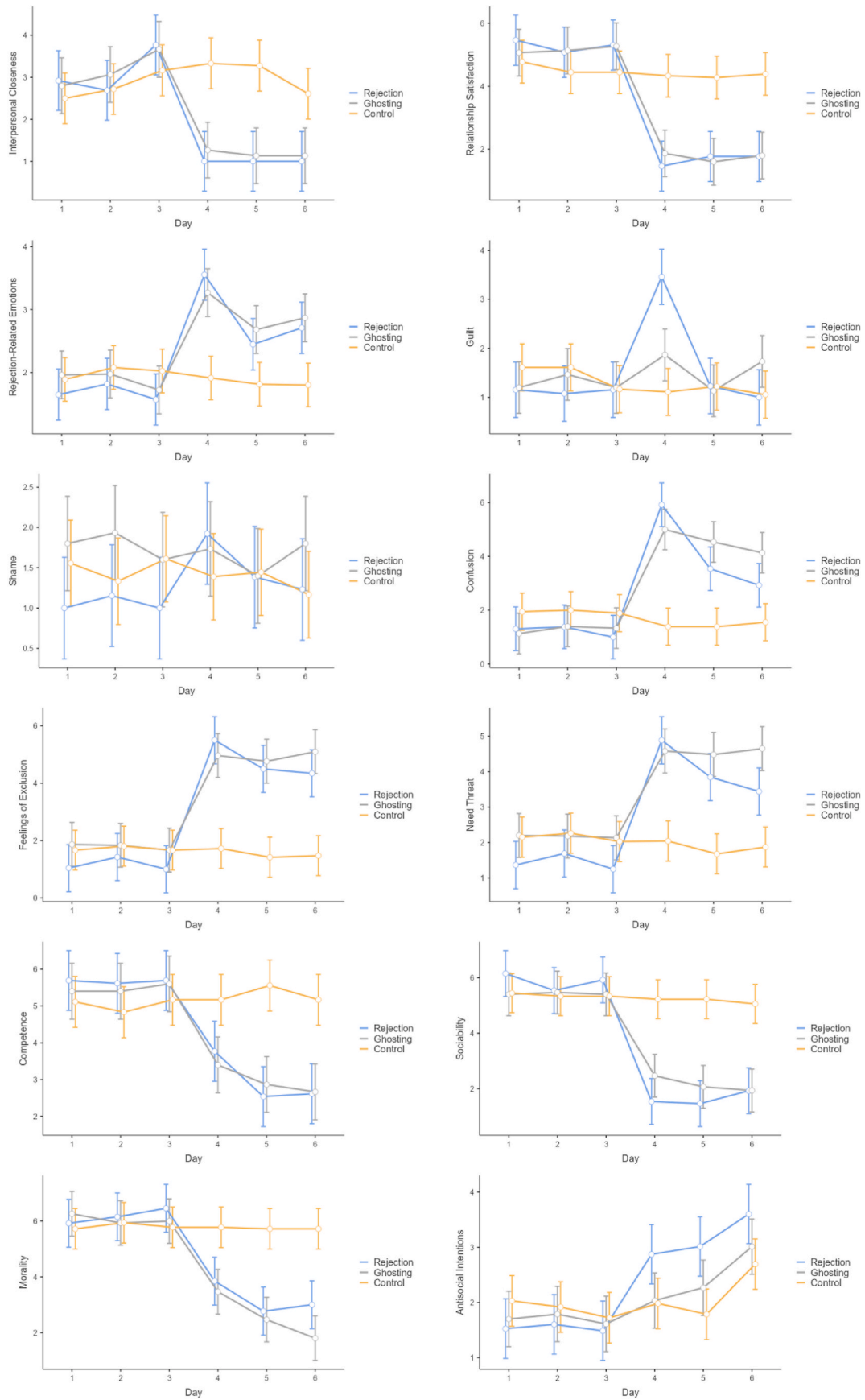


Fig. 2. Estimated marginal means of all dependent variables by condition across days in study 1.

psychological recovery that follows a ghosting experience using a more prolonged study time frame. Thus, we extended our investigation by monitoring participants' responses for three days more following the experimental manipulation, bringing the total duration of the study to 9 days. Likewise, in Study 1, we did not systematize the post-rejection exchanges but provided general indications to refer participants to the experimenter. In Study 2, we devised a specific script, detailed in section 5.1.2. Finally, as opposed to Study 1 (using only opposite-gender confederates), Study 2 paired participants with confederates of both genders, allowing for the generalization of Study 1's results and exploration of the potential role of gender.

5.1. Methods

5.1.1. Design and participants

This study employed a 3 (Condition: Ghosting, Rejection, Control) x 2 (Gender Congruency: Same Gender, Opposite Gender) x 9 (Days) mixed design, with days representing the repeated measurement of the dependent variables. Study 2 applied the same procedure and experimental manipulation as Study 1. However, the timespan consisted of 9 days, and we added another experimental manipulation regarding the gender of the confederate by matching participants with a person identifying as the same vs. opposite gender.

Since, as preregistered, we intended to conduct mixed ANOVA analyses, to determine the sample size, we ran an a priori power analysis using G*Power, aiming for a statistical power of at least $1-\beta = 0.80$ and an alpha error of $\alpha = .05$. The sample size determination was focused on the main effects and interactions between condition, gender congruency, and time on the outcomes measured in the daily questionnaires, the key analyses we intended to perform. Based on the previous study, we anticipated a reasonably large effect ($f = 0.35$); thus, a minimal total sample size of 66 participants was required. However, to account for the possible substantial drop-out due to the burden of the study, we decided to recruit around 130 % of the minimal sample size, at least 86 individuals. Subsequently, we opted for mixed model analyses. Since the power estimation for mixed models is still debated, we based our power analyses on a mixed ANOVA model. We conducted these analyses both a priori to determine the minimum sample size and as a sensitivity analysis afterward to confirm that our sample size was sufficient to detect the effect size.

We used the same inclusion criteria and recruitment strategies presented for Study 1. One hundred twelve participants entered the first experimental phase. Twenty-one participants did not respond to all the questionnaires, and 1 participant was excluded from the analysis because they explicitly revealed that they had altered their responses entirely due to participant bias. Therefore, 90 participants were retained in the final sample (44.4 % female, 55.6 % male; $M_{age} = 24.21$, $SD = 2.66$, $Range = 19-34$ years).

Of the final sample, 33 participants (33.3 %) took part in the control condition, 27 (30.0 %) in the ghosting condition, and 33 (36.7 %) in the rejection condition. Forty-seven participants (52.2 %) were assigned to a same-gender partner, and 43 participants (47.8 %) to an opposite-gender partner. Descriptive statistics of each condition are reported in Table 2.

5.1.2. Materials and procedure

T0: Group Video Call, Contacts, and Individual Characteristics. The video call and contact steps were identical to Study 1. In the first questionnaire, besides asking for primary demographic data (i.e., gender, age, nationality, college course, and occupational status) and Telegram usernames, we measured some individual characteristics reported in the preregistration with exploratory intentions. However, examining the impact of moderators would have required collecting a larger sample, which was impossible due to the lack of resources needed to run such a paradigm, which requires coupling each participant with a confederate.

Interaction Days: Chats and Daily Questionnaires.¹ The procedure was the same as in Study 1. Due to the addition of three days, three extra discussion topics were included: cooking, movies, and life online (i.e., use of the web and social media).

We measured interpersonal closeness, emotions, need threat, social perception, and relationship satisfaction with the same items as Study 1. Conversely, instead of using a full scale to measure only antisocial/prosocial behavioral inclinations, we chose to include one item for each of the three primary responses to ostracism: prosocial ("smiling at the other person"), antisocial ("insult or swear at the other person"), and solitude-seeking ("being alone") behaviors with ratings provided on a 7-point Likert Scale (1 = *not at all* to 7 = *extremely*). In this way, we could also assess a possible withdrawal response and, at the same time, reduce the study burden.

The Experimental Manipulation. The experimental manipulation was identical to Study 1. However, to standardize the brief conversation that could follow rejection, we devised a specific script for confederates to follow:

"Hi [name], I am not interested in talking with you anymore."

If participants asked for an explanation, the confederate would say: "I don't want to talk about it; I simply don't feel like chatting with you anymore."

If participants asked about the study task, the confederate would say: "Feel free to write to the experimenter and inform them of what I told you."

If participants insisted further, the confederate would say: "As I told you, I'm no longer interested in continuing to chat; please talk to the experimenter about it."

In practice, participants did not attempt to continue the conversation after this point, and no further exchanges occurred between confederates and participants.

Final Questionnaire. Like in Study 1, the measures and results from this questionnaire will be reported in the supplementary materials.

5.2. Analysis plan

In Study 2, we applied the same statistical analyses as in Study 1, using the same software. When there was a significant condition x time interaction, we conducted trend analyses to assess changes over time in the post-manipulation period by modeling linear, quadratic, and cubic trajectories for each condition. In the main text, we report the analyses that do not include the effect of gender congruency, as it did not turn out to be a meaningful predictor. The analyses including gender congruency are reported in Table S3 and S4 of the supplementary materials.

5.3. Results

5.3.1. Preliminary analyses

Descriptive statistics were computed for each condition and are reported in Table 2. We computed a Chi-Square test to verify whether the assignment to the two experimental factors (condition and gender congruency) was independent. The analysis showed no significant relationship between the two factors, $\chi^2(2) = 0.023$, $p = .989$. The Chi-Square test indicated a significant relationship between the assigned condition and the response to a multiple-choice manipulation check, $\chi^2(4) = 178.00$, $p < .001$. Based on adjusted standardized residuals (*asr*), in the ghosting condition, participants reported that the interaction partner stopped interacting without providing any explanation more than randomly, $asr = |9.4|$; in the rejection condition, they were more

¹ In Study 2 we also asked our confederates to fill out a brief questionnaire about their interaction and connection with each of their assigned participants. The aim was to explore the possible impact of the ghosting vs. rejection behavior on the source. These data, however, will not be discussed in this manuscript.

likely to report that the other person had stated they did not want to keep on with the interaction, $asr = |9.4|$; while participants in the control condition reported that they had interacted for the whole period, $asr = |9.4|$. Additionally, the one-way ANOVA conducted on the reported number of interaction days yielded a significant result, $F(2) = 1799.22, p < .001, \eta_p^2 = 0.977$. The control group reported engaging in chats for an average of approximately nine days, $M = 8.88, SE = 0.08$, while individuals who were rejected, $M = 3.00, SE = 0.08$, and ghosted, $M = 2.92, SE = 0.09$, reported an average of around three days.

The effect of the condition in the mixed model analysis conducted to check for significant differences in the levels of closeness before the manipulation was not significant, $F(2, 87) = 0.34, p = .712$, showing that participants in the ghosting ($M = 3.07, SD = 0.26$), rejection ($M = 2.89, SD = 0.25$), and control ($M = 2.79, SD = 0.23$) conditions developed similarly close relationships. Similarly, the effect of the condition in the mixed model analysis conducted to check for significant differences in the levels of relationship satisfaction before the manipulation was not significant, $F(2, 43) = 0.20, p = .823$, showing that participants in the ghosting ($M = 4.69, SD = 0.24$), rejection ($M = 4.61, SD = 0.22$), and control ($M = 4.49, SD = 0.21$) conditions were similarly satisfied by their relationships.

5.3.2. Daily questionnaires

The results of the mixed model analyses for the post-manipulation days, including marginal and conditional R^2 values and F test results, are reported in Table 5. Bonferroni-corrected post hoc comparisons between Day 3 and Day 4 (i.e., the day the manipulation was implemented), as well as trend analyses across Days 4–9 (i.e., the post-manipulation period), are summarized in Table 6 and described below. Corresponding plots are presented in Fig. 3.

Interpersonal Closeness (IOS). Interpersonal closeness significantly decreased immediately after the manipulation in both the ghosting and rejection conditions and remained unchanged over time, indicating an immediate and definitive impact.

Relationship Satisfaction. Relationship satisfaction significantly decreased in both the ghosting and rejection conditions. In rejection, the impact was immediate and stable, whereas ghosting showed a gradual and continued decline over time. In contrast, the control condition exhibited a delayed increase.

Rejection-Related Emotions. Rejection-related emotions increased immediately after the manipulation in both the ghosting and rejection conditions. Over time, both conditions showed a non-linear trend, suggesting an initial recovery followed by a rebound. The control condition showed a delayed increase followed by a decrease.

Guilt. The interaction effect for guilt was not significant and was not analyzed further.

Table 5
Linear mixed model results for study 2.

Outcome Variable	Model Fit	Condition (df = 2, 86)		Time (df = 5, 435)		Condition×Time (df = 10, 435)		Baseline Level (df = 1, 86)	
	R^2m (R^2c)	F	p	F	p	F	p	F	p
Interpersonal Closeness	0.60 (0.84)	86.16	<0.001	1.08	0.372	1.23	0.271	41.98	<0.001
Relationship Satisfaction	0.62 (0.89)	66.34	<0.001	6.21	<0.001	9.85	<0.001	69.20	<0.001
Rejection-Related Emotions	0.47 (0.73)	52.28	<0.001	2.62	0.024	4.78	<0.001	20.23	0.024
Guilt	0.06 (0.30)	0.18	0.837	2.36	0.040	1.68	0.082	4.24	0.042
Shame	0.08 (0.20)	0.42	0.659	5.12	<0.001	1.65	0.090	3.47	0.066
Confusion	0.26 (0.75)	12.35	<0.001	19.51	<0.001	13.78	<0.001	0.68	0.413
Feelings of Exclusion	0.39 (0.77)	28.82	<0.001	8.64	<0.001	5.48	<0.001	15.21	<0.001
Need Threat	0.39 (0.76)	14.70	<0.001	4.27	<0.001	2.03	0.029	38.55	<0.001
Competence	0.55 (0.81)	19.83	<0.001	1.83	0.106	4.52	<0.001	126.73	<0.001
Sociability	0.61 (0.85)	57.97	<0.001	6.11	<0.001	6.63	<0.001	86.87	<0.001
Morality	0.46 (0.86)	21.38	<0.001	4.78	<0.001	5.21	<0.001	59.06	<0.001
Prosocial Intentions	0.49 (0.85)	26.50	<0.001	2.71	0.020	3.26	<0.001	62.01	<0.001
Antisocial Intentions	0.12 (0.64)	3.84	0.025	1.07	0.377	0.75	0.680	8.87	0.004
Solitude-Seeking Intentions	0.29 (0.79)	8.67	<0.001	0.47	0.801	5.07	<0.001	24.90	<0.001

Note. R^2m = marginal R^2 ; R^2c = conditional R^2 . df = numerator degrees of freedom, denominator degrees of freedom. All models include the average level of the dependent variable measured before the manipulation (Days 1–3) as a covariate to control for baseline differences (Baseline Level).

Shame. The interaction effect for shame was not significant and was not analyzed further.

Confusion. Confusion increased immediately in both the ghosting and rejection conditions. Over time, levels decreased in both conditions, but the reduction was significantly greater in the rejection condition, $t(435) = 6.61, p < .001$, indicating a faster recovery. The control condition showed no significant change.

Feelings of Exclusion. Feelings of exclusion significantly increased immediately after the manipulation in both ghosting and rejection. Over time, rejection showed recovery, while ghosting showed a relapse pattern. The control condition showed no significant change.

Need Threat. Need threat significantly increased immediately after the manipulation in both ghosting and rejection. Over time, it declined in the rejection condition but remained unchanged in ghosting, suggesting a more persistent effect. The control condition showed no significant change.

Prosocial Intentions. Prosocial intentions significantly decreased immediately after the manipulation in both ghosting and rejection. Over time, ghosting showed a gradual and continued decline, whereas rejection remained unchanged. No change emerged in the control condition.

Antisocial Intentions. The interaction effect for antisocial intentions was not significant and not analyzed further.

Solitude-Seeking Intentions. Solitude-seeking intentions increased immediately in rejection but not in ghosting. Over time, ghosting showed a delayed increase, whereas rejection showed a decline, indicating recovery. No significant change emerged in the control condition.

Competence. Perceptions of the other’s competence decreased in both ghosting and rejection immediately after the manipulation. Over time, competence declined further in the ghosting condition, remained unchanged in rejection, and increased in the control condition.

Sociability. Perceptions of the other’s sociability decreased in both ghosting and rejection immediately after the manipulation. Over time, sociability declined further in ghosting but remained unchanged in rejection. No change emerged in the control condition.

Morality. Morality decreased immediately in both ghosting and rejection. Over time, both conditions showed a gradual decline, with a steeper decrease in ghosting, $t(435) = -4.13, p < .001$. No significant change emerged in the control condition.

5.3.3. Sensitivity analysis

To verify if our sample allows the detection of the effects, we conducted a sensitivity power analysis in the mixed ANOVA assemblage (i.e., the one originally considered when performing the a priori power analysis) using G*Power. In this case, we aimed to detect the main effects and interactions. We calculated the sensitivity power analysis on

Table 6
Post-manipulation outcome patterns across experimental conditions for study 2.

Variable	D3-D4 (Post-Hoc)	Linear Trend	Quadratic Trend	Cubic Trend	Trajectory Description
Interpersonal Closeness					
Ghosting	$t(938) = 6.96, p < .001$	-	-	-	Immediate & Definitive
Rejection	$t(696) = 9.05, p < .001$	-	-	-	Immediate & Definitive
Control	$t(296) = -0.44, p = 1.000$	-	-	-	Stable
Relationship Satisfaction					
Ghosting	$t(696) = 6.11, p < .001$	$b = -1.12, SE = 0.11, p < .001$	$b = 0.25, SE = 0.11, p = .025$	$b = -0.15, SE = 0.11, p = .181$	Gradual
Rejection	$t(696) = 11.42, p < .001$	$b = -0.11, SE = 0.10, p = .282$	$b = -0.08, SE = 0.10, p = .462$	$b = 0.09, SE = 0.10, p = .376$	Immediate & Definitive
Control	$t(696) = 0.49, p = 1.000$	$b = 0.25, SE = 0.10, p = .013$	$b = 0.00, SE = 0.10, p = .947$	$b = 0.04, SE = 0.10, p = .681$	Delayed (opposite)
Rejection-Related Emotions					
Ghosting	$t(696) = -7.54, p < .001$	$b = -0.02, SE = 0.08, p = .760$	$b = -0.04, SE = 0.08, p = .648$	$b = 0.26, SE = 0.08, p = .001$	Immediate & Relapse
Rejection	$t(696) = -11.56, p < .001$	$b = -0.32, SE = 0.08, p < .001$	$b = 0.31, SE = 0.08, p < .001$	$b = -0.11, SE = 0.08, p = .126$	Immediate & Relapse
Control	$t(696) = -0.19, p = 1.000$	$b = -0.09, SE = 0.07, p = .206$	$b = -0.16, SE = 0.07, p = .027$	$b = -0.05, SE = 0.07, p = .477$	Delayed (opposite)
Guilt					
Ghosting	-	-	-	-	
Rejection	-	-	-	-	
Control	-	-	-	-	
Shame					
Ghosting	-	-	-	-	
Rejection	-	-	-	-	
Control	-	-	-	-	
Confusion					
Ghosting	$t(696) = -4.90, p < .001$	$b = -0.37, SE = 0.17, p = .030^*$	$b = -0.20, SE = 0.17, p = .247$	$b = -0.05, SE = 0.17, p = .759$	Immediate & Recovery *
Rejection	$t(696) = -11.98, p < .001$	$b = -1.93, SE = 0.16, p < .001^*$	$b = 1.29, SE = 0.16, p < .001$	$b = -0.68, SE = 0.16, p < .001$	Immediate & Recovery *
Control	$t(696) = 0.12, p = 1.000$	$b = -0.13, SE = 0.15, p = .386$	$b = -0.13, SE = 0.15, p = .814$	$b = 0.01, SE = 0.15, p = .965$	Stable
Feelings of Exclusion					
Ghosting	$t(696) = -7.67, p < .001$	$b = -0.25, SE = 0.18, p = .164$	$b = -0.01, SE = 0.18, p = .946$	$b = 0.51, SE = 0.18, p = .004$	Immediate & Relapse

Table 6 (continued)

Variable	D3-D4 (Post-Hoc)	Linear Trend	Quadratic Trend	Cubic Trend	Trajectory Description
Rejection	$t(696) = -10.57, p < .001$	$b = -1.30, SE = 0.17, p < .001$	$b = 0.87, SE = 0.17, p < .001$	$b = -0.14, SE = 0.17, p = .423$	Immediate & Recovery
Control	$t(696) = 0.30, p = 1.000$	$b = -0.08, SE = 0.16, p = .608$	$b = 0.07, SE = 0.16, p = .640$	$b = 0.03, SE = 0.16, p = .868$	Stable
Need Threat					
Ghosting	$t(696) = -5.71, p < .001$	$b = -0.20, SE = 0.12, p = .093$	$b = -0.15, SE = 0.12, p = .208$	$b = 0.07, SE = 0.12, p = .547$	Immediate & Definitive
Rejection	$t(969) = -7.06, p < .001$	$b = -0.55, SE = 0.11, p < .001$	$b = 0.26, SE = 0.11, p = .018$	$b = -0.00, SE = 0.11, p = .969$	Immediate & Recovery
Control	$t(969) = -0.09, p = 1.000$	$b = -0.08, SE = 0.11, p = .446$	$b = 0.04, SE = 0.11, p = .651$	$b = 0.05, SE = 0.11, p = .609$	Stable
Competence					
Ghosting	$t(696) = 3.37, p = .278$	$b = -0.77, SE = 0.13, p < .001$	$b = -0.77, SE = 0.13, p < .001$	$b = 0.02, SE = 0.13, p = .882$	Gradual
Rejection	$t(696) = 4.54, p = .002$	$b = -0.22, SE = 0.12, p = .081$	$b = 0.12, SE = 0.12, p = .330$	$b = -0.02, SE = 0.12, p = .856$	Immediate & Definitive
Control	$t(696) = 0.48, p = 1.000$	$b = 0.38, SE = 0.12, p = .001$	$b = -0.05, SE = 0.12, p = .673$	$b = 0.02, SE = 0.12, p = .832$	Delayed (opposite)
Sociability					
Ghosting	$t(696) = 5.35, p < .001$	$b = -1.17, SE = 0.13, p < .001$	$b = 0.15, SE = 0.13, p = .251$	$b = 0.03, SE = 0.13, p = .816$	Gradual
Rejection	$t(696) = 10.31, p < .001$	$b = -0.06, SE = 0.12, p = .628$	$b = -0.17, SE = 0.12, p = .176$	$b = 0.05, SE = 0.12, p = .687$	Immediate & Definitive
Control	$t(696) = -1.36, p = 1.000$	$b = 0.09, SE = 0.12, p = .460$	$b = 0.15, SE = 0.12, p = .217$	$b = 0.12, SE = 0.13, p = .301$	Stable
Morality					
Ghosting	$t(696) = 5.08, p < .001$	$b = -1.00, SE = 0.13, p < .001^*$	$b = 0.01, SE = 0.13, p = .926$	$b = -0.03, SE = 0.13, p = .817$	Gradual*
Rejection	$t(696) = 4.82, p < .001$	$b = -0.26, SE = 0.12, p = .041^*$	$b = 0.01, SE = 0.12, p = .930$	$b = 0.03, SE = 0.12, p = .826$	Gradual*
Control	$t(696) = -0.68, p = 1.000$	$b = 0.22, SE = 0.12, p = .063$	$b = 0.05, SE = 0.12, p = .655$	$b = 0.03, SE = 0.12, p = .826$	Stable
Prosocial Intentions					

(continued on next page)

Table 6 (continued)

Variable	D3-D4 (Post-Hoc)	Linear Trend	Quadratic Trend	Cubic Trend	Trajectory Description
Ghosting	$t(696) = 5.10, p < .001$	$b = -0.73, SE = 0.14, p < .001$	$b = 0.17, SE = 0.14, p = .239$	$b = -0.21, SE = 0.14, p = .146$	Gradual
Rejection	$t(696) = 8.43, p < .001$	$b = -0.24, SE = 0.14, p = .081$	$b = -0.07, SE = 0.14, p = .594$	$b = 0.20, SE = 0.14, p = .146$	Immediate & Definitive
Control	$t(969) = 0.76, p = 1.000$	$b = 0.19, SE = 0.13, p = .141$	$b = 0.06, SE = 0.13, p = .666$	$b = -0.15, SE = 0.13, p = .246$	Stable
Antisocial Intentions					
Ghosting	$t(696) = -3.32, p = .337$	-	-	-	Stable
Rejection	$t(696) = -2.22, p = 1.000$	-	-	-	Stable
Control	$t(696) = 0.35, p = 1.000$	-	-	-	Stable
Solitude-Seeking Intentions					
Ghosting	$t(696) = -1.07, p = 1.000^*$	$b = 0.65, SE = 0.17, p < .001$	$b = -0.25, SE = 0.17, p = .158$	$b = 0.31, SE = 0.17, p = .079$	Delayed
Rejection	$t(696) = -7.00, p < .001^*$	$b = -0.61, SE = 0.17, p < .001$	$b = 0.51, SE = 0.17, p = .002$	$b = -0.15, SE = 0.17, p = .375$	Immediate & Recovery
Control	$t(696) = -0.22, p = 1.000$	$b = -0.35, SE = 0.16, p = .025$	$b = -0.12, SE = 0.16, p = .426$	$b = -0.04, SE = 0.16, p = .796$	Delayed (opposite)

Note. D3–D4 (Post-Hoc) reports the results of Bonferroni-corrected pairwise comparisons between Day 3 and Day 4 within each condition. Linear, Quadratic, and Cubic Trend columns report coefficients from polynomial trend analyses examining the trajectory of each outcome over time. “Trajectory Description” provides a qualitative summary of the temporal pattern observed in each condition: Immediate & Definitive = abrupt and lasting change; Immediate & Recovery = initial change followed by a return toward baseline; Immediate & Relapse = initial change followed by reversal; Gradual = progressive change; Delayed = significant change emerging later; Stable = no significant change. * $p < .05$ between conditions.

the main effects of the two between-subjects factors since they required the greatest power in our study to be detected. Given our study design, a large correlation among repeated measures ($ICC = 0.50$), and our final sample size of 90 participants, the study provided 80 % power to detect an effect size of $R^2 = 0.078$, 85 % power to detect an effect size of $R^2 = 0.087$, and 90 % power to detect an effect size of $R^2 = 0.098$, with a 5 % false-positive rate.

5.4. Discussion

Study 2 replicated and extended the findings of Study 1, providing robust support for the validity of the newly developed paradigm in simulating ghosting and rejection experiences. Additionally, it allowed for an initial exploration of the role of the gender composition of the dyads, which did not appear to meaningfully moderate the effects, suggesting generalizability across different participant pairings.

Findings revealed that both exclusion conditions, compared to inclusion, resulted in reduced interpersonal connection, increased

negative emotions, disrupted need satisfaction, negative evaluations of the other person, reduced prosocial intentions, and increased solitude-seeking intentions, confirming the broad psychological impact of digitally mediated exclusion. However, crucially, Study 2 revealed clearer temporal divergences between ghosting and rejection across multiple domains, revealing that the two forms of exclusion may differ in how individuals recover from them.

In the relationship domain, interpersonal closeness dropped immediately in both exclusion conditions and remained low, suggesting that ghosting and rejection were interpreted as relationship-ending events. However, relationship satisfaction showed a more gradual decline in the ghosting condition, possibly reflecting a slower emotional processing or delayed realization of the relational rupture. Regarding emotional and cognitive responses related to social exclusion (e.g., feelings of exclusion, need threat, confusion), rejection led to a sharper initial spike, followed by consistent signs of recovery. In contrast, ghosting responses were more prolonged or unstable. Feelings of exclusion and need threat remained elevated or showed rebound effects after ghosting, while confusion declined more slowly, suggesting that ghosted participants struggled longer with ambiguity and lacked interpretive clarity. Behavioral and motivational intentions also differed over time. While prosocial intentions dropped in both exclusion conditions, only ghosted participants showed a continued decline. Solitude-seeking intentions, by contrast, increased immediately after rejection but emerged more gradually following ghosting. These patterns may reflect a delay in emotional adjustment after ghosting and a slower shift toward withdrawal-oriented coping. Finally, in terms of social perceptions, ghosting again appeared more impactful. Although perceptions of the other’s competence, sociability, and morality declined across both exclusion conditions, only in the ghosting condition did these evaluations continue to deteriorate over time. This may reflect the prolonged interpretive process prompted by ghosting’s ambiguity, which could leave participants continuously reevaluating the other person’s character in the absence of closure.

Overall, these findings reinforce the notion that ghosting elicits a slower-building yet more prolonged response compared to rejection, which triggers a sharper reaction and faster recovery. The nature of ghosting likely interferes with cognitive understanding of the situation, making it uniquely challenging to process and recover from.

6. General discussion

6.1. Summary of findings

6.1.1. A new experimental paradigm to investigate ghosting

The research on ghosting has not developed an experimental paradigm to induce ghosting and measure its effects. Therefore, the first aim of this research was to design and test a multi-day experimental paradigm. The experimental control allowed for high internal validity, while the ordinary setting promoted external validity. Across two studies, we have shown that our paradigm, summarized in Fig. 1, effectively induces ghosting and rejection in an interpersonal online setting. Participants were able to recognize the way their interaction ended. Moreover, their reaction was consistent with previous reports of real-life ghosting experiences, thus indicating that our experience properly resembles actual ghosting events. Consequently, our paradigm can be used to examine the response to ghosting over time, comparing it to rejection and an inclusionary control condition. Our paradigm builds on this tradition of social exclusion research while introducing two key innovations. First, unlike most paradigms that examine either ostracism or rejection in isolation (e.g., Cyberball; Williams & Jarvis, 2006), our approach allows for a direct comparison of both phenomena, enabling researchers to examine their relative effects. Second, it extends the exclusion experience over multiple days, allowing us to track participants’ psychological responses in real-time and test theoretical claims about the temporal unfolding of social disconnection.

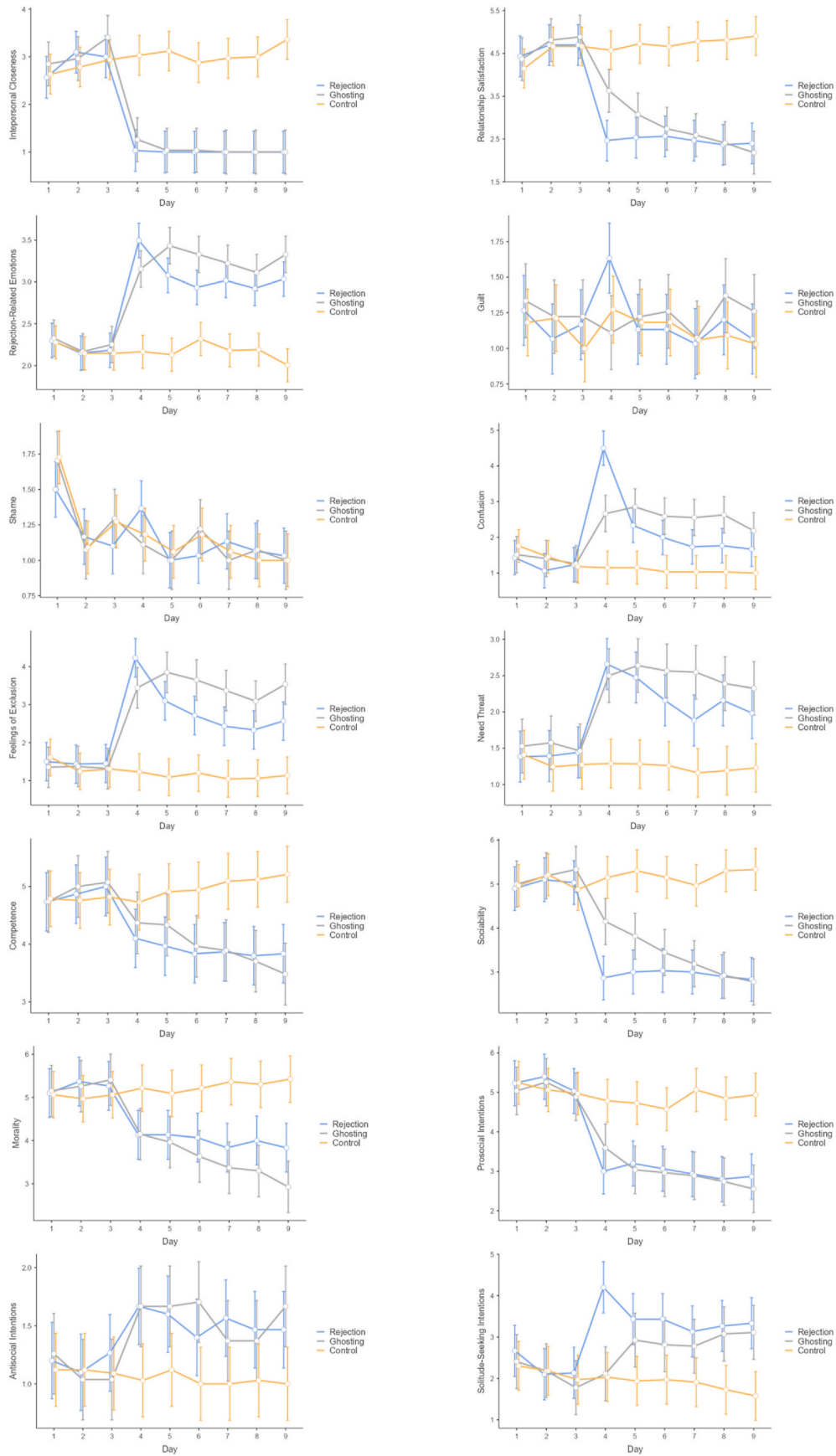


Fig. 3. Estimated marginal means of all dependent variables by condition across days in study 2.

6.1.2. On the overlaps in the psychological consequences of ghosting and rejection

Our studies showed significant overlaps in the psychological consequences of ghosting and rejection. Firstly, our findings confirmed that ghosting and rejection trigger a sense of disconnection from the individual responsible for the dissolution, resulting in a negative evaluation of the relationship, consistent with previous retrospective studies (Leckfor et al., 2023; Pancani et al., 2022). Secondly, our research revealed that ghosting and rejection elicit rejection-related emotions and threaten the basic psychological needs as is typical in the social exclusion reaction (i.e., belonging, self-esteem, control, and meaningful existence; Williams, 2009). Concurrently, the perception of being ignored and excluded emerges strongly. These findings corroborate previous results (Freedman et al., 2022; Leckfor et al., 2023; Pancani et al., 2021, 2022) and reinforce the interpretation of ghosting as a social exclusion instance, identifying it as a valuable framework within which we can examine and conceptualize this emerging phenomenon.

Furthermore, we investigated the emergence of other emotional states previously associated with ghosting, such as guilt, shame, and confusion (Pancani et al., 2021; Yap et al., 2021). Shame was not identified as a consequence of ghosting and rejection, while guilt seemed to play a role only in one of the studies, providing only limited support for the previous literature. In contrast, confusion was associated with both experiences. By definition, indeed, ghosting lacks a moment of confrontation and closure, leaving the recipient wondering what occurred, if something happened to the other person, how they should behave, and whether they can move forward. Our results support previous studies highlighting confusion and uncertainty as prevalent experiences in ghosting episodes (Fanti et al., 2023; LeFebvre & Fan, 2020). In contrast, rejection, which promotes easier account-making and acceptance, should not induce such levels of confusion. However, the item measuring the levels of confusion in our studies was generic, not allowing us to disentangle between the confusion related to the outcome (i.e., not understanding whether the act was meant to reject) and the confusion related to the expectancy-violating behavior. Therefore, we speculate that participants experience confusion due to the expectancy-violating behavior in both conditions, but the outcome is also perceived as unclear in the ghosting condition.

Moreover, our investigation into behavioral intentions towards the source and others unveiled that ghosting and rejection generally decrease the intention to engage in prosocial behaviors, such as smiling at the person responsible for the exclusion, while showing no effect on the intention to exhibit antisocial behaviors, such as insulting the source. Additionally, our data show that rejected and ghosted participants prefer solitude-seeking behaviors, like being alone. Prosocial, antisocial, and solitude-seeking behaviors are the typical outcomes of social exclusion acts (Ren et al., 2016, 2018; Richman & Leary, 2009; Williams, 2009). Prosocial behaviors are usually aimed at reestablishing the lost connection. Given the little value of the connection with the study partner, which had just been established for the study three days before, it is reasonable that participants do not prioritize fixing the relationship. Antisocial behaviors, instead, serve the purpose of restoring control and can act as an outlet to relieve psychological distress and punish the source. In our design, the low value of the relationship probably does not justify the emergence of antisocial behaviors. Finally, solitude-seeking can be used as a means of self-protection. Since rejected and ghosted participants have been subjected to a hurtful event, they may seek to be alone to shield themselves from other possible painful experiences, which aligns with Lutz and Schneider's (2020) findings in the social media environment.

Finally, we explored participants' evaluations of the individuals who excluded them in terms of competence, sociability, and morality, crucial dimensions in forming and updating impressions of others (Brambilla et al., 2021). Our findings indicate that both ghosting and rejection negatively affect all three dimensions, suggesting that individuals who engage in exclusionary behavior are perceived as less competent, less

friendly, and less moral, supporting previous findings (Rudert, Reutner, et al., 2017). Nevertheless, ghosting appears to be particularly associated with a reduction in perceived morality, in line with Pancani and colleagues' (2021; 2022) research, which suggests that ghosting is considered more unjust, and Sprecher and colleagues' (2010) findings that indirect breakup strategies are considered less compassionate and hence less morally accepted.

6.1.3. The specificity of ghosting: reacting and recovering from ghosting takes longer than rejection

Despite similar outcomes, our study's multi-day approach provided valuable insights into the temporal dynamics of ghosting and rejection, shedding light on the effectiveness of the coping processes triggered by different forms of social exclusion. In brief, the response to rejection was more punctual: it broke out right after the event and consequently subsided. Ghosting, instead, triggered a slower and more extended response.

Considering the perception of closeness, no significant differences emerged between ghosting and rejection. Both strategies imply a lack of interaction, interpreted as an interpersonal distancing event. However, the relationship quality decreased at once, on the event day, after rejection, but gradually after ghosting in Study 2. While rejection is a precise event, after ghosting, individuals may still experience some degree of satisfaction in their relationship because they cannot or do not want to assume that the relationship is over (Leckfor et al., 2023; LeFebvre et al., 2020).

Furthermore, we observed differential patterns in the evolution of need threat, the perception of being excluded, and confusion. Rejected participants experienced intense consequences on the day of the event but coped more effectively with the situation in the subsequent days. In contrast, ghosted individuals struggled more to restore their previous state, as signified by an absent or reduced negative linear trend after the manipulation day. An interesting cubic trend, signaling fluctuation in participants' answers, also emerged in rejection-related emotions and feeling ignored and rejected for the ghosting condition. This pattern may reflect the constant confusion that ghostees report experiencing.

In addition, we observed that the social perception of the source undergoes a slower and more gradual update following ghosting (vs. rejection), as shown by a negative linear trend after the manipulation day (vs. no or a weaker negative linear trend). While rejectors were perceived as the least competent and sociable immediately after rejection, the impression of ghosters experienced a gradual decrease over time, not only on the day of ghosting. Notably, morality judgments continued to decline daily throughout the experiment in both conditions, but with a significantly larger magnitude in the case of ghosters. Accordingly, in the rejection condition, the interaction unequivocally comes to an end, leading individuals to negatively update their impressions at that moment and refrain in the subsequent days. Conversely, ghosting leaves the situation open for potential future interactions. As a result, ghostees may anticipate the ghoster's return and explanation for their absence. Each time this anticipated reconciliation does not occur, disappointment sets in, leading to an increasingly negative perception of the ghoster.

The emergence of behavioral intentions followed a similar pattern. Immediately after rejection, individuals report reduced prosocial intentions and a significant increase in solitude-seeking. Conversely, the emergence of these behavioral intentions for ghostees is progressive and delayed, as shown by the lack of difference between day 3 (i.e., the day before the manipulation) and day 4 (i.e., the day of the manipulation) and the subsequent linear trend. Even in this case, this difference may be explained by the diverse interpretation of the situations related to their level of closure. Ghostees are uncertain about what has happened and, consequently, need more time to construe the situation and decide how to act (LeFebvre & Fan, 2020; LeFebvre et al., 2020). By the end of the experiment, the ghoster's intentions become clear; thus, the willingness to be prosocial decreases, and the desire to be alone is maximum.

Overall, abstracting from the specific findings, rejection tends to elicit a more immediate and delimited emotional response, whereas ghosting often evokes a slower but more enduring reaction. In light of Williams's (2009) temporal model, both forms of exclusion initially trigger a reflexive negative response, but over time, rejected individuals show greater signs of progressing into the reflective stage. In contrast, ghosted participants appear to remain stuck in it, showing less improvement in coping with the experience, even after nine days.

Drawing a parallel to stress research (Norris et al., 2009), indeed, the trends that appeared after rejection reveal resilience and recovery patterns, which signal that coping resources have effectively neutralized the stressor. In contrast, the trends that emerged after ghosting can be identified as chronic dysfunction, relapsing/remitting, and delayed dysfunction patterns, which highlight a challenging coping process. These differences can be related to the uncertainty and lack of closure inherent in ghosting episodes. Interestingly, the only difference between ghosting and rejection in our paradigm is a single message from the confederate ("Hi [name], I am not interested in talking with you anymore") that does not provide any reason for the relationship termination but seems sufficient to move on. As already pointed out by LeFebvre and Fan (2020), ghosting can indeed be viewed as an ambiguous loss event (Boss, 1999). Ambiguous loss is present when there is physical absence with psychological presence, the so-called "leaving without goodbye" (Boss, 1999, p. 26), or psychological absence with physical presence, "goodbye without leaving" (Boss, 1999, p. 45). Ghosting can be considered a case of an ambiguous loss with physical absence. Coping with the distressful experience and reaching acceptance when closure is not attainable is complex, as it requires dwelling in uncertainty. Therefore, the ghoster is gone, but their psychological presence keeps haunting the ghostee.

6.2. Implications

This research offers methodological, theoretical, and practical contributions to the study of ghosting and social disconnection. Methodologically, we introduced a novel multi-day experimental paradigm that enables the real-time simulation of ghosting and rejection experiences in a controlled yet ecologically valid context. This approach overcomes key limitations of retrospective designs and opens new possibilities for studying dynamic interpersonal processes in digital settings.

Theoretically, our findings support the conceptualization of ghosting as a form of interpersonal ostracism (e.g., Freedman et al., 2019; Pancani et al., 2021; Schokkenbroek et al., 2025), with unique consequences linked to its ambiguity and lack of closure. The results align with the Temporal Need Threat Model (Williams, 2009), demonstrating that recovery processes differ depending on the clarity and finality of the exclusion experience, with ghosting leading to more prolonged psychological distress. Additionally, the findings refine classical typologies of breakup strategies (e.g., Baxter, 1982; LeFebvre, 2017) by showing that indirect disengagement may be more harmful than direct rejection, even in minimal and digitally mediated interactions.

From a practical perspective, these findings highlight the emotional toll of ghosting and underscore the importance of clear and respectful communication when ending social exchanges, even in digital contexts. Raising public awareness of these consequences could inform digital literacy initiatives and relationship education programs. Furthermore, digital platforms, especially dating apps and messaging services, might consider incorporating optional tools like disengagement prompts or message templates to help users end conversations more clearly and respectfully, ultimately promoting healthier digital interactions.

6.3. Limitations and future directions

Our studies are not exempt from limitations. First, the paradigm was designed to balance external validity by creating a realistic and ongoing digital interaction and internal validity by ensuring experimental

control. Still, interacting with a new acquaintance on assigned topics as part of a research study cannot fully capture the range of real-life ghosting scenarios, especially those involving higher emotional stakes; thus, while our design models one common context for ghosting (i.e., digital interactions between early-stage acquaintances), its generalizability to more emotionally significant relationships remains limited. Second, ghosting occurs more frequently in romantic and dating contexts (Timmermans et al., 2020), whereas our paradigm focuses on non-romantic acquaintances. Relationship duration, quality, and context can meaningfully shape individuals' responses (Koessler et al., 2019; Pancani et al., 2021). Our paradigm may still reflect certain online dating dynamics, where two strangers engage in brief digital exchanges before one person suddenly stops responding. These interactions, although low in emotional investment, are among the most common ghosting scenarios reported in recent studies. Furthermore, examining the effects of ghosting in this relatively low-stakes context provides a conservative test of its impact, and finding measurable effects here suggests that consequences may be even stronger in romantic or long-term relationships. The paradigm we introduce here is flexible and could be adapted, for instance, by incorporating a pre-interaction closeness-generating task or framing the exchange within a romantic or dating context. We encourage future research to explore these adaptations while carefully weighing the ethical implications of such manipulations.

Third, to ensure brevity and avoid excessive burden on the participants, we applied many single-item measures instead of multi-item scales, which tend to be more susceptible to random measurement errors and may not fully capture the construct, thus leading to lower reliability. Furthermore, the internal consistency of the rejection-related emotions scale was often lower than the accepted cutoff of 0.70. Therefore, in future studies, measuring emotions differently and exploring potential ambivalence would be ideal.

Fourth, in our discussion, we speculate that the peculiar temporal dynamic characterizing the response to ghosting is related to the uncertainty experienced. However, our design did not allow for verifying this possible mechanism. Thus, we suggest measuring the perceived uncertainty regarding the event to test this mechanism and either confirm or rule out our explanation.

Fifth, the sample was drawn from young Italian adults. Even though ostracism is a universally aversive experience, cultural and generational factors could affect people's responses. Consequently, this research should be reproduced in different contexts to better generalize its results.

7. Conclusions

The present research has contributed to the understanding of the psychological consequences of ghosting and rejection through the implementation of a novel daily diary experimental paradigm. Our findings have provided valuable insights into the overlap and distinctions between the reaction to ghosting and rejection and shedding light on their peculiar temporal dynamics.

Both ghosting and rejection elicit negative emotional responses, threaten basic psychological needs, result in a worsened perception of the source, and affect behavioral intentions towards them. Importantly, we observed that the reaction to ghosting has a distinct temporal pattern, characterized by a delayed and prolonged impact compared to rejection, which triggers a more immediate response. These findings highlight the significance of clarity and closure in interpersonal relationships, as the uncertainty and ambiguity inherent in ghosting episodes appear to prolong its negative consequences.

CRedit authorship contribution statement

Alessia Telari: Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology,

Investigation, Formal analysis, Data curation, Conceptualization. **Luca Pancani**: Writing – review & editing, Validation, Methodology, Funding acquisition, Conceptualization. **Paolo Riva**: Writing – review & editing, Validation, Supervision, Methodology, Funding acquisition, Conceptualization.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used ChatGPT in order to improve the readability and language of the manuscript. After using this tool/service, the authors reviewed and edited the content as needed and takes full responsibility for the content of the published article.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chb.2025.108756>.

Data availability

The data are shared on OSF

References

- Andrighetto, L., Riva, P., & Gabbiadini, A. (2019). Lonely hearts and angry minds: Online dating rejection increases male (but not female) hostility. *Aggressive Behavior*, 45. <https://doi.org/10.1002/ab.21852>
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self Scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, 63(4), 596–612. <https://doi.org/10.1037/0022-3514.63.4.596>
- Aron, A., Melinat, E., Aron, E. N., Vallone, R. D., & Bator, R. J. (1997). The experimental generation of interpersonal closeness: A procedure and some preliminary findings. *Personality and Social Psychology Bulletin*, 23(4), 363–377.
- Baxter, L. A. (1982). Strategies for ending relationships: Two studies. *Western Journal of Speech Communication*, 46(3), 223–241. <https://doi.org/10.1080/10570318209374082>
- Bernstein, M. J., Sacco, D. F., Young, S. G., Hugenberg, K., & Cook, E. (2010). Being “In” with the In-crowd: The effects of social exclusion and inclusion are enhanced by the perceived essentialism of ingroups and outgroups. *Personality and Social Psychology Bulletin*, 36(8), 999–1009. <https://doi.org/10.1177/0146167210376059>
- Boss, P. (1999). *Ambiguous loss: Learning to live with unresolved grief*. Harvard University Press.
- Brambilla, M., & Leach, C. W. (2014). On the importance of being moral: The distinctive role of morality in social judgment. *Social Cognition*, 32(4), 397–408.
- Brambilla, M., Sacchi, S., Rusconi, P., & Goodwin, G. P. (2021). The primacy of morality in impression development: Theory, research, and future directions. In *Advances in experimental social psychology* (Vol. 64, pp. 187–262). Academic Press Inc. <https://doi.org/10.1016/bs.aesp.2021.03.001>
- Buckley, K. E., Winkel, R. E., & Leary, M. R. (2004). Reactions to acceptance and rejection: Effects of level and sequence of relational evaluation. *Journal of Experimental Social Psychology*, 40(1), 14–28. [https://doi.org/10.1016/S0022-1031\(03\)00064-7](https://doi.org/10.1016/S0022-1031(03)00064-7)
- Campaioli, G., Testoni, I., & Zamperini, A. (2022). Double blue ticks: Reframing ghosting as ostracism through an abductive study on affordances. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 16(5), 10. <https://doi.org/10.5817/CP2022-5-10>
- Cody, M. J. (1982). A typology of disengagement strategies and an examination of the role intimacy, reactions to inequity and relational problems play in strategy selection. *Communication Monographs*, 49(3), 148–170. <https://doi.org/10.1080/03637758209376079>
- Collins, T. J., & Gillath, O. (2012). Attachment, breakup strategies, and associated outcomes: The effects of security enhancement on the selection of breakup strategies. *Journal of Research in Personality*, 46(2), 210–222. <https://doi.org/10.1016/j.jrp.2012.01.008>
- Collins, T. J., Thomas, A. F., & Harris, E. (2023). Unwanted and unfollowed: Defining ghosting and the role of social media unfollowing. *Personal Relationships*. <https://doi.org/10.1111/PERE.12492>
- Fanti, E., Di Sarno, M., & Di Pierro, R. (2023). Dating in a digital world: The role of pathological personality traits in psychological reactions to direct and ambiguous rejection. *Personality and Individual Differences*, 215, Article 112397. <https://doi.org/10.1016/j.paid.2023.112397>
- Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 82(6), 878–902. <https://doi.org/10.1037/0022-3514.82.6.878>
- Fredrickson, B. L. (2000). Extracting meaning from past affective experiences: The importance of peaks, ends, and specific emotions. *Cognition & Emotion*, 14(4), 577–606.
- Freedman, G., Hales, A. H., Powell, D. N., Le, B., & Williams, K. D. (2022). The role of gender and safety concerns in romantic rejection decisions. *Journal of Experimental Social Psychology*, 102, Article 104368. <https://doi.org/10.1016/j.jesp.2022.104368>
- Freedman, G., Powell, D. N., Le, B., & Williams, K. D. (2019). Ghosting and destiny: Implicit theories of relationships predict beliefs about ghosting. *Journal of Social and Personal Relationships*, 36(3), 905–924. <https://doi.org/10.1177/0265407517748791>
- Freedman, G., Powell, D. N., Le, B., & Williams, K. D. (2022). Emotional experiences of ghosting. *The Journal of Social Psychology*, 1–20. <https://doi.org/10.1080/00224545.2022.2081528>
- Gallucci, M. (2019). GAMLj: General analyses for linear models [jamovi module]. Retrieved from <https://gamlj.github.io/>.
- Kay, C., & Courrice, E. L. (2022). An empirical, accessible definition of “ghosting” as a relationship dissolution method. *Personal Relationships*, 1–26. <https://doi.org/10.1111/PERE.12423>
- Koessler, R. B., Kohut, T., & Campbell, L. (2019). When your boo becomes a ghost: The association between breakup strategy and breakup role in experiences of relationship dissolution. *Collabra: Psychology*, 5(1). <https://doi.org/10.1525/collabra.230>
- Leach, C. W., Ellemers, N., & Barreto, M. (2007). Group virtue: The importance of morality (vs. Competence and sociability) in the positive evaluation of In-Groups. *Journal of Personality and Social Psychology*, 93(2), 234–249. <https://doi.org/10.1037/0022-3514.93.2.234>
- Leckfor, C. M., Wood, N. R., Slatcher, R. B., & Hales, A. H. (2023). From close to ghost: Examining the relationship between the need for closure, intentions to ghost, and reactions to being ghosted. *Journal of Social and Personal Relationships*. <https://doi.org/10.1177/02654075221149955>
- LeFebvre, L. E. (2017). Phantom lovers: Ghosting as a relationship dissolution strategy in the technological age. In N. M. Punyanunt-Carter, & J. S. Wrench (Eds.), *The impact of social media in modern romantic relationships* (pp. 219–235). Lexington Books.
- LeFebvre, L. E., Allen, M., Rasner, R. D., Garstad, S., Wilms, A., & Parrish, C. (2019). Ghosting in emerging adults’ romantic relationships: The digital dissolution disappearance strategy. *Imagination, Cognition and Personality*, 39(2), 125–150. <https://doi.org/10.1177/0276236618820519>
- LeFebvre, L. E., & Fan, X. (2020). Ghosted?: Navigating strategies for reducing uncertainty and implications surrounding ambiguous loss. *Personal Relationships*, 27(2), 433–459. <https://doi.org/10.1111/per.12322>
- LeFebvre, L. E., Rasner, R. D., & Allen, M. (2020). “I guess I’ll never know...”: Non-initiators account-making after being ghosted. *Journal of Loss & Trauma*, 25(5), 395–415. <https://doi.org/10.1080/15325024.2019.1694299>
- Lieberman, M. D., & Eisenberger, N. I. (2006). A pain by any other name (rejection, exclusion, ostracism) still hurts the same: The role of dorsal anterior cingulate cortex in social and physical pain. *Social Neuroscience: People thinking about thinking people*, 167–187.
- Lutz, S., & Schneider, F. M. (2020). Is receiving dislikes in social media still better than being ignored? The effects of ostracism and rejection on need threat and coping responses online. *Media Psychology*, 24(6), 741–765. <https://doi.org/10.1080/15213269.2020.1799409>
- Molden, D. C., Lucas, G. M., Gardner, W. L., Dean, K., & Knowles, M. L. (2009). Motivations for prevention or promotion following social exclusion: Being rejected versus being ignored. *Journal of Personality and Social Psychology*, 96(2), 415–431. <https://doi.org/10.1037/A0012958>
- Norris, F. H., Tracy, M., & Galea, S. (2009). Looking for resilience: Understanding the longitudinal trajectories of responses to stress. *Social Science & Medicine*, 68. <https://doi.org/10.1016/j.socscimed.2009.03.043>
- Pancani, L., Aureli, N., & Riva, P. (2022). Relationship dissolution strategies: Comparing the psychological consequences of ghosting, orbiting, and rejection. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 16(2).
- Pancani, L., Mazzoni, D., Aureli, N., & Riva, P. (2021). Ghosting and orbiting: An analysis of victims’ experiences. *Journal of Social and Personal Relationships*, 38(7), 1987–2007. <https://doi.org/10.1177/02654075211000417>
- Park, Y., & Klein, N. (2024). Ghosting: Social rejection without explanation, but not without care. *Journal of Experimental Psychology: General*. <https://doi.org/10.1037/xge0001590>
- Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, 30(9), 1095–1107. <https://doi.org/10.1177/0146167203262085>
- Powell, D. N., Freedman, G., Williams, K. D., Le, B., & Green, H. (2021). A multi-study examination of attachment and implicit theories of relationships in ghosting experiences. *Journal of Social and Personal Relationships*, 38(7), 2225–2248. <https://doi.org/10.1177/02654075211009308>
- Ren, D., Wesselmann, E., & Williams, K. D. (2016). Evidence for another response to ostracism: Solitude seeking. *Social Psychological and Personality Science*, 7(3), 204–212. <https://doi.org/10.1177/1948550615616169>

- Ren, D., Wesselmann, E. D., & Williams, K. D. (2018). Hurt people hurt people: Ostracism and aggression. *Current Opinion in Psychology*, 19, 34–38. <https://doi.org/10.1016/j.copsyc.2017.03.026>
- Richman, L. S., & Leary, M. R. (2009). Reactions to discrimination, stigmatization, ostracism, and other forms of interpersonal rejection: A multimotive model. *Psychological Review*, 116(2), 365–383. <https://doi.org/10.1037/a0015250>
- Riva, P., & Eck, J. (2016). The many faces of social exclusion. In P. Riva, & J. Eck (Eds.), *Social exclusion: Psychological approaches to understanding and reducing its impact* (pp. ix–xv). Springer International Publishing.
- Riva, P., Montali, L., Wirth, J. H., Curioni, S., & Williams, K. D. (2017). Chronic social exclusion and evidence for the resignation stage: An empirical investigation. *Journal of Social and Personal Relationships*, 34(4), 541–564. <https://doi.org/10.1177/0265407516644348>
- Riva, P., Williams, K. D., Torstrick, A. M., & Montali, L. (2014). Orders to shoot (a camera): Effects of ostracism on obedience. *The Journal of Social Psychology*, 154(3), 208–216. <https://doi.org/10.1080/00224545.2014.883354>
- Robinson, M. D., & Clore, G. L. (2002). Belief and feeling: Evidence for an accessibility model of emotional self-report sources of information in emotional self-report. *Psychological Bulletin*, 128(6), 934–960. <https://doi.org/10.1037/0033-2909.128.6.934>
- Rudert, S. C., Hales, A. H., Greifeneder, R., & Williams, K. D. (2017). When silence is not golden: Why acknowledgment matters Even when being excluded. *Personality and Social Psychology Bulletin*, 43(5), 678–692. <https://doi.org/10.1177/0146167217695554>
- Rudert, S. C., Reutner, L., Greifeneder, R., & Walker, M. (2017). Faced with exclusion: Perceived facial warmth and competence influence moral judgments of social exclusion. *Journal of Experimental Social Psychology*, 68, 101–112. <https://doi.org/10.1016/j.jesp.2016.06.005>
- Schokkenbroek, J. M., Telari, A., Pancani, L., & Riva, P. (2025). What is (not) ghosting? A theoretical analysis via three key pillars. *Computers in Human Behavior*, 168. <https://doi.org/10.1016/j.chb.2025.108637>
- Schwarz, N. (2007). Retrospective and concurrent self-reports: The rationale for real-time data capture. In A. Stone, S. Shiffman, A. Atienza, & L. Nebeling (Eds.), *The science of real-time data capture: Self-reports in health research* (pp. 11–26). Oxford University Press.
- Smith, A., & Williams, K. D. (2004). R U there? Ostracism by cell phone text messages. *Group Dynamics: Theory, Research, and Practice*, 8(4), 291–301. <https://doi.org/10.1037/1089-2699.8.4.291>
- Sommer, K. L., Williams, K. D., Ciarocco, N. J., & Baumeister, R. F. (2001). When silence speaks louder than words: Explorations into the intrapsychic and interpersonal consequences of social ostracism. *Basic and Applied Social Psychology*, 23(4), 225–243. https://doi.org/10.1207/S15324834BASP2304_1
- Sprecher, S., Treger, S., & Wondra, J. D. (2013). Effects of self-disclosure role on liking, closeness, and other impressions in get-acquainted interactions. *Journal of Social and Personal Relationships*, 30(4), 497–514. <https://doi.org/10.1177/0265407512459033>
- Sprecher, S., Zimmerman, C., & Abrahams, E. M. (2010). Choosing compassionate strategies to end a relationship. *Social Psychology*, 41(2), 66–75. <https://doi.org/10.1027/1864-9335/a000010>
- Stratmoen, E., Greer, M. M., Martens, A. L., & Saucier, D. A. (2018). What, I'm not good enough for you? Individual differences in masculine honor beliefs and the endorsement of aggressive responses to romantic rejection. *Personality and Individual Differences*, 123, 151–162. <https://doi.org/10.1016/j.paid.2017.10.018>
- Stratmoen, E., Rivera, E. D., & Saucier, D. A. (2020). "sorry, I already have a boyfriend": Masculine honor beliefs and perceptions of women's use of deceptive rejection behaviors to avert unwanted romantic advances. *Journal of Social and Personal Relationships*, 37(2), 467–490. <https://doi.org/10.1177/0265407519865615>
- The jamovi project. (2024). Jamovi [Computer Software]. Retrieved from Version 2.6. <https://www.jamovi.org>.
- Timmermans, E., Hermans, A. M., & Oprea, S. J. (2020). Gone with the wind: Exploring mobile daters' ghosting experiences. *Journal of Social and Personal Relationships*, 38(2), 783–801. <https://doi.org/10.1177/0265407520970287>
- Verhallen, A. M., Alonso-Martinez, S., Renken, R. J., Marsman, J. B. C., & ter Horst, G. J. (2022). Depressive symptom trajectory following romantic relationship breakup and effects of rumination, neuroticism and cognitive control. *Stress and Health*, 38(4), 653–665. <https://doi.org/10.1002/smi.3123>
- We Are Social, Meltwater, & DataReportal. (2023). Digital 2023: Global overview report. <https://datareportal.com/reports/digital-2023-global-overview-report>.
- Wesselmann, E. D., Grzybowski, M. R., Steakley-Freeman, D. M., DeSouza, E. R., Nezelek, J. B., & Williams, K. D. (2016). Social exclusion in everyday life. In P. Riva, & J. Eck (Eds.), *Social exclusion: Psychological approaches to understanding and reducing its impact* (pp. 3–24). Springer International Publishing. <https://doi.org/10.1007/978-3-319-33033-4>.
- Wesselmann, E. D., & Williams, K. D. (2017). Social life and social death: Inclusion, ostracism, and rejection in groups. *Group Processes & Intergroup Relations*, 20(5), 693–706. <https://doi.org/10.1177/1368430217708861>
- Williams, K. D. (2001). *Ostracism: The power of silence*. New York: Guilford.
- Williams, K. D. (2009). Ostracism: A temporal need-threat model. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 41, pp. 275–314). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)00406-1](https://doi.org/10.1016/S0065-2601(08)00406-1).
- Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the internet. *Journal of Personality and Social Psychology*, 79(5), 748–762. <http://www.wesleyan.edu/spn/>.
- Williams, K. D., Govan, C. L., Croker, V., Tynan, D., Cruickshank, M., & Lam, A. (2002). Investigations into differences between social- and cyberostracism. *Group Dynamics*, 6(1), 65–77. <https://doi.org/10.1037/1089-2699.6.1.65>
- Williams, K. D., & Jarvis, B. (2006). Cyberball: A program for use in research on interpersonal ostracism and acceptance. *Behavior Research Methods*, 38(1), 174–180.
- Williams, K. D., & Nida, S. A. (2009). Is ostracism worse than bullying? In M. J. Harris (Ed.), *Bullying, rejection, and peer victimization: A social cognitive neuroscience perspective* (pp. 279–296). Springer Publishing Company.
- Williams, K. D., & Sommer, K. L. (1997). Social ostracism by coworkers: Does rejection lead to loafing or compensation? *Personality and Social Psychology Bulletin*, 23(7), 693–706.
- Wirth, J. H. (2016). Methods for investigating social exclusion. In P. Riva, & J. Eck (Eds.), *Social exclusion: Psychological approaches to understanding and reducing its impact* (pp. 25–47). Springer International Publishing. https://doi.org/10.1007/978-3-319-33033-4_2/COVER.
- Wittenbaum, G. M., Shulman, H. C., & Braz, M. E. (2010). Social ostracism in task groups: The effects of group composition. *Small Group Research*, 41(3), 330–353. <https://doi.org/10.1177/1046496410363914>
- Yap, M. A., Francisco, A. M., & Gopez, C. (2021). From best friends to silent ends: Exploring the concepts of ghosting in non-romantic relationships. *International Journal of Multidisciplinary: Applied Business and Education Research*, 2(10), 943–950. <https://doi.org/10.11594/ijmaber.02.10.12>
- Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology*, 40(4), 560–567. <https://doi.org/10.1016/j.jesp.2003.11.006>
- Zadro, L., Williams, K. D., & Richardson, R. (2005). Riding the 'O' train: Comparing the effects of ostracism and verbal dispute on targets and sources. *Group Processes & Intergroup Relations*, 8(2), 125–143. <https://doi.org/10.1177/1368430205051062>