

**Universität
Basel**

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Ostracism in Everyday Life: Unprecedented Insights Through Experience Sampling

Inaugural Dissertation

In partial fulfillment of the requirements for the degree of Doctor of Philosophy

Submitted to the Faculty of Psychology University of Basel

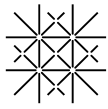
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Basel, 2024

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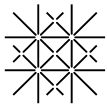
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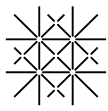
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The dissertation is based on the following manuscripts:

1. Büttner, C. M., Ren, D., Stavrova, O., Rudert, S. C., Williams, K. D., & Greifeneder, R. (2024). Ostracism in everyday life: A framework of threat and behavioral responses in real life. *Journal of Personality and Social Psychology*. <https://doi.org/10.1037/pspi0000471>
2. Büttner, C. M., Rudert, S. C., & Kachel, S. (2024). Ostracism experiences of sexual minorities – Investigating targets' experiences and perceptions by others. *Personality & Social Psychology Bulletin*. <https://doi.org/10.1177/01461672241240675>
3. Büttner, C. M., & Greifeneder, R. (2024). Everyday ostracism experiences of depressed individuals: Uncovering the role of attributions using experience sampling. *Journal of Affective Disorders Reports*, 17, 100804. <https://doi.org/10.1016/j.jadr.2024.100804>

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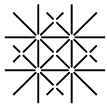
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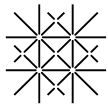
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Acknowledgments



This dissertation would not have been possible without the remarkable people who walked this path with me and it is with deep appreciation that I acknowledge every one of them here.

My deepest gratitude goes to my mentors, Rainer Greifeneder, Selma Rudert, and Kip Williams. Your belief in me, our shared scientific curiosity, and your relentless support have been pivotal to my growth as a researcher. I am also very grateful to all of my colleagues in Basel. Thank you for your support, guidance, and friendship over the years: Elianne Albath, Anna-Marie Bertram, Natalia Bogatyreva, Inès Dufaure de Lajarte, Mariela Jaffé, Melissa Jauch, Fanny Lalot, Dominik Maiori, Jakob Schuck, and Matthias Stutz. I also sincerely thank everyone at Purdue University for welcoming me and making my time there such a great experience.

I was blessed with brilliantly smart and dedicated research assistants. I will always be grateful for how much I have learned from you and for everything you have contributed to my research: Anna-Marie Bertram, Nina Frings, Silvana Gross, Leyre Macías, and Daniel Strebel.

I would also like to extend my gratitude to all of the brilliant minds that I collaborated with during my PhD: Elianne Albath, Natalia Bogatyreva, Rainer Greifeneder, Andy Hales, Melissa Jauch, Sven Kachel, Christoph Kenntemich, Fanny Lalot, Sarah Lutz, Marco Marinucci, Rasmus Möring, Dongning Ren, Paolo Riva, Selma Rudert, Chris Sibley, Olga Stavrova, Kip Williams, and Sydney Wicks. A special note of appreciation also goes to every study participant who shared their ostracism experiences with me. Your trust, honesty, and commitment have been crucial in advancing research on ostracism together.

I am beyond grateful for my family and friends and their support during my PhD journey. Thank you for laughing, crying, and celebrating with me. My final thanks go to Bernie – your love and support, expressed in every morning coffee in bed, countless hours of conversation, and every heartfelt word of encouragement, mean the world to me.

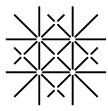


Table of Contents

1. Abstract	1
2. Introduction	2
2.1. Traditional and Novel Methodological Approaches in Ostracism Research.....	2
2.2. Using Experience Sampling to Go Beyond Previous Research	5
3. Experience Sampling Insights Into Everyday Ostracism	6
3.1. How Frequent is Everyday Ostracism?	7
3.2. How Do Individuals Behave After Ostracism in Everyday Life – And Why?.....	8
3.3. What are Risk Factors for Being Frequently Ostracized – And Why?.....	11
3.4. What Reasons Do Individuals Perceive for Being Ostracized?	13
4. Discussion of the Present Insights and Avenues for Future Research	15
4.1. Subjectivity and Bias in Reporting and Perceiving Ostracism.....	15
4.2. Future Directions Regarding Post-Ostracism Need Threat and Behavior.....	19
4.3. Insights From Experience Sampling: A Foundation for Targeted Interventions	21
4.4. Conclusion.....	23
5. References.....	24
6. Appendices	39

1. Abstract

This thesis leverages experience sampling as an innovative approach to investigate real-life experiences of ostracism (i.e., being ignored and excluded), filling gaps left by traditional survey and experimental approaches. In three projects, I explore the frequency, behavioral responses, risk factors, and perceived reasons for everyday ostracism. First, I discuss how Büttner, Ren et al. (2024) use event-contingent and time-contingent experience sampling to quantify ostracism frequency in daily life. Further, this project investigates the behaviors that follow ostracism. Büttner, Ren et al. (2024) propose and find support for a framework suggesting that the severity of need threat after ostracism influences whether individuals approach, avoid, or behave antisocially towards others. In the second project, Büttner, Rudert, & Kachel (2024) identify sexual minorities as a group that is particularly at risk for experiencing frequent ostracism. A complementing experiment reveals that the reason why sexual minorities frequently face ostracism is their deviation from gender-role expectations. Finally, Büttner & Greifeneder (2024) investigate how depression critically shapes targets' frequency, experience, and attribution of ostracism. Depressed individuals not only experience more frequent everyday ostracism and exhibit heightened need threat responses; their depression also leads to maladaptive attributions of ostracism. Together, the three presented projects underscore the value of experience sampling in providing nuanced insights into the psychological impact of real-life ostracism. Traditional survey and experimental approaches alone are insufficient to capture the dynamics and the pervasive, immediate impact of ostracism in everyday life, but experience sampling bridges this gap. The presented projects not only deepen the empirical understanding of ostracism but also set a precedent for future research and practical applications to mitigate the effects of ostracism through targeted interventions.

2. Introduction

Ostracism, being excluded and ignored (Williams, 2009), has significant negative impacts on everyday life, such as diminishing well-being, fostering mental illness, and reducing performance (Chen et al., 2020; Howard et al., 2020; Qian et al., 2019; Rudert, Janke, & Greifeneder, 2021). Ostracism also negatively affects society at large, as demonstrated, for instance, in violent outbursts (e.g., Leary et al., 2003; Ren et al., 2018), political disengagement (Bogatyрева et al., 2024), and costs generated for the health care system (Büttner, Lalot et al., 2024). Ostracism has been argued to be a ubiquitous experience that almost every human – and many animals (e.g., Williams, 2002) – encounter in their daily lives (e.g., Nezlek et al., 2012; Rudert, Janke, & Greifeneder, 2020). Despite the apparent impact and frequency of ostracism, so far, ostracism has rarely been studied in everyday life. In what follows, I first outline how previous studies have investigated ostracism. Then, I discuss how experience sampling², a method of assessing experiences, emotions, and behaviors in real-time in participants' daily lives, can close gaps left by previous research using traditional approaches. Within three projects, I demonstrate how experience sampling can be used to bring forth (1) novel insights into the frequency of ostracism, in general and in at-risk groups, (2) insights into the effects of ostracism on need threat and real-life behavior, and (3) insights into the perceived reasons underlying ostracism. In conclusion, I will integrate the findings to outline implications and provide guidance on when and how to use experience sampling to foster the understanding of ostracism in everyday life.

2.1. Traditional and Novel Methodological Approaches in Ostracism Research

Ostracism research has a long tradition of conducting experiments (e.g., Wessellmann et al., 2023). In a typical experiment, participants are ostracized for few minutes by strangers (e.g.,

² Experience sampling, real-time data capture, ambulatory, or ecological momentary assessment are closely related terms (Trull & Ebner-Priemer, 2013). Here, I mainly rely on *event-contingent* sampling to capture experiences as they occur from the participant's perspective, making experience sampling the most fitting term for this approach.

in Cyberball, a virtual ball-tossing game, Williams & Jarvis, 2006). In line with the Temporal Need Threat Model of ostracism (Williams, 2009), and hundreds of experiments (e.g., Hartgerink et al., 2015), short ostracism experiences suffice to threaten needs of belonging, control, self-esteem, and meaning. Experimental research also identified three main behavioral responses of ostracized individuals: Fortifying belonging by approaching others again (e.g., Balliet & Ferris, 2013), behaving in antisocial ways to regain control (e.g., Ren et al., 2018), or withdrawing from others to shield oneself from further negative experiences (e.g., Ren et al., 2016, 2020). While offering important insights, experiments cannot grasp the when, why, and how of being ostracized *in everyday life* because they lack real-life context (e.g. Büttner et al., 2021). An alternative is large-scale survey designs. Survey studies using retrospective self-report generally find low ostracism frequencies in the previous two months, however, only few individuals report no ostracism at all (e.g., Rudert, Janke, & Greifeneder, 2021; Rudert, Keller et al., 2020). Yet, inquiring about large time intervals may produce memory and recall biases, and pre-defined survey questions limit what researchers can learn about everyday experiences of ostracism (e.g., Ebner-Priemer & Trull, 2009). Moreover, participants' current emotional state when answering (e.g., Fredrickson, 2000; Kihlstrom et al., 1999), the recency of ostracism experiences, their emotional intensity, and their duration (e.g., Fredrickson & Kahneman, 1993) distort retrospective recall (e.g., Ebner-Priemer & Trull, 2009). Diary studies alleviate these problems to some extent because they limit the recall period to 24 hours (e.g., Ebner-Priemer & Trull, 2009). However, diary studies on everyday ostracism paint an inconsistent picture: Previous studies estimate that ostracism occurs once per day (Nezlek et al., 2012) while more recent diary studies find low means of end-of-day feelings of ostracism (Legate et al., 2021; Lutz, 2022). These inconsistent findings warrant methods that are less prone to biases in reporting ostracism. Experience sampling offers the perfect remedy to minimize such biases (e.g., Napa Scollon et al., 2009). In this thesis, I will build on two complementary experience

sampling approaches: Event-contingent sampling and time-contingent sampling. In time-contingent approaches, participants report ostracism since the last alert or their momentary feelings of ostracism (Bernstein et al., 2021; Pancani et al., 2023). A previous study using this approach found ostracism in approximately 10% of recent social interactions (Bernstein et al., 2021). However, according to the Temporal Need Threat Model of ostracism (Williams, 2009), the immediate effects of ostracism, such as the threat to individuals' psychological needs, dissipate quickly, in a few minutes or less (e.g., Büttner et al., 2021; Williams, 2009), risking mis- or under-reporting in time-contingent sampling. Additionally, minor incidents of ostracism may be quickly forgotten, despite their strong momentary impact (e.g., Wesselmann et al., 2012; Zuckerman et al., 1983). A complementing approach is event-contingent sampling where individuals report experiences as soon as they occur in their daily lives, granting them control over timing their responses. To my knowledge, beyond this dissertation, there are no ostracism studies that rely on event-contingent experience sampling using smartphones. However, event-contingent sampling is also not without limitations. Event-contingent sampling may lead to under-reporting of ostracism if participants forget or lack time to report experiences. Conversely, event-contingent sampling could also lead to over-reporting if participants become hypersensitive to detecting ostracism. In contrast to event-contingent sampling, time-contingent sampling distributes signals randomly within specified time brackets, mitigating some risks associated with event-contingent sampling. However, time-contingent sampling may still result in under-reporting since signals may not cover all waking hours or in over-reporting if participants reflect more frequently on their experiences prompted by repeated questions. Based on the advantages and limitations of both methods, combining time-contingent and event-contingent sampling likely yields the most comprehensive understanding of ostracism frequency in daily life.

2.2. Using Experience Sampling to Go Beyond Previous Research

In addition to gauging the frequency of everyday ostracism more accurately, experience sampling also allows insights beyond previous research. For instance, experience sampling allows to investigate what happens after ostracism *in real life*, such as need threat and behavioral reactions, as close in time as possible to the ostracism event to minimize retrospective distortions and recovery effects (e.g., Büttner et al., 2021; Jonas et al., 2014; Williams, 2009). Moreover, in most studies of behavior after ostracism, researchers pre-define one available behavioral option (e.g., antisocial behavior, Warburton et al., 2006), thus offering no means of investigating how individuals decide between different behavioral alternatives. Importantly, available behavioral alternatives fundamentally shape what behavior individuals choose to engage in (e.g., Yucel & Westgate, 2021), thus, pre-defining single behavioral options may bias behavioral assessments. Moreover, behavior in lab studies is often inconsequential: For instance, participants can act aggressively in a study—anonously and without repercussions (e.g., Warburton et al., 2006). This is unlike real life where consequences, including punitive ostracism for breaking social norms, exist (e.g., Ren et al., 2018; Rudert et al., 2023). Thus, assessing various and consequential behavioral alternatives as a response to ostracism in real life is a pressing research question that necessitates experience sampling. Further, combining event-contingent and time-contingent sampling approaches allows to capture both immediate behavioral intentions and past behavior, providing insights into whether intentions translate into actual behavior (e.g., Ajzen, 1991).

Experience sampling also offers novel ways to investigate the frequency of ostracism in at-risk groups. Previous experiments on risk factors for ostracism have primarily focused on why individuals choose to exclude others, for instance, based on targets' personality traits (e.g., Rudert, Hales, & Büttner, 2021; Rudert, Keller et al., 2020), norm violations, burdensomeness, or expendability to group efforts (e.g., Rudert et al., 2023; Wesselmann et al., 2014, 2015).

These studies overlook the perspective of experiencing ostracism in real life. Panel studies provide an important extension by taking the targets' perspective and documenting differences in retrospective ostracism frequency for at-risk groups like young unemployed individuals (Albath et al., 2023), depressed individuals (Rudert, Janke, & Greifeneder, 2021), and individuals with certain personality traits (e.g., Büttner, Rudert, Albath et al., 2024; Rudert, Keller et al., 2020). However, as noted before, these studies are prone to biases. For instance, participants may selectively recollect emotionally impactful or most recent ostracism incidents (e.g., Fredrickson & Kahneman, 1993), leaving minor incidents aside. Ironically, even the experience of ostracism itself may affect the memory of social experiences (e.g., Gardner et al., 2000), influencing retrospective reports, especially in at-risk groups. Fortunately, such biases are less likely in momentary reports (e.g., Ebner-Priemer & Trull, 2009; Napa Scollon et al., 2009) so experience sampling boosts accuracy in reports of everyday ostracism.

Experience sampling is also ideal for studying specific characteristics of ostracism experiences such as the perceived reasons for ostracism (i.e., attributions, e.g., Bernstein et al., 2018). Ostracism, in contrast to rejection, is characterized by a lack of communication (e.g., Rudert et al., 2017), therefore, individuals typically do not know why they were ostracized, rendering various attributions possible (e.g., Bernstein et al., 2018). Experimental paradigms such as Cyberball (Williams & Jarvis, 2006) do not provide sufficient real-world context (e.g., Büttner et al., 2021) to understand attributions of ostracism. Further, real-time assessments of attributions are important because attributions are time-sensitive and change retrospectively (Williams, 2009). Moreover, assessing characteristics of ostracism in *real-life* contexts is crucial for drawing inferences on *real-life* consequences.

3. Experience Sampling Insights Into Everyday Ostracism

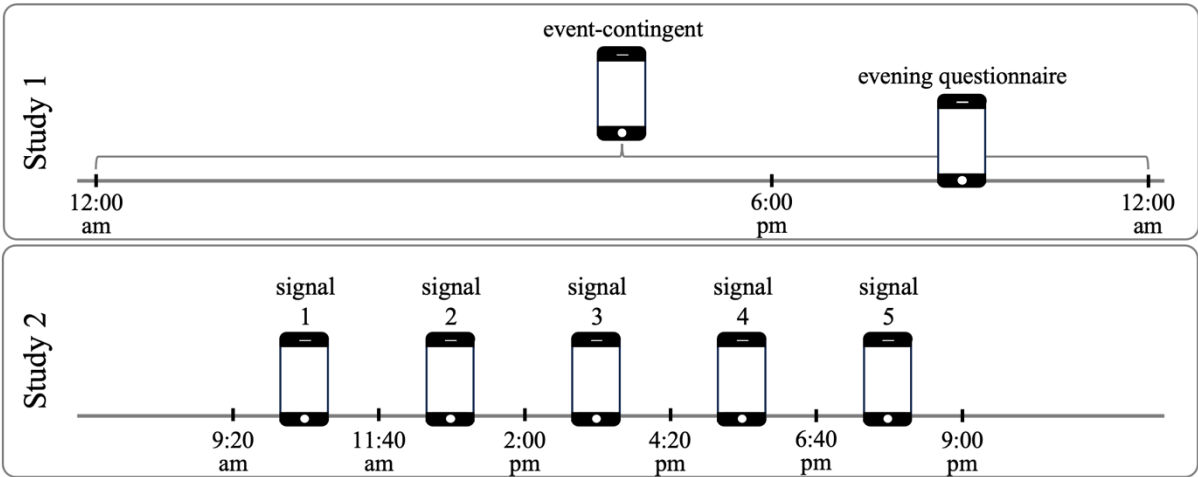
In what follows, I outline three projects that demonstrate how experience sampling can be leveraged to understand the intricacies of ostracism in daily life. The projects address four

research questions that necessitate experience sampling studies to answer: How frequent is everyday ostracism (chapter 3.1)? How do individuals behave after ostracism in everyday life – and why (chapter 3.2)? What are risk factors for being frequently ostracized – and why (chapter 3.3)? And, what reasons do individuals perceive for being ostracized (chapter 3.4)?

3.1. How Frequent is Everyday Ostracism?

Büttner, Ren et al. (2024) conducted an event-contingent ($N = 323$, 14 days, $k = 1107$ ostracism experiences) and a time-contingent ($N = 272$, 7 days, $k = 7943$ assessments including 767 ostracism experiences) experience sampling study to investigate ostracism frequency in daily life. The sampling strategies of both studies are shown in Figure 1: In Study 1, participants recorded instances of ostracism event-contingently (i.e., whenever they felt ostracized). Further, participants could report unrecorded ostracism experiences each evening to prevent underreporting. Study 2 was a 7-day time-contingent experience sampling study with five randomized notifications within specific time intervals. Each notification contained questions on ostracism feelings which were dichotomized to record ostracism experiences.

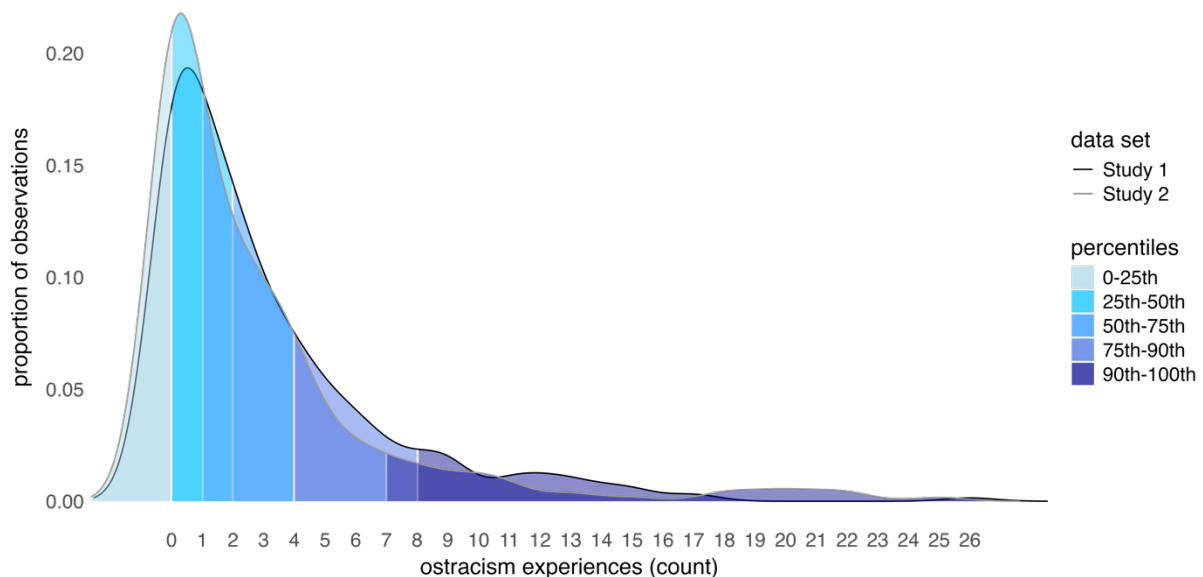
Figure 1
Experience Sampling Approaches in Büttner, Ren et al. (2024).



Both studies find that ostracism takes place 2-3 times per week on average (Study 1: $M = 3.43$ experiences per participant in 14 days, Study 2: $M = 2.92$ experiences per participant in 7 days). In both studies, ostracism frequency was skewed and a small subsample of participants (Study 1: 14.24%, Study 2: 10.29%) reported almost half of all ostracism experiences, see Figure 2. This pertinent between-person variance sets the stage for exploring which groups are particularly at risk for frequent everyday ostracism (see chapters 3.3 and 3.4).

Figure 2

Number of Ostracism Experiences per Participant in Büttner, Ren et al. (2024).



Note. The percentiles indicate, for example, that 25% of participants reported no ostracism.

3.2. How Do Individuals Behave After Ostracism in Everyday Life – And Why?

Büttner, Ren et al. (2024) also set out to answer two questions on behavior after ostracism in real life: What behaviors do ostracized individuals engage in more or less frequently in real life, and, how do they choose between different behaviors?

To answer the first question, Study 1 assessed immediate event-contingent behavioral intentions, and Study 2 assessed behavior in the past hour. In Study 1, the strongest behavioral intention was avoidance, followed by approach intentions, and finally, antisocial intentions. In

Study 2, time-contingent sampling allowed to compare assessments during which individuals reported ostracism to assessments during which individuals reported no ostracism. These comparisons showed that approach behaviors like prosocial behavior and talking to others did not significantly differ between assessments containing ostracism and those that did not contain ostracism. In contrast, antisocial and avoidance behaviors were significantly more likely in assessments containing ostracism.

To answer the question of how ostracized individuals choose between different behaviors, Büttner, Ren et al. (2024) propose the severity of need threat following ostracism as a key determinant of targets' choice between approach, avoidance, or antisocial behavior. After ostracism, individuals may approach others to seek social connection again (e.g., Riva, 2016). According to the threat and defense model (Jonas et al., 2014), approach is an adaptive response to less intense psychological threats. Relatedly, severely threatening ostracism experiences may destroy hope of reconnecting with others (Smart Richman & Leary, 2009), decreasing approach behavior (Cuadrado et al., 2015). Based on these considerations, stronger need threat after being ostracized should render approach behavior less likely. Instead of approaching others, individuals may also socially withdraw to shield themselves from more social pain (e.g., Ren et al., 2016, 2020). Generally, avoidance is the dominant response to intense psychological threats (Jonas et al., 2014). Relatedly, experiences of ostracism that cause stronger negative emotions are associated with higher intentions to leave the respective context, an avoidance reaction (Sarfranz et al., 2023). Based on these considerations, stronger need threat after being ostracized should render avoidance behavior more likely. Antisocial behavior is another common behavior after ostracism (e.g., Ren et al., 2018). Individuals are especially prone to antisocial reactions when they experience high levels of pain (Berkowitz, 1993). Put differently, when ostracized targets experience strong social pain related to severe need threat, they may be more likely to show antisocial behavior (e.g., Ren et al., 2018; Riva, 2016). Based on these

considerations, stronger need threat after being ostracized should render antisocial behavior more likely. In line with these arguments, previous research argued that ostracism paradigms that constitute severe threats, such as being told that one will likely live one's life alone based on one's personality (i.e., Twenge et al., 2002), elicit avoidance and antisocial behavior rather than approach reactions (Bernstein & Claypool, 2012): After being told that they were likely to live their life alone, participants donated less money, volunteered less, and helped others less (i.e., less approach behavior, Twenge et al., 2007). However, after playing Cyberball, a paradigm that elicits strong need threat, that, yet, dissipates quickly (e.g., Hartgerink et al., 2015), participants donated more money (Carter-Sowell et al., 2008) and helped others more in a cooperative task (Williams & Sommer, 1997). The proposed framework accommodates such contradictory findings by explaining when ostracized individuals may approach (less severe threat situations) versus avoid or aggress (severe threat situations).

In line with the proposed framework, the analyses show that when psychological needs are threatened to a lesser extent, individuals are more likely to adopt approach behaviors. In contrast, when psychological needs are severely threatened, individuals react to ostracism with avoidance intentions, withdrawal behavior, and antisocial intentions, but not antisocial behavior. The intention-behavior discrepancy may stem from several factors: Individuals may suppress their antisocial intentions due to potential social or legal repercussions, or they might lack the opportunity to act on their impulses, for instance, because they are physically separated from the ostracizers. Moreover, the effect of ostracism on antisocial intentions may be time-sensitive (e.g., Jonas et al., 2014; Williams, 2009), so that intentions do not necessarily translate into behavior. This discrepancy underscores the need to measure intentions *and* past behavior.

In summary, the combination of sampling methods affords insights into how ostracized individuals behave in real life, including what drives their behavior: need threat. These insights

reconcile previous contradictory findings on the effect of ostracism on prosocial behavior (e.g., Carter-Sowell et al., 2008; Twenge et al., 2007).

3.3. What are Risk Factors for Being Frequently Ostracized – And Why?

As noted before, retrospective assessments may produce memory and recall biases (e.g., Ebner-Priemer & Trull, 2009). These biases may be further intensified by altered perceptions of ostracism. For instance, frequent negative social experiences may make individuals more likely to perceive and report ostracism (e.g., Baams et al., 2020; Downey & Feldman, 1996; Nielsen et al., 2017). Retrospective biases may thus apply to a greater extent to individuals who also make other negative social experiences frequently, as is the case for sexual minorities (e.g., Fasoli et al., 2017; Gordon & Meyer, 2007; Katz-Wise & Hyde, 2012). Immediate assessments as in experience sampling minimize such biases (e.g., Napa Scollon et al., 2009) and may capture ostracism experiences of sexual minorities more accurately.

Büttner, Rudert, & Kachel (2024) took a multi-method approach to understand ostracism experiences of sexual minorities (i.e., lesbian, gay, and bisexual individuals: LGB). Sexual minorities endure various forms of discrimination such as rejection, harassment, and violent assaults (e.g., DeSouza et al., 2017; Gordon & Meyer, 2007; Hebl et al., 2002; Katz-Wise & Hyde, 2012). Ostracism represents another, more subtle, yet profoundly damaging form of discrimination (e.g., Rudert et al., 2017; Williams & Nida, 2009; Zadro et al., 2005) against sexual minorities that, so far, remained largely unaddressed. Ostracism also uniquely affects sexual minorities due to societal exclusion reflected in denials of rights and underrepresentation in society (e.g., Hurley, 2009; Magni & Reynolds, 2021; Pirlott & Cook, 2018). Moreover, ostracism may allow perpetrators to avoid recognition of bias while inflicting psychological harm on sexual minorities (e.g., DeSouza et al., 2017; Robinson et al., 2013). Transgressions of heteronormativity, such as deviations from traditional gender norms (e.g., Gordon & Meyer, 2007; Kite & Deaux, 1987; Morgenroth et al., 2024), are likely to predict sexual minorities'

ostracism experiences (e.g., Rudert et al., 2023; Wesselmann et al., 2015). Therefore, in addition to gauging the ostracism frequency of sexual minorities, this project examined deviations from gender norms as drivers of ostracism.

First, analyses in a nationally representative German sample ($N = 4,104$, Goebel et al., 2019) showed that retrospective ostracism frequency, measured on a scale from 1 = *never* to 7 = *always ostracized*, was 0.36 scale points higher for LGB individuals, 95%CI [.12, .61], $p = .004$. To quantify the observed difference by assessing real-life experiences, Study 2 relied on the same data set as Büttner, Ren et al. (2024, Study 1). In the 14-day experience sampling phase, LGB participants reported, on average, one additional ostracism experience compared to heterosexual participants. However, the difference in reported ostracism experiences was not significant, $t(93.44) = -1.63$, $p = .107$, $d = -.26$. Beyond the different methods, the results may differ because of context and time: Study 1 covered the social reality of LGB individuals in Germany from 2015 to 2022, including significant changes like the legalization of same-gender marriage in 2017 (Pew Research Center, 2023), while Study 2 relied on a younger, U.S. sample. Differences in LGB inclusivity in Germany versus the US (World Equality Index, 2023) and in participants' age (e.g., Pharo et al., 2011; Rudert, Janke, & Greifeneder, 2020) may have influenced LGB ostracism.

In line with the idea that gender role non-conformity drives more frequent ostracism of LGB individuals, in Study 2, perceptions of one's own sexual orientation as different significantly predicted ostracism frequency. Study 3 set out to experimentally investigate gender role non-conformity as an underlying mechanism. Three independent rater samples, blind to targets' actual sexual orientation, rated targets' sexual orientation, gender role nonconformity, and likelihood of ostracism (i.e., "This person is ostracized by others"). Indeed, lesbian/gay targets were perceived as more likely to be ostracized than heterosexual targets.

Underscoring the role of norm deviations as drivers of ostracism, gender role nonconformity significantly increased ratings of the likelihood of ostracism.

In summary, sexual minorities experience ostracism more frequently than heterosexual individuals. Importantly, an experiment revealed the underlying mechanisms of frequent LGB ostracism: norm deviation from gender roles.

3.4. What Reasons Do Individuals Perceive for Being Ostracized?

Attributions of ostracism are important to understand because they shape the emotional toll of ostracism (e.g., Smart Richman & Leary, 2009) and may impede recovery, especially when ostracism is attributed to others' hostile intent (Goodwin et al., 2010). Attributions of ostracism may further be influenced by individual characteristics such as depression. Depression is bi-directionally linked to ostracism: Frequent ostracism fosters depression but depression also fosters ostracism (e.g., Rudert, Janke, & Greifeneder, 2021), potentially because depressed individuals' frequent withdrawal (e.g., Teo et al., 2020) and their social behavior (e.g., Gadassi & Rafaeli, 2015) invite more ostracism (e.g., Ren & Evans, 2021). Moreover, depressed individuals show maladaptive attributions that may uphold their symptoms by attributing negative experiences internally, to themselves, and positive experiences externally (e.g., Seligman et al., 1979). Thus, how depressed individuals attribute ostracism may worsen their condition: Maladaptive attributions harm recovery from ostracism (e.g., Goodwin et al., 2010) and impede re-inclusion because misattributing others' intentions sparks conflict (e.g., Gadassi & Rafaeli, 2015). Importantly, methodically, investigating attributions of ostracism in depressed individuals via retrospective recall may not be the best solution: Retrospective recall is likely compromised by depressed individuals' negative views of social interactions (e.g., Baddeley et al., 2013) and their memory biases (e.g., Urban et al., 2018).

Using the same experience sampling data set as in the previous projects, Büttner & Greifeneder (2024) set out to test whether depressed individuals (i.e., those with more

depressive symptoms and/or a prior diagnosis of depression) attribute ostracism differently than individuals without depression. Based on their maladaptive attribution of negative experiences as internal (e.g., Seligman et al., 1979), depressed individuals should generally attribute ostracism, a negative experience, more internally. Moreover, depressed individuals often feel like a burden to others (e.g., Joiner et al., 2002) and are indeed often seen as burdensome (e.g., Potthoff et al., 1995; Rudert, Janke, & Greifeneder, 2021), which can lead to ostracism (e.g., Rudert et al., 2023; Wesselmann et al., 2014). Based on these considerations, depressed individuals should attribute ostracism more often to being a burden to others. Other attributions of ostracism (e.g., to hostile intent of the ostracizers) were also explored.

First, in line with previous research (e.g., Büttner et al., 2021; Rudert, Janke, & Greifeneder, 2021), individuals with depression experience more frequent ostracism in everyday life and report higher need threat afterward. In disagreement with attribution theories (e.g., Seligman et al., 1979), there was no significant relationship between depression and more internal attributions of ostracism. However, individuals with depression consistently attributed ostracism as being due to their burdensomeness. Such attributions may be particularly dangerous because thwarted belongingness combined with self-perceptions of burdensomeness predict suicidality (e.g., Van Orden et al., 2010). Depressed individuals also more often attributed ostracism to hostile intent of the ostracizers, in line with depressed individuals' hostile attribution biases (e.g., Smith et al., 2016). This is alarming because hostile attributions escalate interpersonal conflicts (e.g., Gadassi & Rafaeli, 2015), further decreasing re-inclusion prospects for depressed individuals.

Taken together, depressed individuals not only experience more frequent ostracism but also feel more threatened by ostracism, and attribute ostracism to being burdensome and to others' hostile intentions. These attributions may contribute to a harmful cycle where depressive symptoms intensify experiences of ostracism, lead to maladaptive attributions, and elicit

behaviors that invite further ostracism. Insights of this kind would be impossible without experience sampling because attributions of ostracism have to be made in situ to avoid biases.

4. Discussion of the Present Insights and Avenues for Future Research

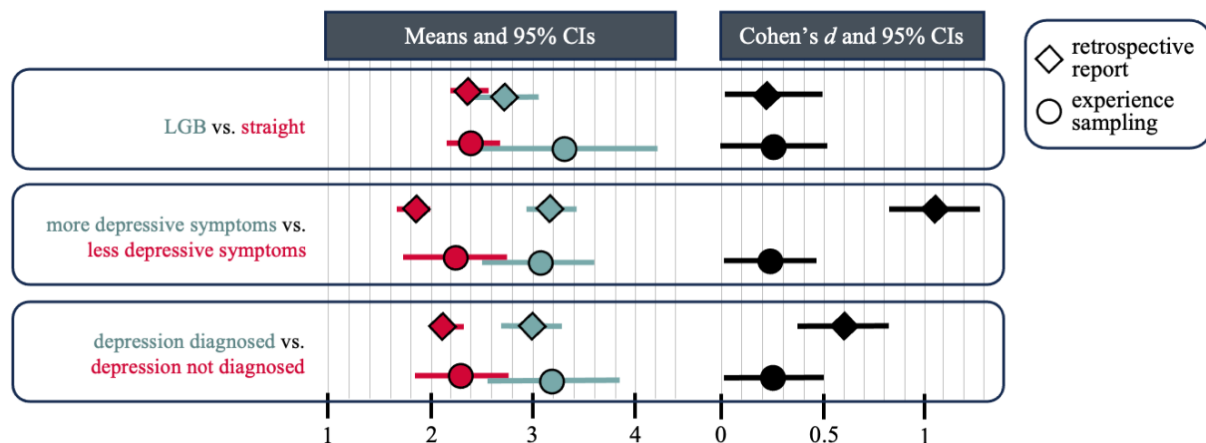
The presented projects illuminate how experience sampling can be used to understand how often and which individuals get frequently ostracized and what happens after ostracism (e.g., need threat, behavior, and attributions). Next, I discuss the lessons learned from these projects, including how experience sampling can be leveraged in future ostracism research.

4.1. Subjectivity and Bias in Reporting and Perceiving Ostracism

Ostracism occurs 2-3 times per week on average, with significant interindividual differences. Opting for experience sampling over traditional survey studies to assess everyday prevalence is particularly advantageous when addressing complex social phenomena like ostracism that are prone to memory biases (e.g., Gardner et al., 2000). Moreover, participants likely vary in their understanding of what it means to be "never" or to be "always" ostracized in retrospective report (e.g., Bocklisch et al., 2012). Counting experiences in daily life reduces subjectivity in interpreting what counts as being "never" or being "always" ostracized. This argument may gain even more weight in populations with pronounced memory biases such as clinical populations (e.g., Schoth et al., 2020; Urban et al., 2018). This is illustrated in the group differences in retrospective and in experience sampling ostracism frequency (Figure 3): For depressed individuals (based on depressive symptoms and prior depression diagnosis), differences in retrospective estimates of ostracism were more pronounced than differences in experience sampling, indicating potential recall bias. In contrast, the effect sizes for sexual orientation on ostracism frequency aligned well between retrospective estimates and experience sampling, suggesting fewer differences between the assessments, and potentially, less retrospective bias in reports of LGB individuals compared to those of depressed individuals.

Figure 3

Retrospective Versus Experience Sampling Ostracism Frequency of At-Risk Groups.



Note. Depressive symptoms were median-split for illustrative purposes.

In another experience sampling study of narcissists' perceptions of ostracism in everyday life, Büttner, Rudert, Albath et al. (2024) point out how experience sampling can be used to further investigate retrospective distortions: When asked immediately after 14 days of experience sampling ended, participants higher in narcissism overestimated the number of experiences that they reported (descriptively, $p = .053$). This retrospective exaggeration (cf. Ebner-Priemer & Trull, 2009) speaks to narcissists' biased perceptions of their social reality and partly explains why narcissists see themselves as frequent victims of ostracism. This approach allows to investigate how specific traits alter memory of ostracism frequency, underscoring the utility of experience sampling. Moreover, clinical studies have shown that psychotherapy can eliminate such negative recall patterns (e.g., De Beurs et al., 1992). Therefore, alignment between retrospective estimates and real-time data on ostracism experiences may be a sign of health and should be the aim of interventions.

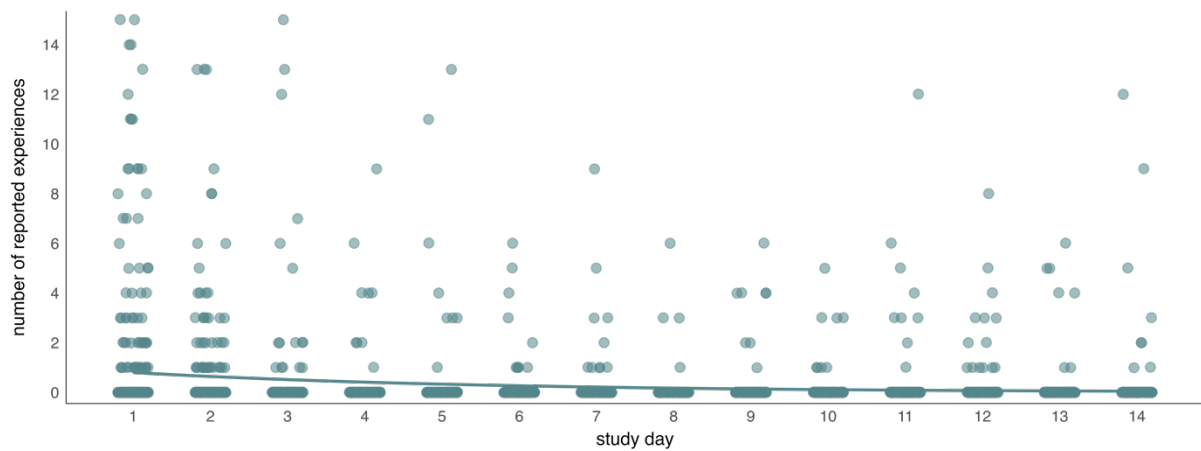
The present findings also raise questions regarding the subjectivity of ostracism reports. Perceiving ostracism is inherently subjective, and has to be rooted in the individual's subjective perception as threatening to cause feelings of exclusion (Rudert & Greifeneder, 2016). Retrospective reports do not capture the immediate emotions and nuances of each ostracism

event, leading to biases based on the individual's current mental state or memory distortions (e.g., Ebner-Priemer & Trull, 2009). While real-time accounts provided through experience sampling reduce memory biases, ostracism experiences are still subjectively construed in experience sampling. Individuals' different sensitivities towards perceiving ostracism likely also influence experience sampling reports of ostracism to some degree. However, since the emotional toll of ostracism depends on its subjective construal (Rudert & Greifeneder, 2016), capturing only subjectively threatening ostracism experiences may still be most informative for determining individual consequences of (frequent) ostracism. After all, subjectively negative experiences have subjectively negative consequences.

When choosing between experience sampling and survey methodologies to study ostracism experiences, researchers must weigh different advantages and disadvantages of the approaches against each other. Experience sampling captures real-life experiences in various contexts and by various sources. Experience sampling should thus be the method of choice to portray diverse lived experiences. Moreover, investigating single attributes of experiences such as the emotional or behavioral repercussions of ostracism that may be time-sensitive and subject to recall biases warrants experience sampling methods. However, researchers must weigh potential insights from longer sampling durations in experience sampling studies against potential attrition. Long sampling intervals may create fatigue and, as a result, fewer reports (e.g., Gunthert & Wenze, 2012; Hektner et al., 2007). In the 14-day event-contingent sampling study, a multi-level Poisson model revealed a significant effect of study day, $b = -0.22$, 95%CI $[-0.24, -0.20]$, $p < .001$, indicating fatigue effects, see Figure 4. Based on the observed pattern, 7 days may be a more suitable time frame for event-contingent sampling of ostracism experiences, while still capturing a full week of experiences.

Figure 4

Effect of Study Day on Number of Ostracism Experiences Reported per Day per Participant.



Depending on the research focus, sometimes, experience sampling may not be the method of choice. For instance, experience sampling time frames are too short to capture rare, extreme, or life-changing ostracism experiences like cutting ties with a family member, being excommunicated, or being imprisoned (e.g., Williams, 2002). Moreover, individuals likely remember these experiences for decades (e.g., Zadro et al., 2003) so autobiographical recall or interviews are feasible to study these experiences in depth. Another case where experience sampling may not be the first step is when the research focus is between-subjects differences in ostracism frequency, for instance, based on personality traits, life circumstances, or cultural background. Here, large-scale surveys with few short items may allow testing for differences in thousands of individuals in a resource-conserving way (e.g., Rudert, Janke, & Greifeneder, 2020; Rudert, Keller et al., 2020), building ground for follow-up experience sampling studies.

In summary, when selecting a method for studying ostracism, researchers should consider the following: One, experience sampling is ideal for capturing the immediate, time-sensitive emotional and behavioral impacts of everyday ostracism. However, participant burden, sampling duration, and available resources have to be considered. Second, autobiographical recall or interviews should be chosen to investigate rare, extreme, or life-

changing ostracism events. Finally, large-scale surveys may be an efficient starting point to examine between-subjects differences in ostracism frequency. Considering these factors will help to use experience sampling and other methods effectively to advance ostracism research.

4.2. Future Directions Regarding Post-Ostracism Need Threat and Behavior

As noted before, experience sampling is ideal for capturing real-time perceptions and reactions. Büttner, Ren et al. (2024) leveraged these advantages to document how individuals behave after ostracism in real life and what shapes decisions between different behaviors: Need threat. Specifically, when ostracism strongly threatens psychological needs, avoidance and antisocial reactions are more likely, conversely, when needs are less threatened, approach reactions are more likely. What remains for future research to address is the time perspective of post-ostracism behavior: For instance, after severe ostracism experiences, individuals may initially withdraw to cope (e.g., Ren et al., 2020); then, when their needs are recovered, individuals may approach others again to seek re-inclusion. Moreover, some behaviors may even invite further ostracism (e.g., Ren et al., 2018; Ren & Evans, 2021) and it is also not clear which behaviors aid recovery of threatened needs best. Sampling more time points would allow for time-series analyses to test: (1) how long individuals behave a certain way, (2) whether certain behaviors at one time point indeed invite more ostracism at a second time point, and (3) how effective different behaviors are in recovering threatened needs.

Future research should also explore how individuals evaluate ostracism experiences as more versus less threatening. Threat perception generally arises from a perceived discrepancy of a current psychological state from a desired state (e.g., Jonas et al., 2014). In the case of ostracism, threat arises from the discrepancy of the current experience of being ignored and excluded from the desired state of inclusion and belonging (e.g., Rudert & Greifeneder, 2016; Williams, 2009). Several factors may influence how individuals quantify this discrepancy and the resulting threat to their needs. For instance, past research shows that individuals with

chronic experiences of ostracism respond with more need threat to any new social situation, be it ostracism or inclusion (Büttner, Jauch et al., 2024, Study 2). Put differently, chronically ostracized individuals tend to perceive greater discrepancy from the desired state of inclusion. In line with this, chronically rejected adolescents show increased neural activation in the anterior cingulate cortex during ostracism (e.g., Will et al., 2016), an area that is also activated during other experiences that threaten belonging (e.g., Eisenberger, 2012; Eisenberger et al., 2003), indicating more threat perception. Thus, past experiences seem to calibrate how individuals perceive the severity of new threats, even on a neurological level. One way future research could illuminate how individuals evaluate threat severity is via experience sampling of individuals' threat responses in different situations and at different times. Repeated assessments allow to track how individuals' threat perceptions fluctuate, and whether specific triggers or contexts exacerbate or mitigate threat perception, beyond what individuals could report in retrospectively (e.g., Conner & Barrett, 2012). In addition to capturing within-person variability, experience sampling can help to identify stable between-person differences in threat perception. For example, in line with findings from Büttner, Jauch et al. (2024), chronically ostracized individuals might consistently report higher levels of threat after ostracism compared to those with less frequent ostracism experiences, indicating more threat perception. Research using experience sampling has identified similar patterns in other domains, such as how traumatic experiences and momentary affect impact threat perception in everyday life (Krkovic et al., 2018). Thus, experience sampling can help to identify factors that influence threat calibration. Moreover, experience sampling methods can be fruitfully combined with real-time physiological assessments such as heart rate, electro-dermal activity, movement, and breathing (e.g., Trull & Ebner-Priemer, 2013). Given that threat responses are associated with various physiological reactions (e.g., Jonas et al., 2014), multi-modal assessments in experience sampling may further aid the understanding of real-life threat responses to ostracism.

4.3. Insights From Experience Sampling: A Foundation for Targeted Interventions

Intervening against frequent ostracism is imperative given the devastating consequences of ostracism for those affected by it (e.g., Chen et al., 2020; Rudert, Janke, & Greifeneder, 2021). While interventions against ostracism are scarce (Williams et al., 2021), insights accrued through experience sampling may pave the way by showing which factors may be conducive to developing interventions. Büttner & Greifeneder (2024) show that maladaptive attributions may uphold harmful cycles between ostracism and depression. Ostracism attributions may be particularly suitable for interventions because attributions are situational and malleable, especially because the real reasons for ostracism are often not known to targets (e.g., Bernstein et al., 2018). Importantly, previous interventions successfully changed cognitive biases that alter attributions (e.g., Peters et al., 2011; Vassilopoulos & Brouzos, 2016), providing ground for interventions to change harmful ostracism attributions.

Experience sampling insights could even help in designing personalized interventions that are sensitive to individuals' specific needs: Smartphone-delivered interventions are already a common practice in clinical just-in-time adaptive interventions (e.g., Nahum-Shani et al., 2015). For instance, such interventions have been successfully used to break rumination circles (e.g., Wang & Miller, 2023). Rumination is a behavior that hinders coping with ostracism (e.g., Wesselmann et al., 2013) and may thus be leveraged in personalized interventions for those who ponder their ostracism experiences excessively. For instance, once rumination-prone individuals are identified, they can enroll in an experience sampling study with interactive treatment elements (cf. Ebner-Priemer & Trull, 2009). Specifically, any time an individual reports an ostracism experience, they could be presented with a short rumination-breaking intervention element (e.g., Wang & Miller, 2023) and, after some time, a follow-up questionnaire to test the effectiveness of the intervention (e.g., Ebner-Priemer & Trull, 2009). Thereby, the intervention elements can be adapted if they do not prove helpful to specific

individuals, and therapeutic intervention is delivered where it is most needed: in everyday life (e.g., Ebner-Priemer & Trull, 2009). Another example could be interventions targeted at individuals who feel ostracized at work (e.g., Howard et al., 2020). GPS-triggered interventions (e.g., Ebner-Priemer & Santangelo, 2024) could activate when individuals enter their workplace or, during peak-ostracism times, such as during lunch break. For example, a "Power of One" reminder (e.g., Büttner, Jauch et al., 2024; DeWall et al., 2010) which emphasizes the profound impact one positive social interaction can have, could be sent to the individual's smartphone at lunchtime, encouraging them to reach out to a colleague or to call a friend. This approach ensures that support is provided precisely when and where it is most needed to mitigate the impacts of ostracism. Yet another example could be just-in-time anti-aggression intervention elements (e.g., Johnson et al., 2020) delivered to individuals who are known to lash out when they feel ostracized (e.g., narcissists, Chester & DeWall, 2016). Delivering such immediate interventions in real life could prevent further punitive ostracism for lashing out and foster re-integration of the ostracized individual.

Finally, ostracism may also be a transient experience that follows life events that reduce one's social circle (e.g., Buecker et al., 2021) such as losing employment (Albath et al., 2023), starting university (Janke et al., 2024), or changing jobs (Büttner, Rudert, & Greifeneder, 2024). However, the temporal order of life events and psychological states needs to be considered to establish causation (e.g., Luhmann et al., 2013). While this could also be achieved with longitudinal surveys, experience sampling allows assessments in ultimate proximity to the life event, minimizing biases in reporting and offering nuanced insights into how humans' social experiences are affected by life events. Furthermore, identifying life events that foster ostracism, such as starting university (Janke et al., 2024), can be combined with smartphone-aided interventions that foster belonging. For instance, an app designed for new students, especially those with minority backgrounds who are at risk of frequent ostracism (Janke et al.,

2024), could implement experience sampling and just-in-time interventions to provide real-time support. Similar interventions could be applied to sexual minorities who face a heightened risk of (workplace) ostracism (e.g., Büttner, Rudert, & Kachel, 2024; DeSouza et al., 2017). This risk can be exacerbated when changing jobs because previous social connections may be lost (e.g., Buecker et al., 2021) and the challenge of outing oneself to new colleagues is often accompanied by fear of ostracism (e.g., Lee et al., 2014). Hopefully, tailored interventions can help guide individuals with specific vulnerabilities through such life events by enhancing social integration, promoting a sense of belonging, and preventing the negative impact of ostracism.

4.4. Conclusion

Taken together, the three presented projects broke new ground by using large-scale experience sampling to study ostracism. The projects offer unprecedented insights into the frequency, repercussions, and risk factors of ostracism, as well as into the perceived reasons for ostracism. The findings deepen our comprehension of ostracism experiences in everyday life, paving the way for targeted interventions to support individuals who frequently face ostracism.

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6. Appendices

(1) Appendix A:

Büttner, C. M., Ren, D., Stavrova, O., Rudert, S. C., Williams, K. D., & Greifeneder, R. (2024). Ostracism in everyday life: A framework of threat and behavioral responses in real life. *Journal of Personality and Social Psychology*. <https://doi.org/10.1037/pspi0000471>

(2) Appendix B:

Büttner, C. M., Rudert, S. C., & Kachel, S. (2024). Ostracism experiences of sexual minorities – Investigating targets' experiences and perceptions by others. *Personality & Social Psychology Bulletin*. <https://doi.org/10.1177/01461672241240675>

(3) Appendix C:

Büttner, C. M., & Greifeneder, R. (2024). Everyday ostracism experiences of depressed individuals: Uncovering the role of attributions using experience sampling. *Journal of Affective Disorders Reports*, 17, 100804. <https://doi.org/10.1016/j.jadr.2024.100804>

Appendix A

Büttner, C. M., Ren, D., Stavrova, O., Rudert, S. C., Williams, K. D., & Greifeneder, R. (2024). Ostracism in everyday life: A framework of threat and behavioral responses in real life. *Journal of Personality and Social Psychology*.
<https://doi.org/10.1037/pspi0000471>

**Ostracism in Everyday Life:
A Framework of Threat and Behavioral Responses in Real Life**

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Acknowledgements. We are very grateful to Anna-Marie Bertram, Leyre Macías, and Daniel Strebel for their help with study material development, study programming, and data preparation of Study 1. We would like to thank Louis Tay and everyone at Expiwell (<https://www.expiwell.com>) for their help in using the experience sampling app for Study 1.

Funding. This research was supported by grant #P000PS_207236/1 from the Swiss National Science Foundation awarded to Christiane M. Büttner and a COVID-19 Research Grant awarded by the Tilburg School of Social and Behavioral Sciences to Olga Stavrova and Dongning Ren.

Declaration of Conflicting Interests' statement. The authors declare that there are no conflicts of interest.

CRedit authorship contribution statement. Christiane M. Büttner: Conceptualization, Data curation, Formal analysis, Investigation, Funding acquisition, Methodology, Project administration, Supervision, Visualization, Writing—original draft, Writing—review and editing. Dongning Ren: Conceptualization, Investigation, Funding acquisition, Methodology, Writing—original draft, Writing—review and editing. Olga Stavrova: Conceptualization, Investigation, Funding acquisition, Methodology, Writing—original draft, Writing—review and editing. Selma C. Rudert: Conceptualization, Methodology, Writing—review and editing. Kipling D. Williams: Conceptualization, Methodology, Writing—review and editing. Rainer Greifeneder: Conceptualization, Methodology, Supervision, Writing—original draft, Writing—review and editing.

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Abstract

Ostracism – being ignored and excluded – is part of many individuals’ daily lives. Yet, ostracism is often studied in laboratory settings and rarely in natural settings. Here, we report one of the first investigations into ostracism in everyday life by documenting how often and where ostracism occurs; who the sources of ostracism are; and how ostracism affects targets’ feelings and behaviors. Two experience sampling studies using event-contingent ($N = 323$, $k = 1107$ ostracism experiences in 14 days) and time-signaling sampling approaches ($N = 272$, $k = 7943$ assessments including 767 ostracism experiences in 7 days) show that ostracism is an aversive experience that takes place in a range of contexts and relationships, as often as 2-3 times per week on average. Reconciling previously mixed findings regarding ostracism’s effects on behavior and extending existing theory, we propose a novel framework of behavioral reactions based on need threat levels: When psychological needs are severely threatened, individuals react to everyday ostracism with avoidance (i.e., withdrawal) and antisocial inclinations (i.e., they exhibit significantly stronger antisocial intentions, although they do not engage in antisocial behavior more frequently). Conversely, when psychological needs are threatened to a lesser extent, individuals are more likely to adopt approach behaviors (i.e., prosocial behavior, talking to others, or connecting with them on social media). Our findings considerably extend present theorizing in ostracism research as they allow to understand when and how individuals experience everyday ostracism and how behavioral reactions after ostracism form in real life.

Keywords: social exclusion; ostracism; experience sampling; need threat; real-life behavior

Ostracism, the painful experience of being excluded and ignored (e.g., Williams, 2009), may have serious consequences in individuals' everyday lives. Being ostracized has been linked to lower well-being, poorer school performance, deviant workplace behavior, reduced productivity, and being at risk for burnout, mental illness, and suicidal ideation (e.g., Chen et al., 2020; Hawes et al., 2012; Howard et al., 2020; Qian et al., 2019; Rudert, Janke, & Greifeneder, 2021; Williams & Sommer, 1997). So far, ostracism research has been largely confined to laboratory and survey studies. This is problematic because survey designs are likely subject to memory and recall biases, and laboratory experiments do not capture people's experiences in naturalistic settings. Moreover, previous research has generally not investigated real-life behavior subsequent to ostracism episodes, leaving the field largely agnostic about which behaviors follow ostracism, and under which circumstances. Experience sampling¹, where participants report ostracism experiences, emotions, and behaviors as they happen in their everyday life using smartphones, is a powerful way to mend this gap.

The present contribution utilizes experience sampling in an event-contingent and time-contingent way to address four fundamental questions regarding the experience of ostracism in daily life: (1) How frequent is everyday ostracism and who ostracizes in which contexts? (2) Does ostracism threaten psychological needs in everyday life? (3) How do individuals behave subsequent to being ostracized in real life? (4) How does the threat of fundamental needs relate to behavior after being ostracized?

The first three questions take a more descriptive approach to understanding ostracism as a phenomenon in real life; such research allows to build ground for further theorizing and intervention. For the fourth question, we suggest a novel theoretical framework, distinguishing behavioral reactions into approach, avoidance, and antisocial reactions, and their distinct

¹ Many terms are used interchangeably to describe this method, such as ambulatory assessment, ecological momentary assessment, or real-time data capture (cf. Trull & Ebner-Priemer, 2013). In this contribution, we use experience sampling as an umbrella term to describe the sampling of ostracism experiences, both event- and time-contingently.

association with threats to fundamental needs. The following sections provide further detail and background to each question.

How frequent is everyday ostracism?

Ostracism research has been largely dominated by laboratory studies (e.g., Hartgerink et al., 2015) that are not well suited for examining how often individuals experience ostracism in daily life. Survey studies provide a remedy and generally find that ostracism is a ubiquitous human experience that almost every human encounters in their life (e.g., Faulkner et al., 1997; Robinson et al., 2013; Rudert, Keller et al., 2020; Saylor et al., 2012). Participants generally report relatively low frequency of ostracism in surveys, although only few participants report never feeling ostracized during the last two months (e.g., Rudert, Janke, & Greifeneder, 2021; Rudert, Keller, et al. 2020, Study 6). However, these reports may be subject to recall biases and participants may selectively sample those ostracism experiences from memory that felt particularly severe to them. Studies using daily diaries paint a more nuanced, but also less coherent picture. For example, Nezelek et al. (2012) estimated that ostracism occurred once a day per participant on average, using event-contingent diary reports (i.e., reporting experiences as soon as they occurred). Other diary studies did not assess frequency directly, but the extent to which individuals feel ostracized at the end of a day. Interestingly, such studies allow for the conclusion that ostracism might be less frequent in daily life. For example, one study observed low levels of everyday ostracism feelings in college students using items such as “Today, people in my chapter treated me as if I was invisible” ($M = 1.25$, assessed on a scale from 1 = *completely disagree* to 4 = *completely agree*, Legate et al., 2021). Another study assessed daily feelings of being ostracized via text messages and also allows for the conclusion that ostracism feelings are not frequent in everyday life ($M = 1.50$, 1 = *never* to 7 = *very often*; Lutz, 2022). While one may argue that the inconsistency in findings is likely a function of the different items used across

studies, the best way forward appears to gather evidence that allows for a more conclusive answer.

More recent technological developments afford to obtain estimates of ostracism prevalence using experience sampling techniques. These techniques allow to assess participants' thoughts, feelings, and behavior as they happen in real life, for instance, using smartphones (e.g., Trull & Ebner-Priemer, 2013). One specific experience sampling technique are *time-contingent* approaches where participants are alerted at pre-defined time points, asking whether they experienced ostracism in a social interaction since the last time that they had been alerted, or how they feel right now (Bernstein et al., 2021; Pancani et al., 2023). Bernstein et al. (2021) found that participants felt ostracized in approximately 10% of their recent social interactions. However, social cognitive effects of ostracism are extremely time-sensitive (Williams, 2009), and especially the *reflexive* (i.e., immediate) effects of ostracism on psychological need threat may be as short-lived as a few minutes or less (e.g., Büttner et al., 2021; Williams, 2009). Even with multiple assessments per day, ostracism experiences may happen hours before the assessment, risking mis- or under-reporting. In the case of daily diary studies, time from the actual experience until the assessment could be from the start of the day to the end of the day. Moreover, minor incidents of ostracism, such as being ignored in an elevator, or by a bystander, may be forgotten after a few minutes, even though they may have strong momentary impact (e.g., Wesselmann et al., 2012; Zuckerman et al., 1983). Thus, the time-contingent approach risks systematic reporting biases when ostracism incidents and experiences are assessed several hours after ostracism occurred.

A complementing experience sampling technique are *event-contingent* approaches where individuals are instructed to report experiences as soon as they occur in their daily life, that is, individuals control when they respond to the provided questionnaires. So far, to our knowledge,

there are no ostracism studies that rely on event-contingent experience sampling using smartphones.

Who ostracizes in which contexts?

Aside from questions regarding frequency, questions about who ostracizes and in which contexts ostracism occurs have not been comprehensively addressed. Survey, diary, and interview studies suggest that ostracism can occur in many contexts and may originate from many different sources, with strangers (Nezlek et al., 2012) but also romantic partners being a particularly common source (Zadro et al., 2008). In addition, the workplace has been argued to be a frequent source of ostracism, especially as a form of social punishment that is more acceptable and less easy to sanction than other forms of discrimination (Robinson et al., 2013; Rudert, Janke, & Greifeneder, 2020). However, previous diary studies did not differentiate the workplace as a context of ostracism (see e.g., Nezlek et al., 2012), focussed on one context exclusively (e.g., text message ostracism, Lutz, 2022), or did not assess contexts of experienced ostracism at all (e.g., Legate et al., 2021). Moreover, survey, diary, and interview studies might have also been subject to recall biases where individuals may sample from memory the most hurtful experiences of ostracism. As a consequence, unexpected or particularly unfair episodes of ostracism may be over-represented compared to rather expected or more mundane instances of ostracism. Recall biases may thus influence which sources and contexts of ostracism are remembered most often. For instance, being ostracized by one's partner for an extended period of time might be more memorable than being ignored by someone in an elevator or by a service person at a restaurant (e.g., Nezlek et al., 2012; Williams, 2009; Zadro et al., 2008; Zuckerman et al., 1983), even though all three experiences may momentarily lower need satisfaction and may be associated with specific behavioral consequences. Hence, the questions of who the sources and what the contexts of ostracism in daily life are, remain largely unanswered so far.

Does ostracism threaten psychological needs in everyday life?

According to the Temporal Need Threat Model of Ostracism (Williams, 2009), ostracism threatens fundamental psychological needs, specifically, the need to belong, the need to maintain high self-esteem, the need for control over one's psychological environment, and the need to lead a meaningful existence. The consequences of being ostracized unfold in a temporal sequence where, in the *reflexive* stage, the initial response to ostracism is a strong threat to the four psychological needs. Followed by that, in the *reflective* stage, needs recover (e.g., Eck et al., 2016; Williams, 2009). Eventually, when ostracism becomes chronic, individuals may enter the so-called *resignation* stage (e.g., Riva et al., 2016; Williams, 2009).

Hundreds of lab studies have corroborated that ostracism threatens fundamental needs (e.g., Gerber & Wheeler, 2009; Hartgerink et al., 2015). In the lab, ostracism is generally inflicted by strangers (e.g., Gerber & Wheeler, 2009; Hartgerink et al., 2015), and reflexive reactions have been shown to be short-lived, but emotionally powerful (e.g., Büttner et al., 2021; Büttner, Jauch, et al., 2024; Williams, 2009). While laboratory settings are particularly well suited to advance our knowledge on the social cognitive underpinnings of ostracism, they likely cannot be translated 1:1 to being ostracized in real life, possibly by close others such as family or friends.

Previous studies document large effects of ostracism on psychological needs in time-contingent reports (e.g., Bernstein et al., 2021; Lutz, 2022). As an advantage, time-contingent experience sampling approaches allow to compare need threat levels after ostracism experiences with situations during which no ostracism occurred. However, because previous surveys relied on retrospective reports, it is not evident that they reflect the in situ reflexive experiences. One way of solving this is to assess need threat following ostracism *event-contingently*, to gain insights on reflexive effects of ostracism in everyday life at the time they occur.

Event-contingent sampling affords further advantages. Laboratory research subjects all individuals to the same objective situation, for instance, a game of ball toss during which

participants are excluded after receiving only two throws (see Williams et al., 2000; Williams & Jarvis, 2006). In real life, however, individuals may experience a range of different ostracism episodes. Event-contingent assessments of ostracism and need threat provide the means to test whether these diverse experiences elicit the same strong threat to psychological needs as highly-controlled experimental manipulations.

How do individuals behave subsequent to being ostracized in real life?

How individuals behave subsequent to being ostracized has been researched for over 25 years (e.g., Williams, 2009; Williams & Sommer, 1997). Laboratory research has identified several behavioral responses that individuals engage in after being ostracized: Broadly speaking, individuals may behave in a prosocial way to seek reconnection (e.g., Balliet & Ferris, 2013), or in an antisocial way to punish or provoke acknowledgment from others in order to regain a sense of control (e.g., Jauch et al., 2022; Ren et al., 2018), or they may withdraw from others to protect themselves from future experiences of ostracism (e.g., Ren et al., 2016, 2020). Recent research identified behavioral alternatives that extend prosocial behavior: Seeking reconnection by talking to others (e.g., Meral et al., 2021) and seeking reconnection on social media (e.g., Lutz et al., 2022).

However, so far, research has not identified how individuals behave after being ostracized *in real life*, where other behavioral alternatives are available than those predefined by researchers. Moreover, previous investigations have rarely looked at different behavioral alternatives within the same study context (e.g., Carter-Sowell et al., 2008; Warburton et al., 2006), thus offering no conclusions on how individuals decide between different behavioral alternatives. Finally, lab studies often create situations that are inconsequential for the participant. For instance, studies offer participants to act in a certain way, for instance, antisocially, without having to fear any consequences for themselves (e.g., giving hot sauce to someone who doesn't like hot sauce, but doing so anonymously, Warburton et al., 2006). In real life, however, aggressing toward others

has consequences and may even invite subsequent ostracism as a punishment for breaking social norms (e.g., Ren et al., 2018; Rudert et al., 2023).

To summarize, to our knowledge, there are no studies investigating different behaviors associated with ostracism in real life. Therefore, we consider it high time to assess different behavioral alternatives as a response to ostracism, in real life, where behavior has real consequences and a range of behavioral alternatives is available.

How does need threat relate to behavior after being ostracized in real life?

But which behavioral response(s) will ostracized targets choose in real life where different alternatives are available to them? Here, we put forth a novel framework, conceptualizing need threat following ostracism as a key determinant of targets' behavioral responses. We detail how need threat is linked with approach, avoidance, or antisocial behavioral responses below.

Approach behavior. After ostracism, behaviors such as seeking social connection or cognitive reappraisal may be broadly categorized as approach-oriented, either behaviorally, or cognitively (e.g., Riva, 2016). According to the threat and defense model (Jonas et al., 2014), approach is the response to more distal, less intense psychological threats. This is attributed to a reflexive neural activation of approach reactions that is more distal and therefore suitable to deal with less intense threats (Jonas et al., 2014). Based on these tenets, we propose that the more psychological needs are threatened subsequent to being ostracized, the less likely individuals exhibit approach behaviors (i.e., need threat is negatively associated with approach behaviors). We conceptualize prosocial behavior, talking with others, and using social media as approach behaviors because these behaviors generally aim to facilitate social connection (e.g., Lutz et al., 2022; Maner et al., 2007; Meral et al., 2021). Importantly, we here conceptualize reaffiliation-motivated behaviors that aim to restore individuals' inclusion status as approach behaviors, even if those behaviors may lead to antisocial outcomes in the long term, for example, when ostracized

individuals approach extreme or radicalized groups and act antisocially on their behalf in the future (e.g., Hales & Williams, 2018; Pfundmair et al., 2022).

Avoidance behavior. Following ostracism, individuals may withdraw from others to protect themselves from further social pain (e.g., Ren et al., 2016, 2020). In addition to social withdrawal, alcohol and drug use, as well as cognitive distraction may also be categorized as avoidance-oriented coping (e.g., Riva, 2016). Again drawing on the threat and defense model (Jonas et al., 2014), avoidance is the dominant response to intense psychological threats based on the reflexive neural activation of anxiety and avoidance after intense threats. Therefore, we propose that the stronger psychological needs are threatened after being ostracized, the more likely individuals show avoidance behaviors (i.e., need threat is positively associated with withdrawal).

Antisocial behavior. Antisocial behavior is common after ostracism and may be aimed at punishing the sources or provoking acknowledgment from others to regain control (e.g., Jauch et al., 2022; Ren et al., 2018). Individuals may be especially prone to antisocial reactions and anger when they experience high levels of pain (Berkowitz, 1993). Put differently, when ostracized targets experience strong social pain related to severe need threat, they are more likely to show antisocial behavior (e.g., Ren et al., 2018; Riva, 2016). Therefore, we propose that the stronger psychological needs are threatened after being ostracized, the more individuals show antisocial behaviors (i.e., need threat is positively associated with antisocial behaviors).

Our suggested framework matches ideas of the multi-motive model of rejection (Smart Richman & Leary, 2009) that predicts behavioral reactions to rejection, discrimination, and ostracism based on different construals of the situation. One such construal, for instance, is how unfair ostracism is perceived (Smart Richman & Leary, 2009). Perceptions of ostracism as unfair are known to elicit stronger anger and, as a result, stronger antisocial reactions (Chow et al., 2008). Relatedly, experiences of ostracism that cause stronger negative emotions are associated

with higher intentions to leave the respective context, an avoidance reaction (Sarfraz et al., 2023). Another construal within the multi-motive model is the expectation of relational repair (Smart Richman & Leary, 2009). That is, ostracism experiences that constitute strong psychological threats may destroy the hope for reconnecting with others (Smart Richman & Leary, 2009), which in turn decreases approach behavior (Cuadrado et al., 2015). In line with arguments from the multi-motive model of rejection (Smart Richman & Leary, 2009), we thus argue that ostracism experiences that elicit higher need threat generally elicit stronger avoidance and antisocial responses compared to approach responses.

Relatedly, it has been argued that exclusion manipulations that constitute severe threats, such as being told that one will likely live one's life alone based on a personality test (i.e., the Future Life Alone paradigm, Twenge et al., 2002), may be accompanied by avoidance and antisocial behavior rather than approach reactions (Bernstein & Claypool, 2012). For instance, after being told that one is likely to live one's life alone, participants behaved less pro-socially (i.e., less approach behavior): they donated less money, volunteered less, and helped others less (Twenge et al., 2007). Consistent with our argument, however, the pattern is different if the threat is less severe. For instance, after playing Cyberball, a brief induction of ostracism that elicits strong need threat, that, yet, fades relatively quickly (e.g., Hartgerink et al., 2015), participants were willing to donate more money (Carter-Sowell et al., 2008), and help more with a collective task (Williams & Sommer, 1997), that is, they showed more approach behavior. The here-suggested framework is thus fit to accommodate findings that appeared to be contradictory so far. In particular, contradictory findings may be explained by differences in threat level elicited by the manipulations, causing individuals to avoid or aggress (severe threat) versus approach (less severe threat).

The existing evidence mainly relied on situationally induced threats. The here suggested framework also affords accommodating that dispositional differences in threat perception may

modulate the effect of ostracism situations. For instance, after being told that someone did not want to work with them, participants low in fear of negative evaluation—but not participants high in fear of negative evaluation—assigned more financial reward to other participants (Studies 5 & 6, Maner et al., 2007). This may be explained as a differential threat response: Participants low in fear of negative evaluation likely felt less threatened by rejection which allowed them to behave in a prosocial, approaching, way.

Finally, it is noteworthy that previous theorizing distinguished two clusters of needs that are typically threatened by ostracism: The inclusionary need cluster, comprising the need to belong and the need for self-esteem, and the power and provocation cluster, comprising the need for control and the need for meaningful existence (Williams, 2009). As theorized based on this distinction, prosocial behavior would be particularly fit to restore inclusionary needs, while antisocial behavior should be especially efficient in restoring needs of the power and provocation cluster. Thus, a following prediction would be, for instance, that stronger threats to inclusionary needs are more likely followed by prosocial behavior, while stronger threats to power and provocation needs should be more likely followed by antisocial behavior. However, previous laboratory research finds very high intercorrelations of the four needs (e.g., Carter-Sowell et al., 2008; Rudert & Greifeneder, 2016; van Beest & Williams, 2006). Moreover, recent experimental findings linking the threat of specific needs (i.e., control) to behavioral inclinations such as intentions to join extreme groups, are mixed (e.g., Hales & Williams, 2018; Pfundmair, 2019). Thus, it seems that, at least in experimental research, differential need threat to specific needs is not an ideal explanation for different behavioral responses subsequent to ostracism. Based on the reviewed evidence, our proposed model therefore relies on overall need threat as a predictor of behavior subsequent to ostracism. However, we also test for the possibility that ostracism in everyday life threatens the four needs differentially, with potentially distinct consequences for behavior subsequent to ostracism.

To summarize, we propose a novel framework to explain behavioral reactions to ostracism based on need threat levels—a theoretical advance that can reconcile contradictory findings in the literature and offer ways of understanding when and why individuals show certain behavioral reactions to ostracism in real life.

The present research

The present contribution addresses four fundamental questions about ostracism in everyday life: (1) How frequent is everyday ostracism, and who ostracizes in which contexts? (2) Does ostracism threaten psychological needs in everyday life? (3) How do individuals behave after being ostracized in real life? And, testing the proposed framework, (4) how does the threat of fundamental needs relate to behavior after being ostracized?

Experience sampling techniques offer a particularly powerful means to address these questions: Study 1 takes an event-contingent sampling approach by asking participants to report any ostracism experiences, need threat, and behavioral intentions as soon as they feel ostracized, over the course of 14 days. Study 2 takes a time-contingent sampling approach by signaling participants 5 times a day over the course of 7 days to inquire about their momentary (i.e., within last hour) ostracism, need threat, and performed behavior.

Open science statement. For Study 1, we preregistered all hypotheses, sample size, exclusion criteria, and analysis plans on AsPredicted prior to data collection (Study 1 main procedure: https://aspredicted.org/THK_7DZ, Study 1 research questions 1 and 2: https://aspredicted.org/4H4_HZG, Study 1 research question 3: https://aspredicted.org/7CR_YZC). For Study 2, we preregistered all research questions and hypotheses, exclusion criteria, and analysis plans on AsPredicted after data collection but before

analyzing the data: https://aspredicted.org/J64_134. All materials, data, and analysis scripts are freely available via <https://osf.io/8h6vb/>.²

Ethical approval. Both reported studies received ethical approval from the institutional committees at the University of Basel and Tilburg University.

Study 1

Study 1 takes an *event-contingent* experience sampling approach to assess the frequency of ostracism experiences in everyday life, including where and by whom ostracism occurred, its threat to psychological needs, and subsequent behavioral intentions.

Methods

Participants and Design

Considering resource constraints and the anticipated frequency of ostracism incidents, we pre-registered to invite 500 participants to the pre-study. Four-hundred-and-ninety-five Prolific Academic users (US American residents, gender-balanced sample) completed eligibility screening (i.e., owning a suitable cell phone). As pre-registered, we excluded participants if they failed attention checks ($n = 2$), indicated not having participated in a serious manner (< 6 on a 9-point scale, $n = 2$), or withdrew consent to analyze their data ($n = 1$). After the pre-screening, all participants were invited to download the experience sampling study. As pre-registered, only those who completed the entire 14-day sequence, missing less than two evening questionnaires per week (this was also the criterion for being paid in the respective week), were retained in the sample. This left 323 participants in the sample ($M_{\text{age}} = 38.04$ years, $SD = 13.15$, 48.30% women, 48.60% men, 3.10% non-binary; 6.50% Black / African American, 1 American Indian or Alaska Native, 13.62% Asian American, 6.50% Hispanic, 69.04% White, and 4.02% two or more races). We provide a supplementary sample description regarding income and employment status

² The present contribution is part of a more comprehensive project on everyday ostracism experiences (see also Büttner, Rudert, & Kachel, 2024, Study 2; Büttner & Greifeneder, 2024). We here focus on describing everyday ostracism experiences, need threat, and behavior and only report the variables needed for these analyses.

(OSF).

Power considerations. Since ostracism prevalence was unknown before data collection, no a priori power calculations were performed. We performed simulation-based sensitivity analyses for multi-level models with the *simr* package (Green & MacLeod, 2016) instead. These analyses showed that Study 1 had 80% power to detect effect sizes of Cohen's $d = |0.11| - |0.21|$ (depending on the behavioral outcome variable) for the effect of need threat score on behavioral intention (1000 Monte Carlo simulations, $\alpha = 0.05$) All observed effect sizes were larger than the smallest effect detectable with 80% power (see Figure 2), suggesting adequate sample size.

Measures

Pre-screening. In the pre-screening, participants first provided informed consent, reported if they own a smartphone and were informed about the procedure of the 14 day-study. Participants completed several questionnaires about their personality, attitudes, and life circumstances that are unrelated to the present contribution. Ending the pre-screening, participants provided demographic information and reported on the seriousness of their participation. Participants had the opportunity to withdraw their answers from data analysis and to leave comments. All participants who completed the pre-screening were thanked and invited to participate in the experience sampling part.

Experience sampling. Next, participants downloaded the scientific app Expiwell (<https://www.expiwell.com>). Over the next 14 days, participants indicated in the app whenever they experienced ostracism (i.e., *event-contingent sampling*; “*I have just been excluded and/or ignored.*”). After each event-contingent report of ostracism, participants completed a questionnaire assessing need satisfaction (Rudert & Greifeneder, 2016, Cronbach's $\alpha = .86$). Participants further provided information on who excluded them (adapted and extended from Nezlek et al., 2012, “*The person that excluded and/or ignored me is...*”, options: “*a stranger*”, “*an acquaintance*”, “*an ordinary friend*”, “*a close friend*”, “*my partner*”, “*a close relative*”,

“a distant relative”, “someone from work”, “other”) and *where* they felt ostracized (*“Where have you felt excluded and/or ignored?”*, five options: *“at work”, “at school / college / University”, “at home”, “online / on social media”,* and *“other”*). We assessed five behavioral intentions after each ostracism report: 1) intentions to behave prosocially (adapted from Caprara et al., 2005), 2) intentions to talk to others, 3) intentions to engage in social media use, 4) intentions to behave aggressively (adapted from Borah et al., 2021), and 5) intentions to withdraw (adapted from Barzeva et al., 2019). See Table 1 for all item texts and descriptive statistics.

In addition to the event-contingent sampling, each evening at 6 pm, participants had the chance to indicate whether they had experienced ostracism situations during the day that they had not already reported. The survey was open until midnight. We introduced this measure to avoid underreporting of ostracism experiences (e.g., when being ostracized during a work meeting, it might not be possible to use the smartphone immediately to report the experience)³. While this allowed for a more reliable measure of ostracism frequency, we did not assess need satisfaction, or behavior in the evening questionnaire, considering that these reports were retrospective and did not allow the possibility to assess reflexive effects.

³ One participant was omitted from analyses as an extreme outlier because they reported a total of 110 additional ostracism experiences in the evening questionnaires, therefore the total of analyzed ostracism experiences is $k = 997$.

Table 1. Measures used in Studies 1 and 2, including descriptive statistics for need satisfaction and behavior measures.

		Study 1		Study 2		
		If not stated otherwise, assessed from 1 = <i>not at all</i> to 7 = <i>very much</i> .		If not stated otherwise, assessed from 1 = <i>not at all</i> to 5 = <i>a great deal</i> .		
ostracism assessment		I have just been excluded and/or ignored.		During the last hour, did other people exclude you?		
				During the last hour, did other people ignore you?		
			<i>M (SD)</i>		<i>M_{general} (SD)</i>	<i>M_{after ostracism} (SD)</i>
belonging		Right now, I feel... 1 = rejected, 7 = accepted	1.89 (1.27)	During the last hour, to what extent have you felt connected?	2.51 (1.10)	2.10 (1.00)
control		Right now, I feel... 1 = powerless, 7 = powerful	1.99 (1.26)	During the last hour, how powerful did you feel? 1 = <i>very powerless</i> , 5 = <i>very powerful</i>	2.89 (0.68)	2.50 (0.88)
self-esteem		Right now, I feel... 1 = devalued, 7 = valued	1.70 (1.36)	During the last hour, to what extent have you felt positively about yourself?	2.62 (1.06)	2.15 (0.97)
meaningful existence		Right now, I feel... 1 = invisible, 7 = recognized	1.72 (1.32)	During the last hour, to what extent have you felt that your life is meaningful?	2.62 (1.09)	2.24 (1.00)
	prosocial behavior	At the moment, I feel like helping someone.	2.76 (1.68)	During the last hour, did you help anybody else?	1.87 (1.03)	2.12 (1.02)
				During the last hour, did you do something nice to another person?	2.03 (1.06)	
approach behavior	talking behavior	At the moment, I feel like talking to someone (in person).	3.14 (1.81)	During the last hour, did you talk to someone in person?	2.66 (1.33)	2.68 (1.22)
				During the last hour, did you post something on your social media page (e.g., Facebook, Instagram)?	1.14 (0.47)	1.34 (0.75)
	social media use	At the moment, I feel like communicating with others on social media.	2.40 (1.74)	During the last hour, did you visit other people's social media pages (e.g., Facebook, Instagram)?	1.54 (0.84)	1.75 (0.94)
antisocial behavior		At the moment, I feel like hurting someone (physically and/or verbally).	1.44 (1.00)	During the last hour, did you do something bad to another person?	1.05 (0.31)	1.30 (0.71)
avoidance behavior		At the moment, I would rather be alone than with others.	4.35 (1.96)	During the last hour, did you withdraw from or avoid others?	1.34 (0.79)	1.96 (1.13)

Note. In line with item wording, we report descriptive statistics for need *satisfaction*, but note that all items were reverse-coded to reflect need *threat* before data analysis.

Results

Prevalence of ostracism experiences

Participants reported 853 event-contingent ostracism experiences, resulting in an average of 2.64 event-contingent experiences of ostracism per participant ($SD = 3.40$, $Range = 0 - 15$). In addition, participants reported 254 ostracism experiences in the evening reports.⁴ Combining event-contingent and evening reports of ostracism results in an average of 3.43 ostracism experiences per participant ($SD = 7.66$, $Range = 0 - 26$). Ostracism experiences did not distribute evenly across participants. As shown in Table 2, a considerable portion of participants reported no ostracism ($n = 90$, 27.86% of all participants). About a third of the sample reported one or two experiences (one experience: $n = 55$, 17.03%; two experiences: $n = 48$, 14.86%). Indeed, the upper 14.24% of the most frequently ostracized participants reported nearly half (49.65%) of all ostracism experiences in Study 1. Figure 1 depicts the distribution of number of ostracism experiences reported by participants over the 14 days.

⁴ Completing more than 80% of all evening questionnaires (i.e., 10 or more of the total 14 evenings) was tied to payment and inclusion in data analysis, therefore, compliance with answering evening questionnaires was high: Participants completed $M = 12.25$ ($SD = 1.20$) of 14 evening questionnaires and only $n = 26$ (8.05%) of participants missed the maximum allowed 4 of 14 questionnaires. Fifty-six participants (17.34%) missed none.

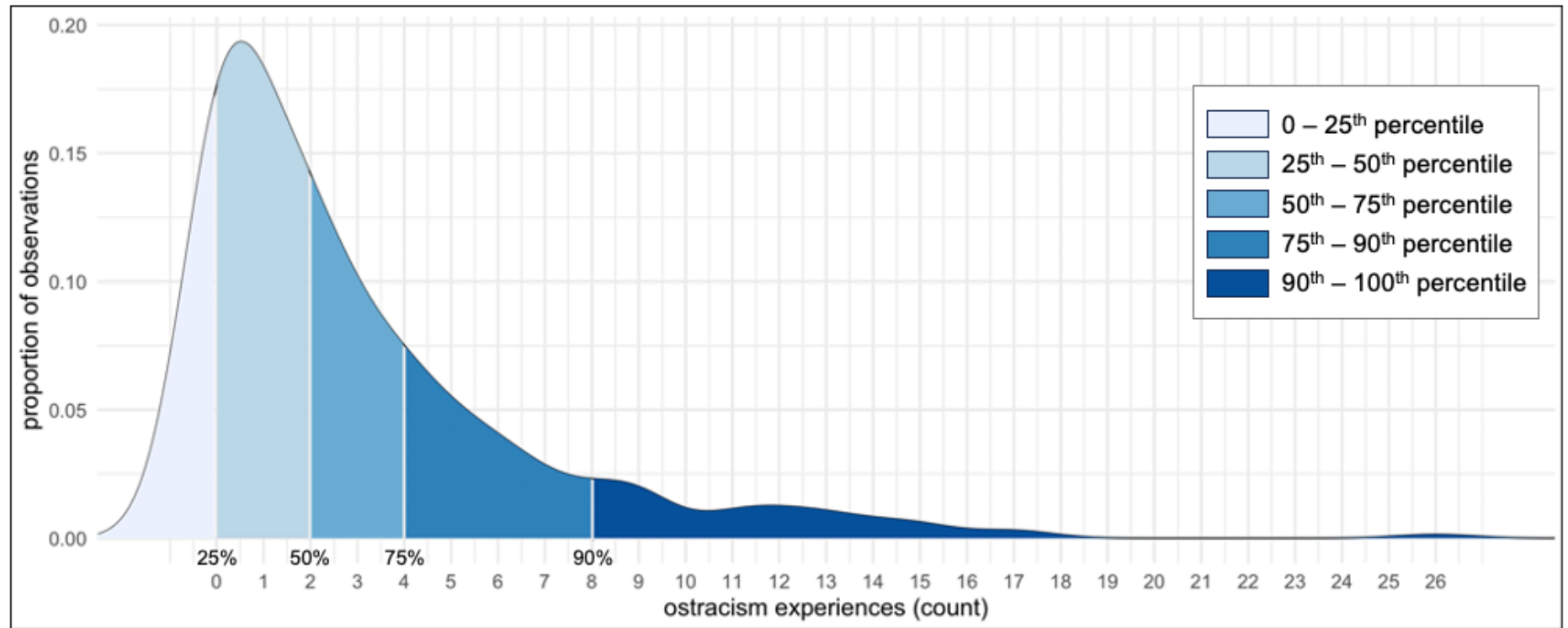
Table 2. Distribution of the number of ostracism experiences per participant in Studies 1 and 2, relative to total number of participants and total number of ostracism experiences.

Study 1					Study 2				
<i>n</i>	<i>k</i>	cumulative <i>n</i> / <i>N</i>	<i>n</i> * <i>k</i>	cumulative <i>n</i> * <i>k</i> / <i>K</i>	<i>n</i>	<i>k</i>	cumulative <i>n</i> / <i>N</i>	<i>n</i> * <i>k</i>	cumulative <i>n</i> * <i>k</i> / <i>K</i>
90	0	27.86%	0	0%	102	0	37.50%	0	0%
55	1	44.89%	55	5.52%	39	1	51.84%	39	5.08%
48	2	59.75%	96	15.15%	32	2	63.60%	64	13.43%
29	3	68.73%	87	23.87%	27	3	73.53%	81	23.99%
25	4	76.47%	100	33.90%	23	4	81.99%	92	35.98%
16	5	81.42%	80	41.93%	8	5	84.93%	40	41.20%
14	6	85.76%	84	50.35%	8	6	87.87%	48	47.46%
8	7	88.24%	56	55.97%	5	7	89.71%	35	52.02%
6	8	90.09%	48	60.78%	5	8	91.54%	40	57.24%
10	9	93.19%	90	69.81%	3	9	92.65%	27	60.76%
5	11	94.74%	55	75.33%	4	10	94.12%	40	65.97%
4	12	95.98%	48	80.14%	3	11	95.22%	33	70.27%
5	13	97.52%	65	86.66%	2	13	95.96%	26	73.66%
2	14	98.14%	28	89.47%	1	15	96.32%	15	75.62%
3	15	99.07%	45	93.98%	2	18	97.06%	36	80.31%
2	17	99.69%	34	97.39%	1	19	97.43%	19	82.79%
1	26	100%	26	100%	2	20	98.16%	40	88.01%
					1	21	98.53%	21	90.74%
					2	22	99.26%	44	96.74%
					1	25	100%	25	100%

Note. *n* is the number of participants who reported *k* ostracism experiences, cumulative *n* / *N* is the percentage of participants who reported *k* ostracism experiences or less, relative to the total number of participants in the study ($N_1 = 323$, $N_2 = 272$), *n* * *k* multiplies the number of participants with *k* ostracism experiences by (e.g., if 2 participants reported 14 experiences each, $n * k = 28$), cumulative *n* * *k* / *K* denotes the percentage of *k* ostracism experiences or less, relative to the total number of ostracism experiences reported in the study ($K_1 = 997^3$, $K_2 = 767$).

Figure 1

Distribution of the Number of Ostracism Experiences per Participant in Study 1.



Note. The depicted percentiles can be interpreted in the following way: 25% of all participants reported no ostracism, 50% of all participants reported two or fewer experiences, 75% of all participants reported four or fewer ostracism experiences, and 90% reported eight or fewer ostracism experiences.

Context of everyday ostracism. Participants reported being most often ostracized at home ($n = 381$, 44.56% of experiences), followed by being ostracized at work ($n = 179$, 20.94% of experiences), being ostracized at another place ($n = 144$, 16.84% of experiences; examples of such places included at a friend's or relative's house, at a store, via text message, at a bar, at the gym, or at a restaurant), being ostracized online or on social media ($n = 91$, 13.68%), and being ostracized at school, college, or university ($n = 88$, 3.98%).

Sources of everyday ostracism. Participants reported being most often ostracized by close relatives ($n = 194$, 22.69% of experiences), followed by co-workers ($n = 168$, 19.65% of experiences), one's partner ($n = 139$, 16.26% of experiences), ordinary friends ($n = 91$, 10.64%), and acquaintances ($n = 88$, 10.29%). Strangers ($n = 81$, 9.47%) and close friends ($n = 79$, 9.24%) were less common sources of everyday ostracism, and distant relatives were the least common source of ostracism ($n = 15$, 1.75%).

Need threat

Prior to analysis, we recoded need satisfaction into need *threat* (i.e., higher numbers reflecting higher threat). Repeated measures correlations using the *rmcorr* package in *R* (Bakdash & Marusich, 2017) show that all four needs correlated significantly and positively following ostracism events (see Table 3). In general, participants showed high need threat associated with experiences of ostracism, $M = 5.18$, $SD = 1.09$. Following Nezelek et al. (2012), we tested whether the means (see Table 1) were different from the scale midpoint (4). This was the case for all four needs, all $ps < .001$.

Table 3. Repeated measures correlations of need threat after ostracism, in Study 1.

variable	1	2	3	4	5
1 need threat belonging	-				
2 need threat self-esteem	.59***	-			
3 need threat control	.37***	.34***	-		
4 need threat meaningful existence	.37***	.42***	.37***	-	
5 need threat score	.79***	.79***	.70***	.71***	-

Note. All variables were group-mean-centered prior to analyses. Need threat score (5) indicates the averaged threat to belonging, self-esteem, control, and meaningful existence after each event-contingent ostracism report. *** $p < .001$.

Behavioral intentions

The strongest behavioral intention was withdrawal, followed by intentions to talk to someone, prosocial behavioral intentions, intentions to use social media, and finally, antisocial behavioral intentions (see Table 1 for all descriptive statistics).

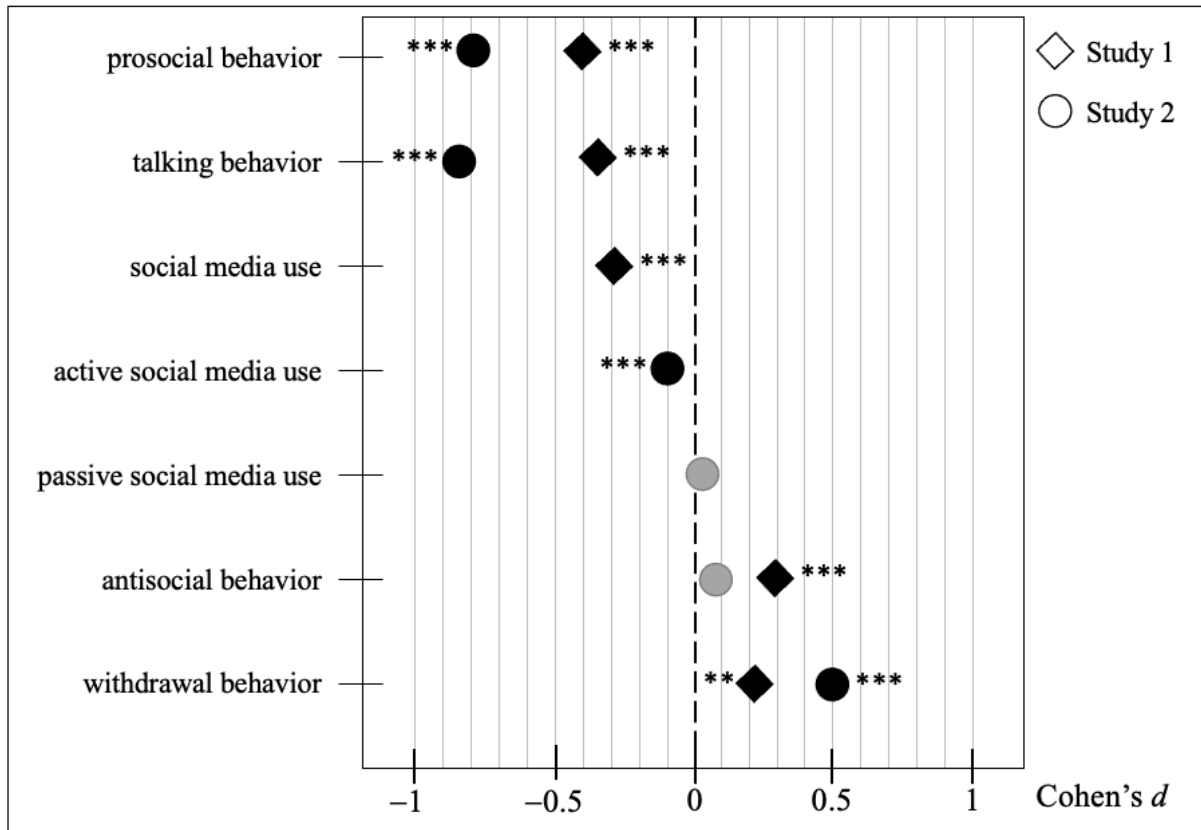
We computed multi-level models to assess the effects of need threat on behavioral intentions, adding random effects for participant (see [OSF](#) Supplementary Table 1 for detailed results). Need threat following ostracism was negatively associated with prosocial intentions, intentions to talk to others, and intentions to use social media, but need threat was positively associated with antisocial intentions and with withdrawal intentions. See Figure 2 for a summary of the effect sizes. Importantly, the patterns remained unchanged when analyzing specific needs of belonging, self-esteem, control, and meaningful existence, separately (see [OSF](#) Supplementary Table 1).

In exploratory fashion, as another potential indicator of withdrawal, we analyzed instances of *not reacting* at all. Specifically, we analyzed whether participants showed *no behavioral intention* after ostracism (i.e., indicating 1 = *not at all* for all behavioral intentions). Of the 853 event-contingently reported ostracism experiences, participants reported a 1 (= *not at all*) for all behavioral intentions except withdrawal (i.e., prosocial, antisocial, talking, and

social media use) for 99 experiences (i.e., 11.61%). For 20 of those events, participants additionally indicated a 1 (= *not at all*) for withdrawal. Based on the proportion of events, we coded the 99 events as *no reaction* (vs. any reaction, $n = 754$). Similarly to the intention to withdraw, need threat was also positively associated with a higher likelihood of *not reacting* at all (coded as 1 vs. any reaction coded as 0), $b = .77$, $p = .001$. Again, this pattern remained unchanged when analyzing specific needs of belonging, self-esteem, control, and meaningful existence, separately (see [OSF](#) Supplementary Table 1).

Figure 2

Need Threat Levels Predicting Behavioral Intentions (Study 1) and Behaviors (Study 2).



Note. Cohen's *ds* obtained with the *EMAtools* package (Kleiman, 2021) are displayed as effect sizes (x-axis). Effects in Study 1 are indicated with squares. Effects in Study 2 are indicated with circles. Black indicates significant effects ($p < .05$), grey indicates non-significant effects ($p > .05$). In Study 2, logistic multi-level models were computed for active social media use, passive social media use, antisocial behavior, and withdrawal behavior. ** $p < .01$, *** $p < .001$.

Discussion

When sampled event-contingently, ostracism happens approximately two times per week (i.e., 3.43 ostracism experiences in 14 days). This estimate includes evening reports of ostracism, therefore, we are confident that our results do not underestimate ostracism experiences. Moreover, participants had the chance to voluntarily leave an open description of

their ostracism experiences.⁵ These descriptions illustrate that participants reported a range of minor ostracism experiences, such as, for instance, not getting asked to join for lunch at work or having a phone call ignored by someone else. But participants also reported more emotionally disruptive experiences of ostracism, such as being ignored for longer periods of time by one's romantic partner or a family member. For instance, one participant described a major ostracism episode: "My mother is in the hospital with life threatening problems and is long distance away from where I live. According to other people she is not responding to texts it calls because she is too stressed and tired. I get that, but it does feel like I am being excluded because she is talking to other people [sic]".

Regarding contexts of ostracism, we find that participants' home and workplace were particularly frequent contexts of ostracism (65.50% of all experiences). Being ostracized online or on social media made up 13.68%. Being ostracized at school, college, or university was rather uncommon (3.98%), reflecting that only few participants in our sample self-identified as students (6.50%, see supplementary sample description [OSF](#)). Close relatives, people from work, and romantic partners were the most frequent sources of ostracism. As expected and in line with previous findings on everyday ostracism experiences and feelings (e.g., Lutz, 2022; Nezlek et al., 2012), we find strong threat to psychological needs following event-contingently assessed ostracism experiences. Extending previous research, we find that, in everyday life, the strongest behavioral intention following ostracism was to withdraw from others, followed by intentions to talk to someone, prosocial behavioral intentions, intentions to engage in social media use, and finally, antisocial behavioral intentions. Low intentions to behave aggressively in real life are in line with the idea that aggressive behavior may occur in laboratory settings with assured anonymity (e.g., Warburton et al., 2006), but is less common in real life where antisocial behavior has potentially negative consequences. In line with the proposed framework

⁵ To protect participant anonymity, we do not share open descriptions, but they are available upon request.

of threat and behavioral responses in real life and previous ideas that intense threat are associated with more avoidance and antisocial behavior but less approach behaviors (e.g., Berkowitz, 1993; Jonas et al., 2014; Riva, 2016), need threat is related negatively to prosocial, talking, and social media use intentions, but positively to antisocial and withdrawal intentions. Similarly to the observed higher withdrawal intentions after severely threatening ostracism experiences, we also observed a positive association of need threat and showing *no behavioral reaction* except for withdrawal. While Study 1 offers insights into behavioral *intentions* associated with event-contingent ostracism experiences, we did not assess *actual* behavior, which can only be assessed retrospectively. We address this limitation in Study 2.

Study 2

We extend Study 1 in several ways: Most importantly, Study 2 samples ostracism time-contingently by signaling participants several times during the day. By taking this approach, need threat levels represent experiences at the reflective stage, instead of the reflexive stage (e.g., Williams, 2009). This approach further allows to assess actual behavior in retrospective report (e.g., “During the last hour, did you help anybody else?”), instead of assessing behavioral intentions (e.g., Study 1: “At the moment, I feel like helping someone.”) that may or may not result in actual behavior (and its real-life consequences). Moreover, previous research showed that active use of social media networks (e.g., posting pictures) re-affords belonging after ostracism more than passive use or use of non-social websites like Wikipedia (e.g., scrolling, Pit et al., 2022). Therefore, we inquire about active social media use (i.e., posting on social media) and passive social media use (i.e., viewing other users’ content), separately, in Study 2. Finally, the design of Study 2 allows to compare need threat and behaviors to baseline measures at time points with no ostracism report.

Methods

Participants

Two-hundred-and-seventy-two Prolific Academic users (UK residents) participated in a 7-day experience sampling study using the smartphone app *ethicadata.com*. Participants ($M_{\text{age}} = 34.33$, $SD = 12.47$ years, 72.43% women, 25% men, 2.57% did not disclose their gender) completed an average of 31.26 assessments over the 7-day course ($SD = 5.17$, $Range = 1 - 41$). Notifications were sent to participants five times a day, each within a specific time interval. Each notification was random within its time interval: 9:20 am–11:40 am 11:40 am–2:00 pm, 2:00 pm–4:20 pm, 4:20 pm–6:40 pm, 6:40–9:00 pm. In total, we analyzed 7943 assessments.⁶ We provide supplementary sample descriptions regarding income, employment status, and education level [OSF](#).

Power considerations. Study 2 was a preregistered analysis of an existing data set, therefore, no a priori power calculations were performed. We pre-registered to include all individuals who responded to at least one momentary assessment. We again performed simulation-based sensitivity analyses for multi-level models with the *simr* package (Green & MacLeod, 2016). These analyses showed that Study 2 had 80% power to detect effect sizes of Cohen's $d = |0.06| - |0.08|$ (depending on the behavioral outcome variable) for the effect of need threat score on behavior (1000 Monte Carlo simulations, $\alpha = 0.05$). All observed effect sizes (except for the effect on passive social media use, $d = 0.02$) were larger than or equal to (for antisocial behavior, $d = 0.07$) the smallest effect detectable with 80% power (see Figure 2), suggesting adequate sample size.

⁶ This data set has been used to analyze the relationship of loneliness and momentary self-control failures (Stavrova et al., 2022). The present research addresses different measures and research questions.

Measures

Ostracism. Ostracism was assessed with two items: "During the last hour, did other people exclude you?" ($M = 1.06$, $SD = 0.32$, skewness = 6.58) and "During the last hour, did other people ignore you?" ($M = 1.12$, $SD = 0.43$, skewness = 4.84), on scales from 1 = *not at all* to 5 = *a great deal*. As pre-registered, we averaged the two items into one score of ostracism (skewness = 5.29) given their high repeated-measures correlation $r = .49$, $p < .001$. As pre-registered, because log-transformation did not alleviate skewness in reports of ostracism (skewness after log-transformation = 3.80), we dichotomized the variable (i.e., 1 was coded as not being ostracized; any values above 1 were coded as being ostracized).

Need threat. We assessed need satisfaction with one item per need (see Table 1). Items were reverse-coded to reflect need threat and averaged into one score (Cronbach's $\alpha = .82$).

Behavior. We assessed six different behaviors: Prosocial behavior, talking to others, active and passive social media use, antisocial behavior, and withdrawal behavior (Table 1 lists all items and descriptive statistics). As pre-registered, we averaged two items into one score of prosocial behavior ($M = 1.95$, $SD = 0.95$, skewness = 0.97) given their high repeated-measures correlation $r = .58$, $p < .001$. The two social media use items were analyzed as separate variables (i.e., $r = .28$, $p < .001$). Because of skewness (active social media use: skewness = 4.24; passive social media use: skewness = 1.71), both social media items were dichotomized. Antisocial (skewness = 7.36) and withdrawal behavior were also dichotomized (skewness = 2.77).

Results

All continuous variables were mean-centered prior to analysis by subtracting the person's average response from each assessment's value.

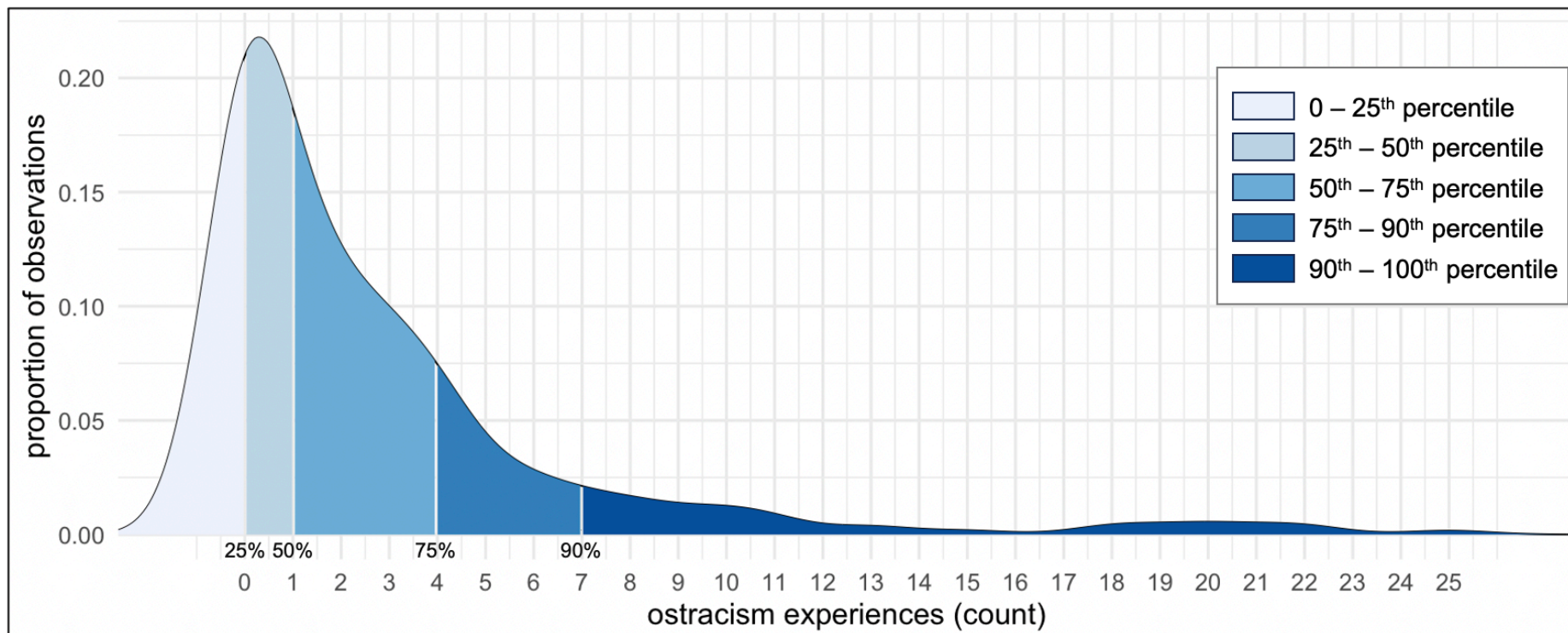
Prevalence of ostracism experiences

Applying dichotomization as pre-registered, 767 reports contained experiences of ostracism (i.e., 9.66% of all recorded situations). For those reports that were identified as experiences of ostracism, the mean level of ostracism was $M = 1.92$ ($SD = 0.62$, $Range = 1.5 - 5$).⁷ On average, participants reported 2.92 ostracism experiences over 7 days ($SD = 4.42$, $Range = 0 - 25$). As in Study 1, the number of ostracism experiences per participant was skewed in a way that a considerable portion of participants reported no ostracism ($n = 102$, 37.50% of all participants), only one experience ($n = 39$, 14.34%), or two experiences ($n = 32$, 11.76%). Consistent with Study 1, we observed that the upper 10.29% of the most frequently ostracized participants reported nearly half (47.98%) of all ostracism experiences in Study 2 (see Table 2). Figure 3 depicts the distribution of the number of ostracism experiences reported by participants over the 7 days.

⁷ There was no built-in no-signal time in Study 2, therefore, a small portion of signals were sent in close temporal proximity to each other: Of all signals, 522 (6.57% of all 7943 signals) were sent *less* than 60 minutes apart from each other, 300 signals (3.78%) were sent less than 45 minutes apart from each other, 148 signals (1.86%) were sent less than 30 minutes apart from each other, 45 signals (0.57%) were sent less than 15 minutes apart from each other, 25 signals (0.31%) were sent less than 10 minutes apart from each other, and 7 signals (0.09%) were sent less than 5 minutes apart from each other. Technically, participants could have referred to the same ostracism event if two signals were less than 60 minutes apart. To examine this possibility, we conducted a robustness check, removing the second assessment if two signals were sent less than 60 minutes apart (i.e., removing $n = 522$ signals). This analysis revealed 718 ostracism reports, corresponding to 9.68% of the analyzed remaining 7421 signals. This proportion is very similar to the overall observed prevalence of 767 ostracism reports in 7943 assessments (i.e., 9.66%), showing no evidence that participants reported the same ostracism situation twice when two signals were sent close in time.

Figure 3

Distribution of the Number of Ostracism Experiences per Participant in Study 2.



Note. The depicted percentiles can be interpreted in the following way: Between 25% and 50% of all participants reported no ostracism or only one experience, 75% reported four or fewer ostracism experiences and 90% reported 7 or fewer ostracism experiences.

Need threat

Repeated measures correlations using the *rmcorr* package in *R* (Bakdash & Marusich, 2017) show that all four needs correlated significantly and positively (see Table 4). As pre-registered, we tested whether strength of ostracism was associated with higher levels of need threat in a multi-level regression model, including a random effect for participant to account for the nested data structure, and an error structure allowing for correlation between adjacent time points within the same participant (see Finch et al., 2019). As predicted, need threat levels were higher at time points with ostracism versus no ostracism, $b = 0.24$, $p < .001$. The same was true for all specific threats to belonging, self-esteem, control, and meaningful existence ($bs = 0.18 - 0.28$, all $ps < .001$).

Table 4. Repeated measures correlations of need threat, in Study 2.

variable	1	2	3	4	5
1 need threat belonging	-				
2 need threat self-esteem	.43***	-			
3 need threat control	.27***	.36***	-		
4 need threat meaningful existence	.44***	.50***	.29***	-	
5 need threat score	.76***	.79***	.61***	.76***	-

Note. All variables were group-mean-centered prior to analyses. Need threat score (5) indicates the averaged threat to belonging, self-esteem, control, and meaningful existence at each assessment. *** $p < .001$.

Behavior

We hypothesized a negative association of ostracism with approach behaviors (i.e., prosocial, talking, and social media behavior) and a positive association of ostracism with avoidance and antisocial behaviors. Using the same multi-level regression model structure as specified above, we tested these hypotheses in six multi-level models with the six behaviors as

the dependent variables, and dichotomized reports of ostracism at the same time point as the independent variable. See Table 1 for all descriptive statistics.

Prosocial behavior, $b = 0.01$, $p = .708$, and talking behavior were not significantly different at time points with ostracism versus no ostracism, $b = -0.07$, $p = .138$. Active social media use was higher at time points with ostracism versus no ostracism, $b = 0.44$, $p < .001$. Passive social media use was not significantly different at time points with ostracism versus no ostracism, $b = 0.08$, $p = .413$. As hypothesized, antisocial behavior, $b = 1.55$, $p < .001$, and withdrawal behavior were higher at time points with ostracism versus no ostracism, $b = 1.32$, $p < .001$.

Associations of need threat and behavior

We also hypothesized a negative association of need threat level with approach behaviors (i.e., prosocial, talking, and social media behavior) and a positive association of need threat level with avoidance and antisocial behaviors. We used the same multi-level regression model structure again, but with group-mean centered need threat at the same time point as the independent variable. For dichotomized dependent variables (i.e., active and passive social media use, antisocial, and withdrawal behavior), we used multi-level logistic models.

As hypothesized, need threat was negatively associated with prosocial behavior, talking behavior, and active social media behavior. Need threat was positively associated with withdrawal behavior. Need threat was not significantly associated with passive social media use or antisocial behavior. Please see Figure 2 for a summary of the effect sizes (see [OSF Supplementary Table 2](#) for detailed results and analyses of specific needs of belonging, self-esteem, control, and meaningful existence).

As in Study 1, in exploratory fashion, we also analyzed instances of *not reacting* to ostracism at all. Specifically, we analyzed whether participants indicated showing *no behavior* after ostracism (i.e., indicating 1 = *not at all* for all assessed behaviors). Of the 7943 time-

contingent assessments, participants reported a 1 (= *not at all*) for all behaviors except withdrawal (i.e., prosocial, antisocial, talking, active social media use, and passive social media use) for 927 observations (i.e., 11.67%). For 719 of those observations (9.05% of all observations) participants additionally indicated a 1 (= *not at all*) for withdrawal. In line with the procedure for Study 1, we first coded the 927 observations as *no reaction* (= 1, vs. any reaction = 0). As in Study 1, need threat was positively associated with a higher likelihood of *not reacting* at all, $b = 1.47, p < .001$. Again, this pattern remained unchanged when analyzing specific needs of belonging, self-esteem, control, and meaningful existence, separately (see [OSF Supplementary Table 2](#)). Considering there was a sufficient number of observations meeting the criterion, we repeated the analyses with the stricter outcome variable that also included those participants who additionally chose 1 (= *not at all*) for withdrawal (i.e., 719 = no reaction, coded as 1 vs. 7224 = any reaction, coded as 0). Analysis of this stricter outcome variable showed that the association between need threat and the likelihood of not reacting to ostracism remained positive but is no longer statistically significant, $b = 1.30, p = .176$ (see [OSF Supplementary Table 2](#) for analyses of specific needs).

Discussion

Study 2 complements and extends Study 1's findings in several ways. First, Study 2 observed a frequency of everyday ostracism comparable to that in Study 1, albeit somewhat higher given the shorter sampling time. We also find that ostracism makes up approximately one-tenth of individuals' experiences, dovetailing with earlier research (9.66% vs. 9.70% in Bernstein et al., 2021).

As hypothesized, time points with ostracism (vs. no ostracism) were associated with increased levels of need threat and increased levels of antisocial and withdrawal behaviors. Further, need threat was significantly associated with withdrawal behavior, but not with antisocial behavior. Replicating findings from Study 1, we again found a positive association

of need threat and showing *no behavior* except for withdrawal. However, when *no behavior* included *no withdrawal*, the association with need threat was no longer significant. This may suggest that when none of the behavioral options provided in the survey were selected, participants may have acted in ways that were not specified in the response options. Future research may investigate this possibility by collecting and coding open descriptions of behavior following ostracism in real life.

In line with our hypotheses, need threat was negatively associated with approach behavior (i.e., prosocial behavior, talking behavior, active social media use), however, prosocial behavior and talking behavior were not significantly higher at time points with ostracism versus no ostracism. *Active* social media use was significantly higher at time points with ostracism, which might signal an increase in acknowledgment-seeking in response to ostracism (see Kenntemich et al., 2024). Interestingly, *passive* social media use was neither significantly affected by ostracism nor by need threat levels. This may point to the possibility that passive social media use neither reflects approach nor avoidance behavior. We further situate the results in theorizing and discuss potential differences based on *reflexive* (i.e., Study 1) and *reflective* (i.e., Study 2) effects in the General Discussion.

General Discussion

Ostracism is a pervasively negative yet familiar experience to many individuals across cultural (e.g., Uskul & Over, 2014) and everyday contexts (e.g., Nezelek et al., 2012). The present contribution sought to answer fundamental questions regarding ostracism experiences in everyday life: (1) How frequent is everyday ostracism, and who ostracizes in which contexts? (2) Does ostracism threaten psychological needs in everyday life? (3) How do individuals behave after being ostracized in real life? And (4) how does the threat of fundamental needs relate to behavior after being ostracized? Overall, using a multi-method approach high in ecological validity, we document that ostracism is an experience that occurs in a range of

contexts and relationships, on average 2-3 times per week, and is accompanied by intense need threat. Moreover, the higher individuals' need threat, the more likely will they react with avoidance and antisocial behavior rather than approach behavior, supporting our proposed framework of need threat and behavioral reactions to ostracism in real life.

How frequent is everyday ostracism, and who ostracizes in which contexts?

In both event-contingent (Study 1) and time-contingent (Study 2) assessments of everyday ostracism, ostracism experiences occurred 2-3 times per week (Study 1: $M = 3.43$ in 14 days, Study 2: $M = 2.92$ in 7 days). Ostracism was reported in 9.66% of all situations in Study 2. Even though this may not sound very much at first glance, it reflects that 1 out of 10 situations in daily life is related to ostracism. This number is higher than other negative interpersonal experiences, even if assessed in very specific contexts. For instance, romantic couples report an average of 7.25% of situations in which they feel their interests conflict with their partner's interests and an average of 5.05% of situations in which they behaved in a non-cooperative way towards their partner (Columbus et al., 2021, Study 1). From the ostracizers' perspective, because confrontational conflict is more costly than excluding others as a form of punishment (e.g., Molho et al., 2020; Rudert et al., 2023), it appears even rational that ostracism turns out to be a particularly frequent behavior. However, ostracism experience reports were skewed in both studies: Only a small portion of participants (14.24% in Study 1 and 10.29% in Study 2) accounted for almost half of all ostracism experience reported in each study. This suggests significant between-person variance that warrants further examination in future research, for instance, regarding individual trait-level moderators such as personality and dispositional preferences (e.g., Ren & Evans, 2021; Rudert et al., 2023) or differences in demographics such as age, sexual orientation, or employment status that may drive everyday experiences of ostracism (e.g., Albath et al., 2023; Büttner, Rudert & Kachel, 2024; Rudert, Janke, & Greifeneder, 2020). Although between-person variance is large, ostracism frequency

was higher on average in Study 2 relative to Study 1. Differences between the studies (e.g., US vs. UK sample, different gender compositions, different sampling times) make it impossible to attribute the differences in ostracism frequency to one single factor. Moreover, both event-contingent and time-contingent sampling approaches may be conducive to under- *and* over-reporting under certain circumstances.

In event-contingent sampling, *under-reporting* may arise when participants forget to report experiences or do not have the time in their busy everyday lives. This issue was previously discussed in Nezelek et al. (2012), who conducted a pen-and-paper diary study of daily ostracism with a similar conceptual approach as Study 1. As a result, one may need to consider whether a count of zero really means zero experiences in event-contingent sampling of ostracism. To partly mitigate this issue, Study 1 in the present contribution introduced the evening questionnaires as a measure to prevent underreporting.

On the other hand, event-contingent sampling could also render participants overly sensitive to perceiving ostracism, fostering *over-reporting*. Specifically, one could argue that individuals might have over-detected ostracism events in Study 1 because they were explicitly instructed to carefully monitor and report ostracism experiences when they occur (see Bernstein et al., 2021 for a short discussion).

With time-contingent sampling as used in Study 2, within a specified time bracket, signals are distributed randomly across the full range of the time window. Participants need not be on the lookout for ostracism events, thus mitigating some risks associated with event-contingent sampling. For example, the zero-means-zero limitation of Study 1 is partially addressed in Study 2 because participants had the option to report that there was no ostracism. Time-contingent sampling, however, may also be conducive to *over-* or *under-reporting* under certain circumstances. Specifically, while Study 2's design prompted participants during most waking hours, the design did not cover all hours, risking *under-reporting*. In some cases,

experiences of ostracism may not have been captured because the next notification was sent several hours after ostracism happened.

On the other hand, it could also be that repeated time-contingent questions about ostracism led participants to reflect on their social experiences in the past hour, thus lowering the threshold for reporting ostracism, leading to more ostracism reports. Taken together, neither study design is superior to the other. The fact that we found similar frequencies of ostracism in everyday life across both studies speaks to the validity of both designs. A methodologically intriguing experiment for future research would be to manipulate different features in experience sampling approaches to systematically test whether certain features indeed lead to more or less frequent reports of social experiences.

Going beyond earlier evidence, we find that most ostracism experiences occur at home or at work and by close relatives, people from work, and romantic partners, that is, others whom people usually interact with frequently. This is consistent with earlier conceptualization that both close relationships (e.g., Zadro et al., 2008) but also the work context in general (e.g., Robinson et al., 2013; Rudert, Janke, & Greifeneder, 2020) are frequent sources of ostracism. To our knowledge, only the study by Nezlek et al. (2012) also assessed contexts of experienced everyday ostracism. Our finding that close relatives, people from work, and romantic partners are the most frequent sources of ostracism seemingly contradict Nezlek et al. (2012) who observed that strangers and acquaintances made up the majority of sources of ostracism (62% combined, vs. 19.76% in the present data), and relatives and partners made up only 9% (vs. 38.95% in the present data). The different results, however, might align very well if one considers that Nezlek et al. did not specifically ask for the workplace as a source of ostracism. Assuming that a sizeable proportion of the ostracism by strangers or acquaintances in the Nezlek et al. study was ostracism by co-workers, the results across studies provide a much more coherent picture.

Importantly, future studies should take into account how much time each participant spends at various locations throughout the day to figure out which contexts bear higher risks of getting ostracized. For instance, previous research has noted that the workplace may be a particularly risky context for experiencing ostracism frequently (e.g., Rudert, Janke, & Greifeneder, 2020) but just how risky the workplace is may be relative to how much time a person spends at work: For example, if someone works 20 hours a week but gets ostracized at work in 30% of cases reported by this person, then the workplace is a higher-risk location for this person compared to someone who works a 40-hour week and reports 10% of their ostracism experiences at work. Such observations could further be linked to factors such as status at work (e.g., Fiset et al., 2017) or personality traits such as low conscientiousness that drive ostracism in occupational contexts (e.g., Rudert, Hales, & Büttner, 2021).

Of note, we used more diverse samples compared to previous studies with college students (Bernstein et al., 2021; Legate et al., 2021) whose social interactions may considerably differ from those of the rest of the population. Moreover, younger individuals react more strongly to experiences of ostracism (Pharo et al., 2011), and experiences of ostracism may be more frequent for younger compared to older adults (Rudert, Janke, & Greifeneder, 2020). Using adult samples proved important to demonstrate context effects such as the frequency of the workplace as a source of ostracism. However, we note that our findings have not been accrued in a representative sample and that experience sampling studies limit the participant pool to individuals with smartphones.

Our data demonstrate that 7 to 14 days are enough to record ostracism experiences for most participants. However, we acknowledge that this period may have been too short for registering severe ostracism events (e.g., being disowned by a family member, or being ostracized for a long time e.g., Zadro et al., 2003, 2008). Retrospective reports of lifetime ostracism experiences may be better suited for capturing such ultimate ostracism experiences.

Does ostracism threaten psychological needs in everyday life?

Ostracism in everyday life elicited strong threat to the psychological needs of belonging, self-esteem, control, and meaningful existence, in line with the Temporal Need Threat Model of Ostracism (Williams, 2009). Study 2 allowed to compare time points with ostracism versus no ostracism and found that need threat was significantly higher at time points with ostracism. Threat to specific needs was highly correlated in both studies. Although need threat is often conceptualized as a consequence of ostracism and other interpersonal aggressive behaviors such as microaggressions (e.g., Wesselmann et al., 2019), experiencing psychological need threat itself also has negative consequences. For instance, experiencing frustration of one's psychological needs can impact psychological functioning during the day (e.g., Bartholomew et al., 2011) and even at night, in the form of recurring dreams (e.g., Weinstein et al., 2018). Therefore, need threat is not only a consequence, but also needs to be understood as an antecedent to further negative consequences for people's everyday lives.

How do individuals behave after being ostracized in real life?

To our knowledge, this is the first set of studies to assess behaviors associated with ostracism *in everyday life*. Which behaviors were most common following ostracism? In Study 1, descriptively, from most frequent to least frequent: withdrawal, intentions to talk to someone, prosocial behavioral intentions, intentions to engage in social media use, and finally, antisocial behavioral intentions were reported by participants. Study 2 importantly complements this picture in that the time-contingent sampling approach allowed to compare behavior at time points with versus without ostracism. Prosocial behavior, talking behavior, and passive social media use were not different at time points with versus without ostracism experience. Active social media use, antisocial, and withdrawal behavior were higher at time points with versus without ostracism experience.

How does the threat of fundamental needs relate to behavior after being ostracized?

In both studies, we find a distinct association pattern between need threat and behavioral reactions: In line with the here-advanced framework of need threat and behavioral responses in real life, need threat was negatively associated with approach behaviors (i.e., prosocial behavior, talking to others in person, and using social media to connect with others) and positively associated with avoidance and antisocial behaviors. Interestingly, we did not find that threat to specific needs within the inclusionary need cluster (i.e., need to belong and need for self-esteem) versus the power and provocation cluster (i.e., need for control and need for meaningful existence, Williams, 2009) predicted distinct behavioral reactions. Rather, in line with our proposed framework, it was strength of *overall* need threat rather than threat to *specific* needs that predicted approach versus avoidance versus antisocial reactions (but not actual antisocial behavior in Study 2). With that observation, we extend previous theorizing within the Temporal Need Threat Model of Ostracism (Williams, 2009) and offer an explanation of why previous findings on specific needs predicting distinct behavioral reactions are mixed (e.g., Hales & Williams, 2018; Pfundmair, 2019). We discuss findings regarding specific behavioral reactions and further theoretical predictions in the following.

Prosocial behavior. In the present studies, prosocial behavior was negatively associated with need threat after ostracism. This finding aligns with our framework's theoretical predictions and reconciles previous contradictory findings that individuals behave more pro-socially in comparably low-threat ostracism situations (e.g., Carter-Sowell et al., 2008), and less pro-socially in comparably high-threat ostracism situations (e.g., Twenge et al., 2007).

Talking behavior. Talking to others was also negatively associated with need threat after ostracism. Talking to others may have many benefits but also bears social risks: While approaching others to talk about one's exclusion experience might elicit social support, targets of ostracism may also fear further devaluation when disclosing to others. Consistent with this

fear, evidence suggests that others indeed devalue targets of ostracism when learning about their experience (Meral et al., 2021). In line with our model, in situations of low threat, the benefits of talking to others may outweigh the social risks of further ostracism. Conversely, after severe instances of ostracism, avoiding further devaluation by not approaching others may be important to protect the ostracized target from further psychological harm. Here, future research could further test our framework by examining the role of trait-level moderators such as fear of negative evaluation (e.g., Maner et al., 2007) or rejection sensitivity (e.g., Downey & Feldman, 1996). Personality traits such as extraversion may also influence which behaviors ostracized individuals choose and how beneficial they are to their coping efforts. For instance, it could be that extraverted individuals are more likely to restore their belonging need from talking about their ostracism experiences than introverted individuals (Swickert et al., 2002). Moreover, the specificities of what ostracized participants talk about remain open for future research to address. For instance, while talking to others may often be approach-oriented and prosocial to elicit social support, ostracized individuals may also discuss antisocial topics with others such as retaliation plans against the ostracizers or antisocial fantasies. In addition to discussing antisocial topics, talking to others may serve approach goals while, at the same time, being antisocial in nature: For instance, sharing secrets or gossiping together fosters social connection between individuals (e.g., Jaffé et al., 2023; McAndrew et al., 2007; Tassiello et al., 2018). However, spreading gossip or someone else's secret may be considered antisocial towards the person who is gossiped about or whose secrets are involuntarily shared. Therefore, talking to others may be approach-oriented *and* antisocial at the same time. Similarly, talking to one person can mean avoiding another person, therefore, talking to others may be approach-oriented *and* avoidant at the same time.

Social media use behaviors. While social media has been documented as a powerful tool to cope with social exclusion (e.g., Lutz et al., 2022, 2023), Study 1 revealed that

individuals refrain from approaching others on social media after ostracism experiences that severely threaten their psychological needs. Study 2 revealed differences in active and passive social media behavior: Higher need threat was associated with less posting behavior (i.e., less *active* social media use), but was not associated with viewing others' content (i.e., *passive* social media use). At first, the findings on passive social media use may seem contradictory to the above-described pattern that higher need threat is associated with lower approach behaviors. However, it appears that passive social media use may reflect both approach and avoidance behavior (yet passive social media use likely rarely qualifies as antisocial behavior). To illustrate, passively viewing others' content may be a form of psychologically approaching others, for instance, by reminding oneself about past belonging experiences by looking at previous social media postings (e.g., Büttner et al., 2023; Gardner et al., 2005). But passive social media use may also be a form of avoiding others, for instance when scrolling with one's phone on social media is used to detach oneself from the ostracism situation (i.e., phubbing the ostracizers, e.g., Büttner et al., 2022). The present results do not allow to further differentiate passive social media use. Potentially, the here observed null effect reflects that passive social media use assessed a mix of both approach and avoidance behavior.

Delineating further predictions that follow from our framework, future research may test the impact of ostracism experiences based on the severity of elicited need threat on *specific* behaviors on social media (e.g., messaging others, commenting on others' posts, tagging other users, posting pictures with others, e.g., Büttner et al., 2023; Büttner & Rudert, 2022; Lutz et al., 2023). Importantly, social media use was assessed as communication with others in Study 1. However, again, the specificities of what communicating with others on social media means remain open. For instance, it could be that some ostracized individuals turn to social media to connect with extreme groups (e.g., Hales & Williams, 2018; Pfundmair, 2019), a behavior that could gradually isolate them further from others over time (e.g., Hales & Williams, 2020) and

potentially foster antisocial behavior on behalf of extreme groups. In Study 2, social media use was assessed even more openly as posting (active use) versus viewing others' posts (passive use). Thus, specific social media users' behaviors could range from prosocially-oriented acts such as liking others' content to antisocial acts such as cyber-bullying (e.g., Yokotani & Takano, 2021), hate speech (e.g., Castaño-Pulgarín et al., 2021), or spreading false information (e.g., Wicks et al., 2023). Future studies should make use of real-life social media data and text analysis of social media posts and comments after ostracism to gain more insight into these phenomena (see Kenntemich et al., 2024). Moreover, social media use is not the only digital means of communication that is available to ostracized targets. Engaging in other online behaviors such as playing video games after ostracism may also re-afford psychological needs (e.g., Karahanna et al., 2018) and may be approach-oriented (e.g., collaborative group games) or antisocially-oriented (e.g., ego shooter games). Relatedly, research may also focus on social media as a form of avoidance behavior such as withdrawing by using social media less frequently (e.g., Sarfraz et al., 2023) or withdrawing from physically present others by using social media.

Antisocial behavior. Regarding antisocial behavior, in line with the proposed framework, Study 1 shows a significant association between higher need threat and antisocial behavior *intention*. Study 2, however, did not demonstrate an association between need threat and antisocial *behavior* during the last hour. This discrepancy between intention and behavior may have several reasons. First, while participants may have the urge to behave in antisocial ways (i.e., intention), they may refrain from enacting it due to possible negative consequences such as social or legal punishment. Second, it could also be that ostracized targets do not have the opportunity to aggress against the ostracizers in all situations. For instance, picture someone being physically left out of a meeting – while they might feel the urge to aggress towards those who excluded them, the ostracizers are physically out of reach. This further dovetails with tenets

of the Theory of Planned Behavior (Ajzen, 1991), which states that a main factor for why behavioral intentions are not always translated into behavior is a lack of behavioral control - which aligns with the Temporal Need Threat Model (Williams, 2009) and the present findings that ostracism deprives targets of control. Finally, it could also be that the effects of ostracism on antisocial inclinations are time-sensitive so that effects are weaker in time-contingent sampling of the last hour compared to event-contingent sampling of behavioral intentions (see e.g., Balliet & Ferris, 2013; Jonas et al., 2014; Wesselmann et al., 2015). In any case, the present findings demonstrate that measuring actual behavior in daily life is important above and beyond the assessment of intentions.

Withdrawal behavior. In both studies, higher need threat was associated with withdrawal behavior, dovetailing with experimental research (Ren et al., 2016, 2020). This is alarming because withdrawal may harm ostracized individuals in the long run: Recent findings show that people avoid those who tend to withdraw because they assume that they would make for unpleasant interaction partners and would prefer to be alone anyways (e.g., Ren & Evans, 2021). Future research could thus test cyclic associations of ostracism and withdrawal behavior in everyday life. What is also not known at this point is how long individuals withdraw from others. For instance, in line with tenets that threat responses operate in a temporal sequence where the initial threat is strong (e.g., Williams, 2009) and accompanied by avoidance and antisocial rather than approach reactions (e.g., Jonas et al., 2014; Wesselmann et al., 2015), it could be that individuals first withdraw from others to recover their needs and ponder adequate coping strategies. It may well be the case that individuals who initially withdrew show more approach tendencies after a certain time. These are questions for future research to address.

Conclusion

In two experience sampling studies, we find that ostracism is an emotionally powerful experience that occurs 2-3 times per week, predominantly in close relationships, at work, and

at home. Reconciling previously mixed findings regarding ostracism's effects on behavior and extending existing theory, we propose a novel framework of behavioral reactions based on the strength of experienced need threat: When psychological needs are severely threatened, individuals react with avoidance and antisocial inclinations (i.e., withdrawal and antisocial intentions, but not antisocial behavior) rather than approach behavior (i.e., prosocial behavior, talking to others, or connecting with them on social media), to everyday ostracism.

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Appendix B

Büttner, C. M., Rudert, S. C., & Kachel, S. (2024). Ostracism experiences of sexual minorities – Investigating targets' experiences and perceptions by others. *Personality & Social Psychology Bulletin*. <https://doi.org/10.1177/01461672241240675>

Ostracism Experiences of Sexual Minorities: Investigating Targets' Experiences and Perceptions by Others

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Personality and Social Psychology Bulletin
1–16
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DOI: 10.1177/01461672241240675
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Abstract

Lesbian, gay, and bisexual (LGB) people face frequent discrimination, maltreatment, and violence for transgressing gender roles upheld in heteronormative societies. Ostracism (i.e., being excluded and ignored) is likely another, understudied form of discrimination against sexual minorities. In a multi-method approach using a nationally representative panel ($N = 4104$) and experience sampling data ($N = 467$, 14 days, $k = 926$ ostracism experiences), we find that LGB individuals report more ostracism experiences than straight individuals. In line with the idea that ostracism toward sexual minorities occurs as a function of gender role nonconformity, lesbians and gay men are rated by an independent rater sample as more likely to be ostracized ($k = 10,760$ ratings) when they are also rated as more lesbian/gay and less gender role conforming. Our findings speak in favor of ostracism as a discriminatory experience of LGB individuals that is driven by transgressions of heteronormativity.

Keywords

LGB, sexual orientation, ostracism, social exclusion

Received September 22, 2023; revision accepted March 1, 2024

People who identify as part of a sexual minority (e.g., lesbian, gay, and bisexual) face a range of discriminatory behaviors such as rejection, harassment, and even violent assault (e.g., DeSouza et al., 2017; Fasoli et al., 2017; Gordon & Meyer, 2007; Hebl et al., 2002; Katz-Wise & Hyde, 2012). As a result, sexual minorities experience more mental illness (e.g., Meyer, 2003) and attempt suicide twice as often as their straight counterparts (e.g., King et al., 2008). Previous research has been largely silent about the role of ostracism, being excluded and ignored (Williams, 2009), in the everyday life of sexual minorities. Ostracism may be a specific, yet more subtle, form of discrimination against sexual minorities (e.g., DeSouza et al., 2017). Even though targets of ostracism are not physically harmed, ostracism causes the affected individuals a tremendous amount of psychological pain that is neurologically similar to experiencing physical pain (e.g., Eisenberger, 2012; Eisenberger et al., 2003). As a consequence, ostracism bears immense individual and societal costs such as lowering well-being, reducing productivity, and increasing burnout, mental illness, and suicidality (e.g., Chen et al., 2020; Qian et al., 2019; Rudert et al., 2021).

While sexual orientation has been largely ignored as a potential driving factor of ostracism, exclusion from society characterizes the history of sexual minorities: Lesbians, gay men, and bisexual people¹ (from here-on: LGB) have been

stigmatized as having a disease and excluded from society as a consequence: For instance, they were denied the same rights as heterosexual individuals regarding marriage, adoption, or donating blood (e.g., Hammack & Cohler, 2011; Hurley, 2009; Peng & Salter, 2021). LGB people are also ostracized by law in different countries, such as being imprisoned, excommunicated from church, or banned from serving in the military (International Lesbian, Gay, Bisexual, Trans, and Intersex Association, 2016; Pirlott & Cook, 2018). Exclusion is also reflected in invisibility, marginalization, and underrepresentation in the public sphere, constituting psychologically impactful forms of ostracism (e.g., Büttner & Rudert, 2022; Jauch et al., 2023; Lutz et al., 2023; McCarty et al., 2022): Concretely, LGB individuals face underrepresentation in media portrayals (e.g., McInroy & Craig, 2017), in political decision-making processes as parliamentarians (e.g., Magni & Reynolds, 2021), and in educational contexts

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(e.g., Ellis & High, 2004). These experiences likely contribute to LGB individuals' overall higher feelings of ostracism compared with heterosexual individuals. Indeed, a recent study documents that Chinese LGB individuals' feelings of being excluded by society predict higher emotional distress, however, LGB individuals' feelings were not compared with those of heterosexual individuals (Cheung & Tsang, 2023).

Fortunately, blatant discrimination against LGB individuals is increasingly unacceptable (e.g., Preuß et al., 2020; Steffens, 2005). However, with increasing restriction of blatant discrimination, subtle forms of discrimination—such as ostracism—may increase (e.g., Preuß et al., 2020; Robinson et al., 2013). While many forms of discrimination are characterized by negative attention being directed at the target, ostracism is characterized by withdrawing attention from a target, which makes it both more subtle to detect and to call out. In line with this, in a field study of job applications, lesbian/gay applicants were not blatantly discriminated (e.g., insulted) but fewer words were exchanged with them and interactions with them were generally shorter than for heterosexual applicants (Hebl et al., 2002)—a form of ostracism. Importantly, because of its subtlety, ostracism may constitute a discriminatory behavior that allows the perpetrator to avoid appearing guilty. After all, the reasons for ostracism are often unclear to the target and sources can easily attribute ostracism to socially acceptable reasons (Robinson et al., 2013). For instance, the interviewers in the Hebl et al. (2002) study could have claimed that not bias but mere chance led to shorter exchanges with lesbian/gay applicants. While shorter exchanges likely hindered lesbian/gay applicants' hiring chances, the interviewers can hardly be held accountable for exchanging fewer words with them. Moreover, societal ostracism such as underrepresentation in policy-making (e.g., Magni & Reynolds, 2021) is even less obviously attributable to a single culprit, and therefore harder to combat than outright discrimination or violence. Engaging in subtle forms of discrimination, such as ostracizing sexual minority members, may also prevent individuals from having to recognize their own biases and instead protect a favorable self-image (“Of course I would never discriminate against the gay colleague, I just forgot to invite him for lunch!” cf. literature on microaggressions, Nadal et al., 2016).

Importantly, not receiving attention—ostracism—may be just as hurtful if not more than receiving negative attention: Being rendered meaningless and not worthy of attention is a unique component of experiencing ostracism compared with other forms of psychological maltreatment that makes ostracism especially aversive (e.g., Rudert et al., 2017; Williams & Nida, 2009). Experimental studies suggest that being ignored even has stronger psychological consequences than being outrightly rejected (Rudert et al., 2017) and ostracism also elicits stronger negative emotions than bullying (Zadro et al., 2005). Targets of long-term ostracism even report that they would choose physical abuse over being

ostracized because they would at least be acknowledged by others then (Williams & Zadro, 2005). In addition, targets of long-term ostracism report that bystanders do not empathize with them and they hope others would empathize more with targets of physical abuse than with those of ostracism (Williams & Zadro, 2005). Crucially, empathy gaps in observers of repeated adversity predict lower helping intentions and may thus further harm targets of ostracism (Zagefka, 2022). In conclusion, ostracism is more subtle, less easy to detect, and thus less easy to combat than other forms of discrimination. In addition, the consequences of ostracism may surmount those of direct rejection or bullying.

Despite the apparent relevance of ostracism for LGB individuals, research on ostracism experiences of LGB individuals is scarce and seems to be limited to occupational contexts. For instance, LGB employees are more likely to be excluded from work events than heterosexual employees (Hoel et al., 2017) and one in five LGB physicians reports feeling ostracized by co-workers (Eliason et al., 2011). Moreover, consequences of ostracism for LGB individuals may potentially be deadly: Among young LGB individuals, losing friends after disclosing one's sexual orientation, an extreme form of ostracism, is one of the strongest predictors of suicide attempts (Hershberger et al., 1997).

But what may be the mechanisms underlying the relation between one's sexual orientation and ostracism? We argue that transgressions of heteronormativity are likely to predict ostracism experiences of LGB individuals. First, LGB individuals' sexual orientation may be perceived as different from that of a heteronormative society and LGB individuals may be excluded as a result, especially when they are perceived as deviating more strongly from the heteronormative standard. For instance, meta-analytic findings suggest that those who deviate from the majority are rejected as a function of the size of the minority (Tata et al., 1996). LGB individuals' experiences of ostracism may thus depend on perceptions of being different from their social environment. Furthermore, in line with heteronormative gender belief systems (Kite & Deaux, 1987), LGB individuals may be perceived to violate gender role norms (i.e., by not following traditional gender roles, for example, Gordon & Meyer, 2007; Kachel et al., 2016; Morgenroth et al., 2024) and norm violations are a strong predictor of individuals' decisions to ostracize others (Rudert et al., 2023). Gender role nonconforming behaviors may include, among others, the ways that LGB individuals talk, move, or dress (e.g., Gordon & Meyer, 2007; Kachel et al., 2018; Munson & Babel, 2007). In heteronormative societies, people may react with feelings of threat to individuals who challenge gender roles and the gender binary (e.g., Morgenroth & Ryan, 2021; Van Der Toorn et al., 2020). Feelings of threat in turn increase negative attitudes toward sexual minorities (e.g., Glick et al., 2007). The degree of gender role nonconformity has also been linked to experiences of queerphobic discrimination and violence (e.g., Gordon & Meyer, 2007; Salter & Liberman, 2016).

These findings suggest that LGB individuals who conform to gender roles to a lesser extent may be perceived as deviating norm violators which may lead to ostracism. To examine whether norm violations indeed play a role in driving LGB individuals' ostracism experiences, we examine perceptions of one's own sexual orientation as different and gender role (non)conformity.

In sum, the present contribution sets out to answer the following questions:

Research Question 1 (RQ1): Do LGB individuals experience ostracism more frequently than heterosexual individuals?

Research Question 2 (RQ2): Are transgressions of heteronormativity (i.e., perceiving one's sexual orientation as different and gender role nonconformity) associated with more frequent ostracism of LGB people?

The Present Research

To paint a full picture of LGB individuals' ostracism experiences, we use a multi-method approach: Taking a target perspective (i.e., those who get ostracized), Studies 1 and 2 examine self-reported ostracism experiences of LGB (versus straight) individuals in a nationally representative multiwave panel from Germany (Study 1) and highly externally valid experience sampling data in another context, the United States (Study 2). Study 2 also tests whether seeing one's own sexual orientation as different is a better predictor of ostracism frequency than mere self-categorization of sexual orientation. Complementing the approach of Studies 1 and 2, Study 3 investigates whether others perceive LGB individuals to face ostracism more frequently—a proxy for ostracizability (as a target attribute) which is connected to targets' ostracism experiences (e.g., Rudert et al., 2023; Rudert, Keller, et al., 2020). Analyzing target experiences *and* perceptions by others is indispensable for understanding the role of norm violations (see, for example, Rudert et al., 2023; Rudert, Keller, et al., 2020) since only assessing one perspective may misrepresent the role of norm violations in ostracism (see, for example, Study 1 vs. 2 in Rudert et al., 2023). Moreover, targets self-report could be prone to biases, such as perceptual defense (i.e., avoiding the recognition of potentially threatening stimuli; Howie, 1952). For cross-validation, Study 3 uses naturally occurring subtle cues (e.g., full-body pictures, faces, and voices) derived from women and men varying in sexual orientation to investigate perceived ostracism (i.e., perceived likelihood that others will ostracize a target person) based on targets' sexual orientation. Assessing perceived ostracism among raters in a way that does not reflect one's own decision, but *others'* behavior toward the target is important: In general, ostracizing others has psychological costs, and most people condemn ostracizing others (e.g., Rudert et al., 2018). Indicating which targets might get ostracized *by others*, instead of indicating whom

one *wants* to ostracize, circumvents that individuals may not want to admit ostracism intentions in a more direct way (e.g., Rudert, Keller, et al., 2020). Finally, Study 3 further reduces social desirability by not mentioning targets' sexual orientation, incorporates perceived sexual orientation and gender role nonconformity as judgment dimensions in addition to perceived ostracism, avoids spillover effects by using different samples rating each judgment dimension, considers psychosocial variables of raters, and employs a highly controlled experimental approach.

All studies' procedures were approved by the University of Basel's (#002-16-1 and #002-16-6) and the University of Kaiserslautern-Landau's (#364) Institutional Review Boards. Data for Study 1 is subject to German data protection laws, but can be made available to all researchers by the German Institute for Economic Research (https://www.diw.de/en/diw_02.c.222829.en/access.html). The analysis code and materials for Study 1, as well as materials, analysis code, and data for Studies 2 and 3 are available via OSF (<https://osf.io/kxsym/>). Study designs, hypotheses, sample size, inclusion/exclusion criteria, and analysis plans of the experimental studies were pre-registered on AsPredicted (Study 2 study procedure: https://aspredicted.org/THK_7DZ, Study 2 specific hypotheses: https://aspredicted.org/RGM_PLS, Study 3: https://aspredicted.org/MMM_XYG). We report all manipulations, measures, and exclusions relevant for the presented studies.²

As effect size measures, we report Cohen's *d* for *t*-tests, correlation coefficients *r* for correlations, and regression coefficients (*bs*) for regression analyses, throughout the manuscript. To compare the effects of sexual orientation on ostracism frequency, we additionally report η^2 for these analyses in Studies 1 and 2.

Study 1

Study 1 used panel data from the innovation sample of the socio-economic panel (SOEP-IS, Goebel et al., 2019), a nationally representative survey of German adults. We tested whether individuals who identify as LGB report more ostracism experiences than heterosexual individuals (H1). Hypotheses will be numbered consecutively throughout the manuscript.

Method

Participants. The SOEP-IS waves 2015, 2018, and 2022 include measures of ostracism and sexual orientation that 2,609 unique participants answered (see Table 1).

Measures. Ostracism frequency was measured with the Ostracism Short Scale (Rudert, Keller, et al., 2020): "In the last two months, how often have you experienced the following?" with respect to: "Other people have ignored me," "Other people have shut me out from conversations," "Other

Table 1. Descriptive Statistics for Study 1 and Study 2.

Sample characteristic	Study 1 (survey year)			Study 2 (study phase)	
	2015	2018	2022	Pre-screening	Experience sampling
Sample size	2,264	1,021	819	467	304
Sexual orientation					
Heterosexual	2,214 (97.79%)	1,005 (98.43%)	802 (97.79%)	357 (76.44%)	231 (75.99%)
Lesbian/gay	19 (0.84%)	7 (0.69%)	3 (0.37%)	46 (9.85%)	33 (10.86%)
Bisexual	31 (1.37%)	9 (0.88%)	14 (1.71%)	64 (13.70%)	40 (13.16%)
Gender					
Woman	1,183 (52.27%)	542 (53.09%)	407 (49.69%)	226 (48.39%)	145 (47.70%)
Man	1,081 (47.73%)	479 (46.91%)	394 (48.11%)	229 (49.04%)	151 (49.67%)
Nonbinary	-	-	-	12 (2.57%)	8 (2.63%)
Chose not to answer	-	-	18 (2.20%)	0	0
Age: <i>M</i> , <i>SD</i> , Range	50.65, 18.11, 17-96	54.47, 18.42, 17-97	56.22, 17.77, 18-90	36.94, 12.92, 18-75	38.36, 13.08, 18-75
Ostracism frequency: <i>M</i> , <i>SD</i> , Range					
Full sample	1.75, 0.76, 1-7	1.60, 0.70, 1-5.75	1.73, 0.70, 1-6	2.57, 1.50, 1-7	3.06, 3.81, 0-26
Heterosexual	1.74, 0.76, 1-7	1.60, 0.70, 1-5.75	1.72, 0.70, 1-6	2.50, 1.48, 1-7	2.82, 3.39, 0-17
Lesbian/gay	1.72, 0.73, 1-3	1.89, 0.91, 1-3	1.50, 0.70, 1.25-1.75	2.80, 1.57, 1-6.25	3.82, 5.41, 0-26
Bisexual	2.04, 0.72, 1-3.5	2.06, 0.79, 1-3.5	1.99, 0.75, 1-3.75	2.81, 1.56, 1-7	3.82, 4.43, 0-17

Note. The SOEP-IS (Study 1) assessed gender as a binary variable. Ostracism experiences were assessed before sexual orientation in both studies. We report all sexual orientation items, including all answer options, on the OSF Supplement 1.

people have treated me as if I was not there,” “Other people have excluded me from activities,” 1 = *never*, 7 = *always*. Sexual orientation was measured with one item (see OSF Supplement 1). Based on the small subgroup sizes (see Table 1), sexual orientation was dichotomized (LGB vs. heterosexual).

Results

Descriptively, across all waves, LGB individuals reported higher ostracism frequency ($M = 1.93$, $SD = 0.74$) than heterosexual individuals ($M = 1.70$, $SD = 0.73$). To account for the nested data structure, we computed a mixed model with random intercepts for participant and survey year and found a significant effect of sexual orientation on ostracism, $b = .18$, 95% CI [.02, .34], $p = .030$, $\eta^2 = .001$, see Figure 1 (left graph). In addition, we used Ho et al.'s (2011) *MatchIt* R-package for propensity score matching to estimate the effect of sexual orientation on ostracism frequency. We chose this approach to make the different groups more comparable to test the impact of single attributes (here: sexual orientation) without confusing them with other group differences (here: gender, age, and household income). Propensity scores were estimated using one-to-one nearest-neighbor matching. Because of missing values on income, we were able to match $N = 64$ LGB individuals to heterosexual individuals, achieving a good balance between the two groups, all standardized mean differences $> .10$. We computed a weighted linear regression with cluster-robust variance to estimate the standard error. Compared with their matched straight counterparts, ostracism

frequency was 0.36 scale points higher among LGB individuals, 95% CI [.12, .61], $p = .004$, $\eta^2 = .07$.

Discussion

LGB individuals reported more frequent ostracism experiences than heterosexual individuals, even when they were matched on demographic dimensions important to the experience of ostracism (e.g., age; Albath et al., 2023). While a difference of 0.23 (matched: 0.36) on a 7-point scale may seem small, previous literature has associated even small increases in ostracism frequency with the development of suicidal ideation and clinically diagnosed depression (Chen et al., 2020; Rudert et al., 2021). However, ostracism experiences that are assessed retrospectively are potentially affected by recall biases. In addition, very few individuals in the SOEP self-identified as LGB. The SOEP assures participants' anonymity; however, data are collected in a household-based interview style (Goebel et al., 2019) which may contribute to underreporting of queer identities. Moreover, data were confined to one context: Germany. We address these concerns in Study 2, using a smartphone-based, completely anonymous, experience sampling approach and an U.S. American sample. Moreover, being LGB may be an entirely different experience based on one's social environment. For instance, being the only LGB person in one's peer group versus feeling like an accepted member of the queer community may affect individuals' ostracism experiences to a great extent. We therefore address seeing one's own sexual orientation as

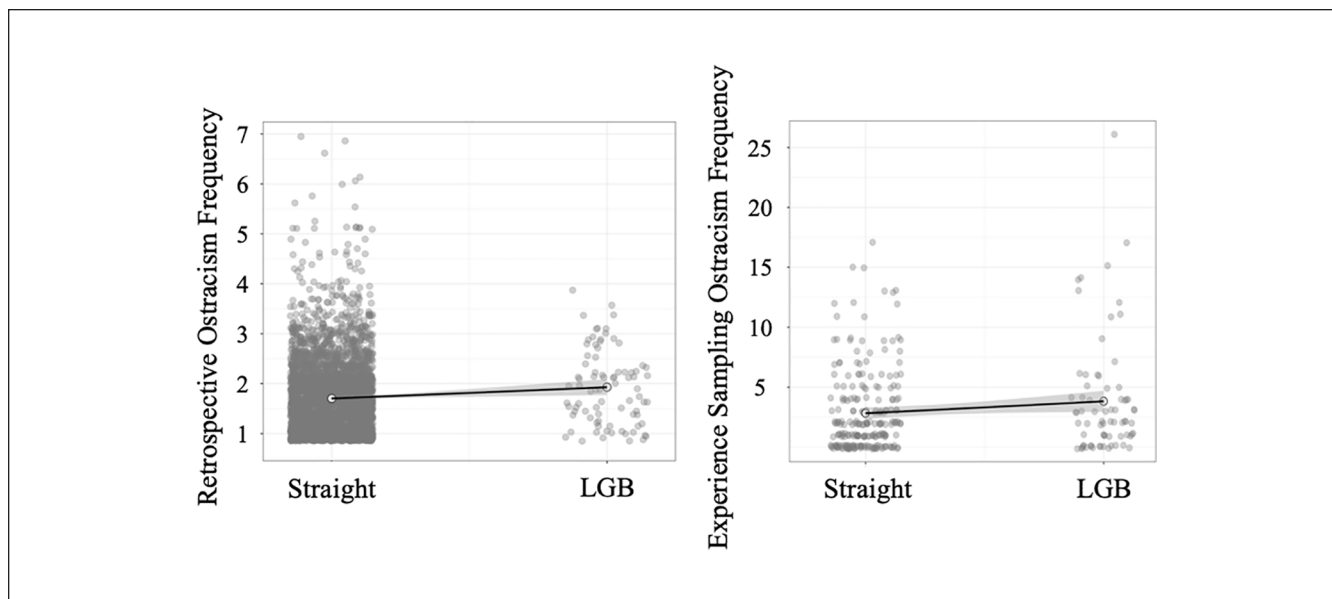


Figure 1. Sexual Orientation Predicting Retrospective Ostracism Frequency in Study 1 (Left Graph) and Experience Sampling Ostracism Frequency in Study 2 (Right Graph).

Note. Gray areas around regression lines represent standard errors. Lighter points are means.

different from that of others as a possible predictor of ostracism experiences in the next study.

Study 2

Study 2 again tests the hypothesis that individuals who identify as LGB report more ostracism experiences than heterosexual individuals (H1), assessed retrospectively, as well as in experience sampling reports of ostracism. We also pre-registered the following hypothesis: Participants who self-report their sexual orientation to deviate more (vs. less) from others will report more ostracism (H2). Data collection was conducted in two phases: A pre-screening where eligibility for participation and trait measures were assessed, and a 14-day experience sampling phase during which participants reported whenever they felt ostracized in daily life.

Method

In total, 467 U.S. residents completed the pre-screening and reported ostracism using the same Ostracism Short Scale (Rudert, Keller, et al., 2020) as in Study 1. Participants indicated their sexual orientation with one item and, in line with Study 1, sexual orientation was dichotomized (see OSF Supplement 1 for response options and Table 1 for descriptive statistics). Participants also indicated their agreement with two statements “My sexual orientation is different from that of people around me” and “My sexual orientation is different from that of people close to me” (1 = *not at all*, 7 = *very much*) which were—as pre-registered—averaged into one score of sexual orientation deviance, $r(465) = .89$, 95% CI [.87, .91], $p < .001$.

Of the 467 pre-screened participants, 304 participants completed the experience sampling phase for in-situ reporting of ostracism experiences. For 14 days, participants indicated whenever they felt ostracized (i.e., an event-contingent measure of ostracism) using the app Expiwell (<http://www.expiwell.com/>). Moreover, individuals had the chance to report additional ostracism experiences every evening at 6 p.m. (i.e., time-contingently) to avoid underreporting.

Results

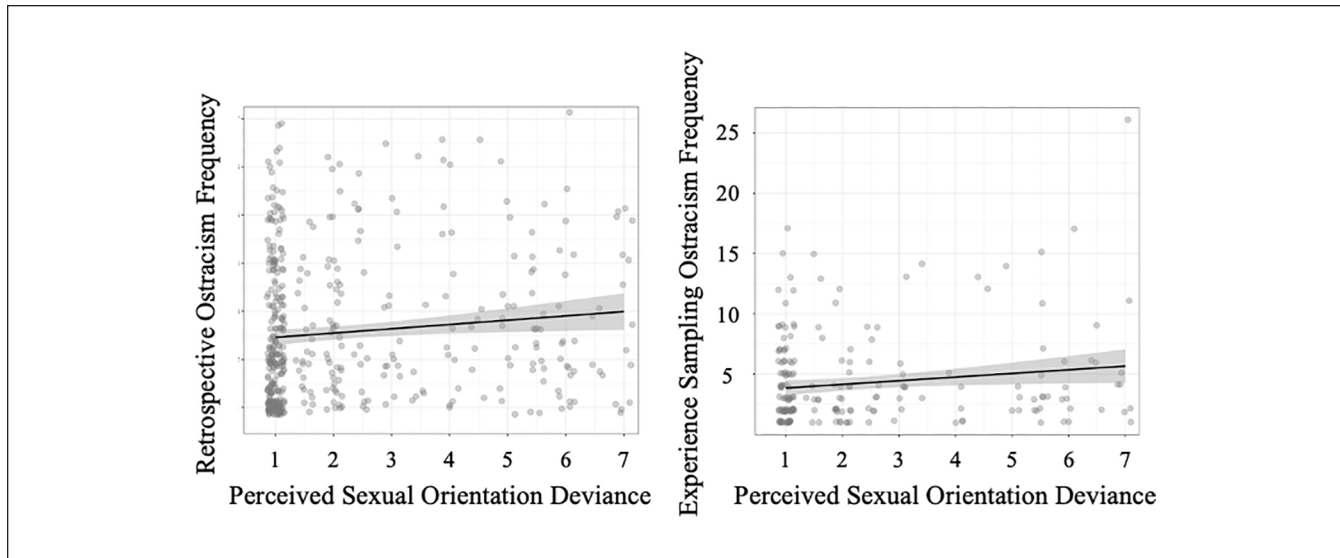
Sexual Orientation. LGB individuals again descriptively reported higher retrospective ostracism frequency, $M = 2.81$, $SD = 1.56$, compared with straight individuals, $M = 2.50$, $SD = 1.48$, but the difference was not significant, $t(173.76) = -1.86$, $p = .065$, $d = -.21$, 95% CI [-.42, .01], $\eta^2 = .011$. As depicted in Figure 1 (right graph), during the experience sampling phase, LGB individuals also descriptively reported more ostracism experiences, $M = 3.82$, $SD = 4.87$, than straight individuals, $M = 2.82$, $SD = 3.39$. The difference was not significant, $t(93.44) = -1.63$, $p = .107$, $d = -.26$, 95% CI [-.53, .00], $\eta^2 = .017$.

Sexual Orientation Deviance. Sexual orientation deviance was significantly higher among lesbian/gay and bisexual individuals compared with straight individuals (see Table 2). Supporting H2, sexual orientation deviance was significantly associated with retrospective ostracism frequency, $b = .09$, 95% CI [.01, .16], $p = .019$, as well as with experience sampling ostracism frequency, $b = .28$, 95% CI [.05, .51], $p = .018$. Both associations are shown in Figure 2. Examined in exploratory fashion, sexual orientation deviance did not have

Table 2. Descriptive Statistics and Subgroup Analyses for Sexual Orientation Deviance in Study 2.

	Study phase			
	Pre-screening		Experience sampling	
	Sexual orientation deviance: <i>M</i> , <i>SD</i> , range	Subgroup analysis ostracism frequency by sexual orientation deviance	Sexual orientation deviance: <i>M</i> , <i>SD</i> , range	Subgroup analysis ostracism frequency by sexual orientation deviance
Lesbian/gay	5.29 ^a , 1.21, 3-7	$b = -.33$, 95% CI [-.83, .17], $p = .182$	5.36 ^c , 1.17, 3-7	$b = -.68$, 95% CI [-2.14, 0.78], $p = .345$
Bisexual	4.98 ^a , 1.50, 1-7	$b = .04$, 95% CI [-.22, .31], $p = .737$	5.15 ^c , 1.12, 2.50-7	$b = .44$, 95% CI [-0.85, 1.74], $p = .492$
Heterosexual	1.36 ^b , 0.71, 1-7	$b = .15$, 95% CI [-.06, .37], $p = .161$	1.33 ^d , 0.61, 1-4	$b = .41$, 95% CI [-0.31, 1.14], $p = .263$

Note. The letters a–d represent significant differences in means of sexual orientation deviance between groups obtained via Tukey's post hoc tests. Means in the same column that share the same letter do not differ significantly from each other, means with different letters differ significantly.

**Figure 2** Sexual Orientation Deviance Predicting Retrospective Ostracism Frequency (Left Graph) and Experience Sampling Ostracism Frequency (Right Graph) in Study 2

Note. Gray areas around regression lines represent standard errors.

significant effects on ostracism in the subgroups of lesbian/gay, bisexual, and straight individuals (see Table 2).

Discussion

Study 2 replicated results from Study 1 in showing that LGB individuals descriptively report more frequent ostracism experiences than straight individuals, both in retrospective recall and across an experience sampling period of 14 days. However, these differences were not significant. Sensitivity analyses conducted in G*Power 3 (Faul et al., 2007) revealed that sample size is unlikely to be the reason for the nonsignificant effects: Even though overall sample size was much larger in Study 1, LGB subgroups were small and thus the two studies are similar in their sensitivity to detect effects

(i.e., for a *t*-test, Study 1: $d = .28$; Study 2: $d = .27$). The difference in the results of Studies 1 and 2 could be due to various reasons. First, context and time differ: While Study 2 was conducted in late 2022, Study 1 analyzes the social reality of LGB people in Germany over 7 years (2015–2022). Among other societal changes during this time frame, same-gender marriage was legalized in Germany in 2017 (Pew Research Center, 2023), an event that likely changed the social reality of many LGB people in Germany. Moreover, the samples considerably differ in sociodemographic characteristics: Participants in Study 2 were younger on average than participants in Study 1 (by 15–20 years, see Table 1). Younger individuals may experience ostracism more frequently than older individuals (e.g., Albath et al., 2023; Rudert, Janke, & Greifeneder, 2020) and suffer more from

ostracism's consequences (e.g., Pharo et al., 2011). Longitudinal studies also show age-related changes in the social reality of LGB individuals (e.g., Kneale & French, 2018). Therefore, investigating the reality of different age groups may have produced differences in the LGB and the straight groups between the studies. Furthermore, the studies investigate two different national contexts (Germany vs. the United States) that may be accompanied by different attitudes toward LGBs. For instance, in the World LGBT Equality Index, Germany takes 10th place in LGBT-friendliness, while the United States takes 25th place (World Equality Index, 2023).

Extending Study 1, Study 2 uncovered that self-reports of one's own sexual orientation as different from those of others were strongly associated with retrospective reports and in-situ experiences of ostracism. This association could be due to many different reasons such as violating norms which is a powerful predictor of decisions to ostracize (Rudert et al., 2023). As previous research suggests, lesbians and gay men may be perceived as transgressing gender norms (e.g., Gordon & Meyer, 2007; Kachel et al., 2016) which leads to discrimination (e.g., Gordon & Meyer, 2007), and likely also ostracism. Thus, Study 3 tests explicitly whether conforming versus not conforming to gender roles drives ostracism of people varying in sexual orientation. Study 3 focuses on lesbian/gay and straight women and men only, without addressing bisexual people. This decision was based on previous research showing a strong heterosexual/non-heterosexual dichotomy: For instance, bisexual people self-stereotype as similarly gender-conforming as heterosexual people (Burke & LaFrance, 2016) and others perceive bisexual people as similar to same-gender lesbian/gay (instead of heterosexual) people (Rule & Alaei, 2016).

Study 3

Going beyond Studies 1 and 2, Study 3 changes perspectives and investigates perceptions of ostracism, that is, how likely raters perceive that other people will ostracize a person based on that person's sexual orientation and gender role nonconformity. Different stimuli (i.e., video with voice vs. video without voice vs. voice vs. full-body picture with head vs. full-body picture without head vs. head picture) from lesbian/gay and straight individuals (from here-on: targets) were rated by participants (from here-on: raters) regarding sexual orientation, perceptions of ostracism, and gender role (non)conformity.

We tested the following pre-registered hypotheses: Targets who self-identify as lesbian/gay will be rated as higher in perceived ostracism compared with targets who self-identify as straight (H3a). Based on previous evidence suggesting higher discrimination experiences for gay men compared with lesbians (Steffens & Wagner, 2004), we further test: Targets who self-identify as gay men will be rated as higher in perceived ostracism compared with targets who

self-identify as lesbians (H3b). We also test the effect of other-rated sexual orientation: The more lesbian/gay a target is rated, the more that target is rated as likely to be ostracized (H4). Furthermore, we test the impact of self-ascribed and other-rated gender role (non)conformity on perceived ostracism: The higher the level of gender role nonconformity the targets ascribe to themselves (H5a), and the higher the level of gender role nonconformity the targets are ascribed by others (H5b), the more they will be rated as likely to be ostracized.³

Method

Design. The study had three experimental factors: 2 (target gender: 36 female vs. 36 male) \times 2 (targets' sexual orientation: 36 lesbian/gay vs. 36 straight) \times 6 (signal type: video with voice vs. video without voice vs. voice vs. full-body picture with head vs. full-body picture without head vs. head picture) with the first two factors varied within raters and the third factor varied between raters.

Targets and Stimuli. In total, 72 targets (18 lesbians, 18 gay men, 18 straight women, and 18 straight men) were rated; $M_{\text{age}} = 24.17$, $SD = 2.26$, Range = 20–30. For each target, six different stimuli were created in a controlled laboratory setting (see Kachel et al., under review, for more information). For dynamic stimuli (video with voice vs. without voice vs. voice only), targets were asked to give directions on campus while being video- and voice-recorded. For each target, we created three excerpts that were 3 to 5 seconds long. During each excerpt, targets looked into the camera at least once. None of the excerpts referred to sexual orientation, gender, or masculinity/femininity. For static stimuli (full-body pictures with head vs. without head vs. head only), targets were instructed to look directly into the camera with a neutral expression. Pictures were edited to be as comparable as possible: Targets were cut out and placed on a gray background. Color grading, brightness, and tone were standardized. Pictures without head were cropped and edited to include neither face nor hair.

Target-Assessed Variables. We assessed targets' sexual orientation (lesbian/gay vs. straight), gender (female vs. male), and targets' self-ascribed gender role nonconformity using the six-item Traditional Masculinity-Femininity scale (e.g., "I consider myself as . . .," 1 = *very masculine*, 7 = *very feminine*, Kachel et al., 2016, Cronbach's $\alpha = .91$). To represent gender role nonconformity, scores for female targets were reverse-coded.

Raters. Raters were German speakers, at least 18 years old, from Clickworker (€4 for approximately 25 minutes). To reduce social desirability in raters' responses, the study was advertised as a study of first impressions, without mentioning sexual orientation, and raters were unaware of targets'

self-identified sexual orientation. As pre-registered, we excluded one rater who did not provide informed consent, eight raters who displayed unreasonably fast reaction times, nine raters who reported having a visual disorder, and one who reported having a speech-, language-, or hearing disorder, as well as one rater who failed the attention check. In total, 141 raters who gave 10,760 ratings of perceived ostracism were retained in the sample: 68 women, 72 men, 1 diverse; $M_{\text{age}} = 37.83$, $SD = 12.22$, Range = 18–70.⁴

Rater-Assessed Variables. Our key dependent variable was ratings of perceived ostracism, one item: “This person is ostracized by others.” To avoid spillover effects, different groups of raters (applying the same exclusion criteria) provided ratings of targets’ sexual orientation (“This person is lesbian/gay”)⁵ and ratings of targets’ gender role nonconformity (“This person is gender conforming,” reverse-coded prior to analysis).⁶ All items were rated from 1 = *do not agree at all* to 7 = *do agree fully and completely*. In exploratory fashion, we assessed raters’ contact frequency with lesbians and gay men, one item each: “Frequency of contact with lesbians / gay men,” 1 = *never* to 7 = *constantly*; $M_L = 2.81$, $SD = 1.40$, $M_G = 3.20$, $SD = 1.53$, $r(140) = .54$, 95% CI [.41, .65], $p < .001$. We also assessed attitudes toward lesbian/gay individuals with the SABA scale (Preuß et al., 2020; higher values on a scale from 1 to 7 indicate more positive attitudes, $M = 5.45$, $SD = 1.27$).

Results

Analytic Strategy. As pre-registered, following Barr et al. (2013), we computed multi-level models adding maximal random effects structure (i.e., random intercepts for raters and targets, random slope for predictor by rater, as well as random slope for signal type by rater). Because all models failed to converge, we removed (as pre-registered) the random slopes and report results from models with random intercepts only.⁷

Effects of Target Sexual Orientation and Gender on Ratings of Ostracism. Descriptively, lesbian/gay targets were rated as higher in perceived ostracism, $k = 4,940$ ratings, $M = 3.27$, $SD = 1.67$, compared with straight individuals, $k = 4,973$ ratings, $M = 2.99$, $SD = 1.56$. Supporting H3a, a multi-level model indicated a significant difference, $b = -.32$, 95% CI [-.57, -.02], $p = .037$. To test whether gay men (vs. lesbians) are perceived as being ostracized more often (H3b), we probed for effects of target gender. Different from our predictions, lesbian targets were rated as higher in perceived ostracism, $k = 2,470$ ratings, $M = 3.42$, $SD = 1.68$, compared with gay targets, $k = 2,611$ ratings, $M = 3.09$, $SD = 1.64$. While the effect of sexual orientation (lesbian vs. gay) was not significant, $b = .30$, 95% CI [-.11, .70], $p = .158$, a model including target gender as an additional predictor showed a significant interaction of sexual orientation

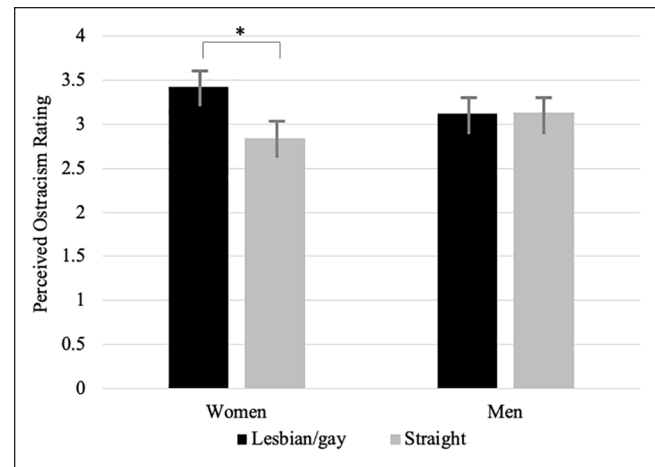


Figure 3. Sexual Orientation and Target Gender Predicting Perceived Ostracism Ratings in Study 3.

Note. Vertical bars indicate standard errors of the means. * $p < .05$.

(lesbian/gay vs. straight) and target gender, $b = .57$, 95% CI [.04, 1.11], $p = .040$, as well as a significant effect of sexual orientation, $b = -.58$, 95% CI [-.96, -.21], $p = .004$, but no significant main effect of target gender, $b = -.30$, 95% CI [-.68, .08], $p = .129$. Tukey-adjusted simple effects testing showed that only the comparison of lesbians and straight women was significant, insofar that lesbians were rated as higher in perceived ostracism than straight women, $b = .58$, 95% CI [.08, 1.08], $p = .014$, all other $ps > .388$. Descriptive statistics are depicted in Figure 3.

Effects of Other-Rated Sexual Orientation on Ratings of Ostracism. Lesbian/gay targets were also rated as more lesbian/gay than straight targets, $t(57.34) = 4.87$, $p < .001$, $d = 1.15$, 95% CI [.64, 1.64] ($M_{LG} = 4.01$, $SD = 0.88$; $M_{\text{straight}} = 3.17$, $SD = 0.53$). Supporting H4, other-rated sexual orientation was significantly associated with perceived ostracism, $b = .49$, 95% CI [.37, .62], $p < .001$.

Effects of Gender Role (Non)Conformity on Ratings of Ostracism. Self-ascribed gender role nonconformity was significantly higher for lesbian/gay targets, $M = 3.52$, $SD = 0.94$, than for straight targets, $M = 2.59$, $SD = 0.83$, $t(68.77) = 4.90$, $p < .001$, $d = 1.05$, 95% CI [.55, 1.53]. Supporting H5a, targets’ self-ascribed gender role nonconformity was significantly associated with perceived ostracism ratings, $b = .28$, 95% CI [.15, .40], $p < .001$. Other-rated gender role nonconformity was significantly higher for lesbian/gay targets, $M = 3.84$, $SD = 0.82$, than for straight targets, $M = 3.06$, $SD = 0.48$, $t(56.15) = 4.90$, $p < .001$, $d = 1.15$, 95% CI [.65, 1.65]. Supporting H5b, other-rated gender role nonconformity was also significantly associated with perceived ostracism ratings, $b = .60$, 95% CI [.49, .72], $p < .001$. Self-ascribed and other-rated gender role nonconformity correlated significantly, $r(70) = .56$, 95% CI [.38, .70], $p < .001$.

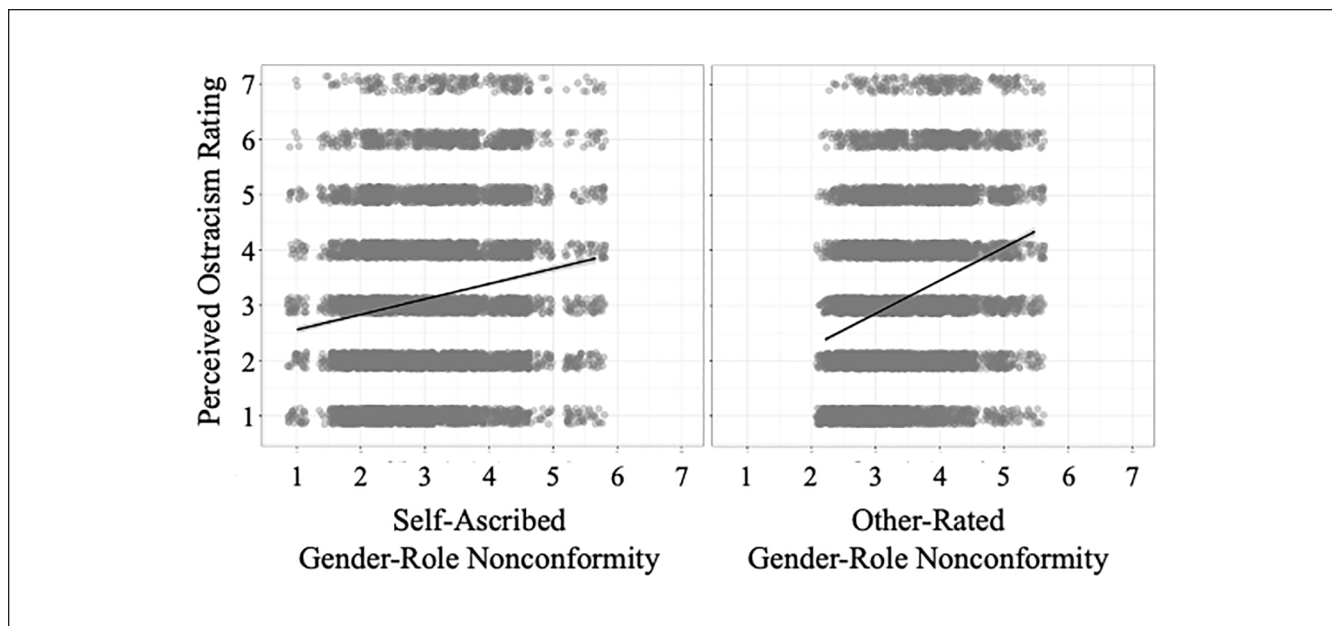


Figure 4. Self-Ascribed Gender Role Nonconformity (Left Graph) and Other-Rated Gender Role Nonconformity (Right Graph) Predicting Perceived Ostracism Ratings in Study 3.

Note. Gray areas around regression lines represent standard errors.

Both associations with perceived ostracism are shown in Figure 4.

Exploratory Pre-Registered Analyses. To identify the factors explaining most variance in perceived ostracism, we also ran a pre-registered model including target sexual orientation (straight vs. lesbian/gay), other-rated sexual orientation, self-ascribed gender role nonconformity, and other-rated gender role nonconformity predicting perceived ostracism ratings. Target sexual orientation, $b = .26$, 95% CI [.05, .47], $p = .022$, and other-rated gender role nonconformity, $b = .68$, 95% CI [.41, .94], $p < .001$, emerged as significant effects. Other-rated sexual orientation and self-ascribed gender role nonconformity were not significantly related to perceived ostracism in this model, $ps = .350-.830$.

We also pre-registered to probe for effects of target gender: For analyses of other-rated sexual orientation, self-ascribed gender role nonconformity, and other-rated gender role nonconformity, there were no effects of target gender, nor significant interaction effects between target gender and predictors, $ps = .145-.991$.

Exploratory Analyses (Not Pre-Registered). To investigate the potential effect of psychosocial rater factors, we tested whether attitudes toward lesbian/gay individuals moderate the hypothesized effects. Indeed, attitudes toward lesbian/gay individuals interacted significantly with all tested predictors, specifically, the effect of all tested predictors was stronger for raters with more positive attitudes toward lesbian/gay individuals (except for the effect of identifying as

lesbian versus gay: $p = .107$). See Table 3 for all inferential statistics.

We also tested whether more frequent contact with lesbian/gay individuals moderates the hypothesized effects. Contact frequency did not interact significantly with any of the tested predictors with one exception: The effect of sexual orientation (gay vs. lesbian) on perceived ostracism was stronger for raters with more frequent contact with lesbians and for raters with more frequent contact with gay men (see Table 4).

Discussion

Study 3 offers novel insights into ostracism of sexual minorities: Lesbian and gay individuals not only report more ostracism (Studies 1 and 2) but are also perceived to face more ostracism by others. While targets' sexual orientation (lesbian/gay vs. straight), and especially other-rated perceived sexual orientation, affected perceived ostracism ratings, the effects differed by gender: Lesbians were perceived to face more ostracism compared with straight women (no significant differences occurred when comparing the other groups). Previous research suggests that gay men face more homonegativity and discrimination compared to lesbians (e.g., Feinstein et al., 2012; Herek, 1988; Steffens & Wagner, 2004). Yet, in line with status beliefs theory (Ridgeway, 2001), it can be argued that lesbians encounter more discrimination due to being part of two marginalized, low-status groups (women and sexual minorities) compared with gay men who are only part of one marginalized group. Our

Table 3. Exploratory Moderator Analyses of Attitudes Toward Lesbian/Gay Individuals, Study 3.

Tested predictor	Main effect predictor	Main effect attitudes	Interaction effect	Interpretation of interaction effect
Lesbian/gay vs. straight	$b = .03$, 95% CI [-.31, .37], $p = .870$	$b = .04$, 95% CI [-.08, .16], $p = .526$	$b = -.06$, 95% CI [-.10, -.02] , $p = .002$	Perceived ostracism of lesbian/gay (but not of straight targets) is higher for raters with more positive attitudes.
Gay vs. lesbian	$b = .05$, 95% CI [-.45, .55], $p = .850$	$b = .02$, 95% CI [-.11, .14], $p = .814$	$b = .05$, 95% CI [-.01, .10], $p = .107$	n.s.
Other-rated sexual orientation	$b = .17$, 95% CI [-.01, .35], $p = .059$	$b = -.21$, 95% CI [-.35, -.06] , $p = .006$	$b = .06$, 95% CI [.04, .08] , $p < .001$	Effect of other-rated sexual orientation on perceived ostracism is stronger for raters with more positive attitudes.
Self-ascribed gender role nonconformity	$b = .04$, 95% CI [-.12, .21], $p = .615$	$b = -.12$, 95% CI [-.26, .01], $p = .071$	$b = .04$, 95% CI [.02, .06] , $p < .001$	Effect of self-ascribed gender role nonconformity on perceived ostracism is stronger for raters with more positive attitudes.
Other-rated gender role nonconformity	$b = .21$, 95% CI [.03, .39] , $p = .021$	$b = -.24$, 95% CI [-.39, -.09] , $p = .001$	$b = .07$, 95% CI [.05, .10] , $p < .001$	Effect of other-rated gender role nonconformity on perceived ostracism is stronger for raters with more positive attitudes.

Note. Significant effects are bold-faced.

Table 4. Exploratory Moderator Analyses of Contact Frequency with Lesbian (L) and Gay (G) Individuals, Study 3.

Tested predictor	Main effect predictor	Main effect contact frequency	Interaction effect
Lesbian/gay vs. straight	L: $b = -.29$, 95% CI [-.58, .00], $p = .050$	L: $b = .11$, 95% CI [.00, .22] , $p = .046$	L: $b = -.001$, 95% CI [-.04, .03], $p = .961$
	G: $b = -.28$, 95% CI [-.57, .02], $p = .067$	G: $b = .03$, 95% CI [-.06, .13], $p = .482$	G: $b = -.01$, 95% CI [-.04, .03], $p = .695$
Gay vs. lesbian	L: $b = .13$, 95% CI [-.30, .56], $p = .553$	L: $b = .08$, 95% CI [-.03, .20], $p = .164$	L: $b = .06$, 95% CI [.01, .11] , $p = .020$
	G: $b = .13$, 95% CI [-.30, .56], $p = .562$	G: $b = .01$, 95% CI [-.10, .11], $p = .860$	G: $b = .05$, 95% CI [.01, .10] , $p = .024$
Other-rated sexual orientation	L: $b = .48$, 95% CI [.34, .61] , $p < .001$	L: $b = .09$, 95% CI [-.04, .22], $p = .191$	L: $b = .01$, 95% CI [-.01, .03], $p = .531$
	G: $b = .45$, 95% CI [.31, .59] , $p < .001$	G: $b = -.02$, 95% CI [-.13, .10], $p = .781$	G: $b = .01$, 95% CI [-.01, .03], $p = .163$
Self-ascribed gender role nonconformity	L: $b = .25$, 95% CI [.11, .39] , $p < .001$	L: $b = .08$, 95% CI [-.04, .20], $p = .187$	L: $b = .01$, 95% CI [-.01, .03], $p = .262$
	G: $b = .25$, 95% CI [.11, .39] , $p < .001$	G: $b = .005$, 95% CI [-.10, .11], $p = .931$	G: $b = .01$, 95% CI [-.01, .02], $p = .275$
Other-rated gender role nonconformity	L: $b = .56$, 95% CI [.43, .69] , $p < .001$	L: $b = .06$, 95% CI [-.07, .19], $p = .388$	L: $b = .02$, 95% CI [-.01, .04], $p = .180$
	G: $b = .55$, 95% CI [.41, .68] , $p < .001$	G: $b = -.03$, 95% CI [-.15, .09], $p = .647$	G: $b = .02$, 95% CI [-.003, .04], $p = .098$

Note. Significant effects are bold-faced.

findings on lesbians' ostracism experiences align better with the latter theorizing; however, more research is needed to grasp underlying factors.

Although self-ascribed and other-rated sexual orientation, as well as gender role nonconformity were associated with

perceived ostracism, other-rated gender role nonconformity ensued as the most important factor driving perceived ostracism. Correspondingly, our findings suggest that ostracism may not be confined to lesbians, gay men, and bisexuals but also straight people who are transgressing gender roles may

be at risk of facing ostracism, while LGB individuals who conform to gender roles may not be, or, to a lesser extent. Ostracism may thus constitute a defensive threat reaction toward those who challenge gender roles and the gender binary (e.g., Glick et al., 2007; Morgenroth & Ryan, 2021; Van Der Toorn et al., 2020), irrespective of their self-identified sexual orientation. This aligns with findings that gender role nonconformity also detracts heterosexuals' well-being (e.g., Tate et al., 2015).

Interestingly, the observed effects emerged for all signal types alike, suggesting that stigma information is transferred via multiple subtle cues. This aligns with the back-up-signal hypothesis that different cues such as faces and voices convey similar information (e.g., Smith et al., 2016).

Finally, some rater effects emerged: the influence of sexual orientation (lesbian/gay vs. straight, but not comparing lesbians and gay men), rated sexual orientation, and gender role nonconformity (self-ascribed and rated), on perceived ostracism were all stronger for raters with more positive attitudes toward lesbians and gay men. This aligns with previous findings that more positive attitudes toward minority members increase perceptions of minority discrimination among majority members (e.g., Bagci et al., 2017). The effect of sexual orientation (gay vs. lesbian) on perceived ostracism was stronger for raters with more frequent contact with lesbians and gay men. Just as intergroup contact increases support for social change among majority members (e.g., Hässler et al., 2020), potentially, more frequent contact with sexual minorities may sharpen individuals' detection of discrimination, and, as a consequence, their perception of lesbians and gay men as more likely to face ostracism.

General Discussion

Despite a myriad of studies on the discrimination of sexual minorities in general (e.g., Fasoli et al., 2017; Feinstein et al., 2012; Gordon & Meyer, 2007; Hebl et al., 2002; Katz-Wise & Hyde, 2012), research has been largely silent about the role of ostracism—an impactful form of discrimination that may strongly impact mental health and thriving of sexual minorities (e.g., Chen et al., 2020; Qian et al., 2019; Rudert et al., 2021). Compared with straight individuals, sexual minorities face more ostracism: This is shown in a nationally representative panel ($p = .030$, $\eta^2 = .001$), also when participants were matched for age, gender, and income ($p = .004$, $\eta^2 = .07$). Although nonsignificant results emerged from an experience sampling study of 14 days, descriptively, lesbian, gay, and bisexual participants reported more frequent ostracism experiences during the last two months ($p = .065$, $\eta^2 = .011$), and during the experience sampling phase ($p = .107$, $\eta^2 = .017$). As a first hint that deviation from heteronormativity may affect ostracism experiences, sexual orientation deviance significantly predicted higher ostracism frequencies. Applying an experimental approach by presenting stimuli of targets varying in sexual orientation, targets'

self-reported sexual orientation (lesbian/gay vs. straight), and perceived sexual orientation predicted perceived ostracism significantly. In addition, perceptions as likely targets of ostracism appeared to be gendered: Lesbians were rated as more likely to be ostracized by others than any other subgroup. Moreover, other-rated gender role nonconformity emerged as the strongest predictor of ostracism as rated by others, in line with the idea that people who challenge gender belief systems (Kite & Deaux, 1987) are ostracized as a consequence. Finally, in line with previous intergroup contact research (e.g., Bagci et al., 2017; Hässler et al., 2020), the effects were stronger (except for the comparison of lesbians and gay men) for raters with more positive attitudes toward sexual minorities, and the effect of sexual orientation (gay vs. lesbian) on perceived ostracism was stronger for raters with more frequent contact with lesbians and gay men.

So, what are the potential consequences of ostracism for lesbians, gay men, and bisexuals? Studies 1 and 2 showed small-to-medium differences in mean reported ostracism frequency between sexual minority members and heterosexuals (that were not significant in Study 2, see above). However, even small increases in ostracism frequency foster the development of depression and suicidality (Chen et al., 2020; Rudert et al., 2021). Consequences may be even stronger for LGB individuals because ostracism based on stable and internal attributes, such as sexual orientation, is particularly hurtful (e.g., Peng & Salter, 2021; Wirth & Williams, 2009). A common fallacy is that individuals are less impacted by adverse experiences if they are victimized over and over again (Zagefka, 2022), however, this is not the case for ostracism experiences, in fact, ostracism hurts the same over and over again (Büttner et al., 2023), and, even if individuals expect to be ostracized, ostracism still hurts (Jauch et al., 2022). Over time, ostracism may become chronic, causing individuals to enter the *resignation stage* (Williams, 2009), characterized by feeling hopeless, depressed, worthless (e.g., Riva et al., 2016), and unable to enjoy even positive interactions (Büttner et al., 2021, 2023). Certainly, this investigation is only a starting point to examine specific ostracism experiences that make up the social reality of LGB individuals and distinguish it from that of straight individuals. Future research should expand the present scope by analyzing LGBs' ostracism experiences and, for instance, address (a) forms of ostracism specific to the LGB community (e.g., gender norm violations), (b) the impact of ostracism by straight individuals versus from within the queer community (e.g., in the case of bisexual erasure, see, for example, Morgenroth et al., 2022), and (c) factors hindering recovery from ostracism such as attributions to malicious sources' motives (e.g., Goodwin et al., 2010). Protective factors against ostracism such as perceived social support and connectedness to the queer community should also be part of future research.

Another potential path explaining more frequent reports of ostracism that we did not address is that LGB individuals

may *perceive* ostracism more readily. Drawing from workplace harassment literature (e.g., Nielsen & Knardahl, 2015), as well as the rejection sensitivity model of sexual minorities (Baams et al., 2020), frequent experiences of maltreatment may increase individuals' readiness to perceive experiences as psychological maltreatment. Not all ostracism occurs out of the maliciousness of those who ostracize; people may also be overlooked, forgotten, or underrepresented unintentionally (e.g., Williams, 2009). Perceiving such instances as ostracizing and attributing them to intentional motives may increase the emotional consequences (e.g., Goodwin et al., 2010), as well as the perceived frequency of ostracism by LGB individuals. Longitudinal investigations should examine whether sexual minorities indeed develop a sensitivity toward ostracism (Baams et al., 2020).

Furthermore, insights accrued in the present research may inform interventions against queer discrimination by acknowledging ostracism as a form of maltreatment. Norms play an important role in decisions to ostracize others (see Rudert et al., 2023). Explicit acceptance of all sexual orientations in families, social circles, and organizations may set new norms that could aid in reducing ostracism of LGB individuals. There are also implications for allyship, that is, members of an advantaged group (i.e., straight people) who support matters of social justice for disadvantaged groups (e.g., Broido, 1997): When LGB individuals experience more frequent ostracism, allyship has to include being an ally against ostracism because failure to confront ostracism may aggravate the ostracized individual's experience (e.g., Chernyak & Zayas, 2010; DeSouza et al., 2017).

This project paves the way for further queer ostracism research. For instance, future research should endeavor to shed more light on the experiences of transgender individuals who may be particularly at risk for ostracism (e.g., Peng & Salter, 2021) based on ostracizing experiences such as gendered language use (e.g., DeSouza et al., 2017; Stout & Dasgupta, 2011), being addressed with pronouns that they don't identify with (e.g., Morgenroth et al., 2024), or transphobic microaggressions (e.g., Wesselmann et al., 2022). Future research could build upon the present findings to examine the degree of gender role nonconformity as a factor driving ostracism of transgender individuals. Future queer ostracism research should also include intersectionality effects, for instance, regarding age, race, or socioeconomic status.

Finally, we deem it important to note what our research does not imply. As a consequence of ostracism, LGB individuals may conceal their sexual orientation: In a study of LGB surgery residents, 57% concealed their sexual orientation because they feared ostracism (Lee et al., 2014). However, concealing one's sexual orientation has harmful effects on well-being and life satisfaction (e.g., DeSouza et al., 2017; Herek, 2003; Quinn & Earnshaw, 2013). Therefore, while gender role nonconformity and perceptions of being different may shape LGB individuals' experiences of ostracism, concealing one's sexual orientation is not an

implication of the present studies since it would wrongfully hold LGB individuals responsible and may ultimately cause more psychological harm.

Conclusion

Ostracism is part of the social reality of LGB people and is mainly attributable to perceptions of gender role nonconformity. As gender role nonconformity is not confined to sexual minority members, ostracism may therefore also threaten straight individuals. We hope these findings pave the way for future research into ostracism experiences of queer individuals, allyship against ostracism, and intersectionality effects.

Acknowledgments

We would like to thank Anna-Marie Bertram, Leyre Macías, and Daniel Strebel for their assistance with study programming, study material development and/or data preparation for Study 2. We would like to thank Louis Tay and everyone at Expiwell (<https://www.expiwell.com>) for their help in using the experience sampling app for Study 2. We thank Dorothee Scheffel for pre-processing the images in Study 3 and Nina Gaisbauer and Lea Lorenz for implementing Study 3 on PsyToolkit. We are very grateful to Rasmus Möring for his thoughtful comments during study conceptualization.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by grant #P000PS_207236/1 from the Swiss National Science Foundation awarded to Christiane M. Büttner and by grants from the German Research Foundation (DFG KA 5005-1/1), from Landau Strategy Fund, and Kone Foundation awarded to Sven Kachel.

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Supplemental Material

Supplemental material is available online with this article <https://osf.io/kxsym/>.

Notes

1. This project focusses on lesbian/gay, and bisexual individuals.
2. Studies 2 and 3 were both part of larger projects. Here, we chose to focus on ostracism experiences and perceptions of ostracism of LGB individuals compared with straight individuals and only report measures relevant to the addressed questions.
3. We pre-registered to also test whether perceptions of ostracism by others are associated with higher frequency of ostracism experiences reported by targets. However, only lesbian and gay targets ($n = 36$) reported their ostracism experiences, therefore

comparisons with straight targets are not possible. We report these analyses as supplementary in the R script (OSF).

4. We pre-registered to include raters' sexual orientation (see OSF Supplement 1 for response options) as a potential control variable. However, as anticipated, subgroups were too small to run meaningful analyses (i.e., $n = 11$ of 141 raters indicated not being straight).
5. Other-rated sexual orientation rater sample: $n = 87$; 29 women, 58 men; $M_{\text{age}} = 39.06$, $SD = 12.75$, Range = 19-70.
6. Other-rated gender role nonconformity rater sample: $n = 119$; 46 women, 73 men; $M_{\text{age}} = 40.64$, $SD = 12.35$, Range = 18-67.
7. As pre-registered, signal type was a control variable in all analyses. Since signal type did not have significant effects in any of the reported analyses (smallest $p = .440$), see OSF for these effects.

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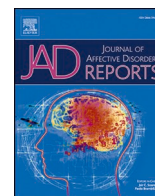
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Appendix C

Büttner, C. M., & Greifeneder, R. (2024). Everyday ostracism experiences of depressed individuals: Uncovering the role of attributions using experience sampling. *Journal of Affective Disorders Reports*, 17, 100804. <https://doi.org/10.1016/j.jadr.2024.100804>



Research Paper

Everyday ostracism experiences of depressed individuals: Uncovering the role of attributions using experience sampling

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ARTICLE INFO

Keywords:

Depression
Depressive symptoms
Everyday ostracism
Social exclusion
Attributions

ABSTRACT

Background: Depression is linked to more frequent experiences of ostracism (being excluded and ignored). Here, we examine attributions of everyday ostracism that may play an important role in individuals' experience of and reactions to ostracism. Based on interpersonal and attribution theories of depression, we hypothesize that internal (compared to external) attributions of ostracism and attributions to being burdensome are particularly frequent among depressed individuals.

Methods: We use an experience sampling approach including retrospective reports of ostracism ($N = 490$) and event-contingent reports of ostracism ($n = 323$, $k = 1107$ experiences in 14 days) to analyze the frequency of everyday ostracism experiences, subsequent need threat, and attributions of ostracism by depressed individuals (i.e., individuals with stronger current depressive symptoms and those who had been diagnosed with depression before).

Results: Depressed individuals report more frequent retrospective ostracism, and more frequent everyday ostracism, as well as higher need threat following everyday ostracism. Depressed individuals do not attribute ostracism more internally, but they attribute being ostracized more frequently to being burdensome, as well as to hostile intent of the ostracizer(s).

Limitations: This research used a non-clinical sample and self-reports of current depressive symptoms and previous diagnoses of depression. Future research in patient populations and longitudinal designs will fruitfully complement the present findings.

Conclusions: Maladaptive attributions of everyday ostracism may perpetuate the cycle between ostracism experiences and depression. This warrants attention from clinical practitioners, specifically in interventions against cognitive biases in depression.

Depression fundamentally alters how individuals perceive their social environment: Depressed individuals enjoy social interactions less (e.g., Büttner et al., 2021; Hirschfeld et al., 2000), experience lower social functioning and more interpersonal conflict (e.g., Gadassi and Rafaeli, 2015; Hammen, 2005), and, although they experience a similar amount of social interactions, their interactions are more negative than those of non-depressed individuals (e.g., Baddeley et al., 2013; Nezlek et al., 2000). Unsurprisingly, previous literature has linked depression to more frequent experiences of, and more severe reactions to, negative interpersonal experiences such as social exclusion, rejection, and ostracism (e.g., Büttner et al., 2021; Jobst et al., 2015; Reijntjes et al., 2009; Reinhard et al., 2020; Rudert et al., 2021; Seidl et al., 2020). However, previous literature is largely silent about how these experiences affect depressed individuals in their everyday life, and how they make sense of

these experiences, that is, how they attribute them. Understanding these processes is crucial since attributions of interpersonal experiences may alter depressed individuals' everyday interactions, and thereby uphold cycles of negative interpersonal interactions, maladaptive attributions, and depressive symptomology (e.g., Gadassi and Rafaeli, 2015; Sweeney et al., 1986).

We start by reviewing the bi-directional association between ostracism experiences (feeling excluded and ignored, e.g., Williams, 2009) and depression. Then, we turn to the potential role of attributions of ostracism by depressed individuals. Finally, we summarize the present research questions and the tested hypotheses.

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<https://doi.org/10.1016/j.jadr.2024.100804>

Received 29 January 2024; Received in revised form 25 April 2024; Accepted 12 May 2024

Available online 13 May 2024

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1. Bi-directional association between ostracism and depression

Ostracism is a frequent experience of depressed individuals (e.g., Rudert et al., 2021) that affects them more negatively and that they recover more slowly from than non-depressed individuals (e.g., Büttner et al., 2021; Jobst et al., 2015; Seidl et al., 2020). In Williams' (2009) Temporal Need Threat Model of Ostracism, depression is theorized to be a consequence of chronic ostracism, as a part of the *resignation* stage where individuals are unable to recover psychological needs that are typically threatened by ostracism. Empirical evidence associating chronic ostracism with depressive symptoms (e.g., DeWall et al., 2012; Riva et al., 2016) and clinically-diagnosed depression (e.g., Rudert et al., 2021) supports these tenets. In animals, isolation has been causally linked to the development of depressive behaviors (e.g., Grippio et al., 2007, 2008).

In the reverse direction, depressed individuals are at an increased risk of ostracism: For instance, Reinhard et al. (2020) speak of “a vicious cycle where psychiatric symptoms increase the chance of being ostracized, and ostracism consolidates or even aggravates psychopathology” (p. 521). This is because, for instance, individuals with depressive symptoms frequently withdraw from social interactions (e.g., Derntl et al., 2011; Teo et al., 2020), and may be ostracized as a consequence because others assume they want to be left alone or they would not contribute to enjoyable social interactions (Ren and Evans, 2021). Depressed individuals may also be perceived as burdensome and in need of high levels of support (e.g., Coyne, 1976; Potthoff et al., 1995; Rudert et al., 2021), both of which are strong predictors of decisions to ostracize (e.g., Rudert et al., 2023; Wesselmann et al., 2013, 2015).

The combination of both links—from ostracism to depression, and from depression to ostracism—creates a vicious cycle (e.g., Reinhard et al., 2020), which may aggravate both depression and ostracism. The present contribution focuses on the latter link, from depression to ostracism.

2. The potential role of attributions of ostracism by depressed individuals

An understudied area in the bi-directional link between depression and ostracism is how ostracism is attributed by depressed individuals. As an act of omission (e.g., *not* receiving attention, *not* being invited, *not* being part of the group), ostracism is inherently ambiguous and the reasons *why* someone was ostracized often remain unknown (e.g., Nezlek et al., 2012; Williams, 2009). Yet, attributions take a key role in dealing with ostracism, as they shape how (depressed) individuals construe ostracism, and, as a consequence, how they cope with it (e.g., Smart Richman and Leary, 2009). For instance, attributing ostracism to malicious motives of those who ostracize undermines coping efforts (e.g., Goodwin et al., 2010), which could be especially detrimental to depressed individuals since their coping capability is already impaired (e.g., Büttner et al., 2021). Attributions may therefore influence how hurtful ostracism is perceived, as well as how individuals behave afterward (e.g., Bernstein et al., 2018; Smart Richman and Leary, 2009), and, as a consequence, individuals' chances for re-inclusion. The present contribution will mainly focus on two types of attributions: Attributions to internal versus external factors (i.e., locus of attribution) and attributions to being a burden to others.

2.1. Depressed individuals may attribute ostracism more internally

Individuals generally seek to understand the cause of social experiences that they make, that is, they attribute causes to experiences. Broadly speaking, attributions can be internal or external (e.g., Heider, 1958), that is, reasons can be within the self (e.g., “They excluded me because I am not fun to be around.”), or outside of the self (e.g., “They excluded me because they are mean.”). It has been argued that depressed individuals show maladaptive attribution styles in that they attribute

positive experiences to external factors that are out of their control such as luck, whereas they attribute negative experiences more internally (e.g., Seligman et al., 1979; Sweeney et al., 1986). Ostracism is an inherently negative experience, reflected in the massive effects of ostracism on psychological well-being (e.g., Hartgerink et al., 2015; Williams, 2009). Given that ostracism experiences are inherently negative and depressed individuals attribute negative experiences more internally, we hypothesize that depressed individuals (compared to individuals without depression) attribute ostracism more internally in everyday life.

2.2. Depressed individuals may attribute ostracism more frequently to being burdensome

Perceptions of burdensomeness are key concepts in both depression (e.g., Allen and Badcock, 2003; Baddeley et al., 2013; Coyne, 1976) and ostracism (e.g., Rudert et al., 2023; Wesselmann et al., 2013, 2015). Perceptions of being a burden to others perpetuate depression and strongly predict suicidal behaviors (e.g., De Catanzaro, 1995; Joiner et al., 2002; Van Orden et al., 2008). From the perspective of those around depressed individuals, depressive symptoms and behaviors may indeed be burdensome (e.g., Baddeley et al., 2013; Potthoff et al., 1995), so attributions of negative experiences to burdensomeness by depressed individuals may even be correct. Moreover, burdensome behavior has been directly linked to decisions to ostracize burdensome group members (e.g., Rudert et al., 2023; Wesselmann et al., 2013, 2015). We therefore hypothesize that attributing ostracism to being burdensome is more frequent among depressed individuals.

3. The present research

We test the following hypotheses:

Hypothesis 1 (pre-registered): Participants with more compared to less depressive symptoms report more situations of everyday ostracism.

Hypothesis 2: In exploratory fashion, and to replicate previous research (e.g., Büttner et al., 2021), we also test whether need threat after ostracism is higher for participants with higher levels of depressive symptoms.

Going beyond previous research, we also examine the frequency of different attributions of ostracism based on depressive symptoms:

Hypothesis 3a (pre-registered): Participants with higher compared to lower levels of depressive symptoms attribute ostracism more internally.

Hypothesis 3b (pre-registered): Participants with higher compared to lower levels of depressive symptoms attribute ostracism more frequently to being a burden to others.

We do not examine persistent, trait-like attributional styles of depressed individuals as an outcome of ostracism, instead, we focus on attributions referring to single ostracism experiences, made in everyday life, by individuals with varying levels of depressive symptoms.

Exploratorily, we assess other attributions as well (see Methods section). Moreover, as an additional operationalization of depression, we also test whether ostracism frequency and attributions of ostracism differ between participants who had been diagnosed with depression before compared to those who had never been diagnosed with depression.

Importantly, data for this study were assessed with an experience sampling approach, using participants' phones as sampling devices. To research attributions of ostracism as individuals experience it, approaches that come closest to individuals' everyday experiences are indispensable. The here-chosen experience sampling approach captures depressed individuals' experiences of ostracism as they happen in their

everyday lives, as well as their subsequent need threat and attributions.

4. Methods

The study's procedure was approved by the University of Basel's Institutional Review Board. Hypotheses, sample size, measures, and exclusion criteria were pre-registered (procedure: https://aspredicted.org/THK_7DZ, specific hypotheses: https://aspredicted.org/FMC_NV4 and https://aspredicted.org/VCT_S3C). This study was part of a larger project. We here focus on attributions of everyday ostracism by depressed individuals and only report measures relevant to these questions. The data set has previously been used to analyze everyday experiences of ostracism by sexual minorities (Büttner et al., 2024) and behavior after everyday ostracism (Büttner et al., 2024). The present contribution has a different focus and uses different measures. All materials, data, code, and analyses are available via <https://osf.io/pt2j7/>. Data collection was split into two phases: In the pre-screening, eligibility for participation and trait measures were assessed. This was followed immediately by a 14-day experience sampling phase during which participants reported whenever they felt ostracized in daily life (i.e., event-contingently).

5. Participants

5.1. Pre-screening

Two participants failed the attention check, two indicated not having participated in a serious manner (< 6 on a 9-point scale), and one participant withdrew consent that their data can be analyzed. As pre-registered, this left 490 US residents ($M_{\text{age}} = 36.71$ years, $SD = 12.95$, 48.78 % female, 3.27 % non-binary), recruited from the crowd-sourcing platform Prolific Academic.

Retrospective ostracism frequency. Participants completed a retrospective ostracism frequency measure using the four-item Ostracism Short Scale (e.g., "In the last two months, how often have you experienced the following? Other people have ignored me.", 1 = never, 7 = always, adapted from Rudert, Keller et al., 2020, $M = 2.58$, $SD = 1.50$, $Range = 1 - 7$, Cronbach's $\alpha = 0.94$). Ostracism frequency was assessed before depressive symptoms and diagnoses of depression, as to not prime participants to search their memory for ostracism experiences because of their depression.

Depression diagnosis. Previous diagnosis of depression was assessed with one item: "Has a doctor ever diagnosed you with one or more of the following diseases?", "depression" "yes", "no", "prefer not to say". 296 (60.41 %) individuals indicated never having been diagnosed with depression, 192 had been diagnosed with depression (39.18 %), and two participants chose not to answer. Those who indicated having received a diagnosis were asked to indicate how long ago they were diagnosed with depression, in months (one item: "How long ago were you diagnosed with depression?", $M = 110.13$ months, $SD = 107.25$, $Range = 1 - 504$).

Psychopathological co-morbidity. Participants were also asked whether a doctor had diagnosed them with another psychological diagnosis. Of those who were diagnosed with depression, 79 (41.15 %) indicated not receiving further psychological diagnoses, ten participants (5.21 %) chose not to answer, and 103 (53.65 %) indicated receiving at least one additional psychological diagnosis (see OSF Supplement 1 for a list of all reported diagnoses).

Depressive symptoms. Participants answered eight items measuring depressive symptoms in non-clinical contexts (Mohr and Müller, 2004, as translated by Büttner et al., 2021). Example: "There are many things that seem meaningless to me", 1 = never, 7 = always ($M =$

3.33, $SD = 1.51$, $Range = 1 - 7$, Cronbach's $\alpha = .90$).¹

Finally, participants provided demographic information, reported on the seriousness of their participation, and had the opportunity to withdraw consent for their data to be analyzed.

5.2. Experience sampling

Of the 490 pre-screened participants, 323 ($M_{\text{age}} = 38.04$ years, $SD = 13.15$, 48.30 % female, 3.10 % non-binary) completed the entire 14-day experience sampling part.

Ostracism frequency. Participants were instructed to indicate whenever they felt ostracized (event-contingent report) using the app Expiwell (www.expiwell.com) and report any additional events in the evening to avoid under-reporting (daily questionnaire at 6pm). Participants were provided with a very broad definition of ostracism at the beginning of the study to not prime participants with examples:

"What do we mean by "being excluded and/or ignored"? When we talk about social exclusion, we mean being excluded and/or ignored by others. One or many persons may exclude you; these may be strangers, loose acquaintances, or colleagues, but also close friends or family. Being ignored and/or excluded may mean that other people ignore you, shut you out from conversations, exclude you from activities, or treat you as if you were not there. Some exclusion experiences might be very short or not feel overly important to you. Sometimes, others may exclude you on purpose, other times, you might feel that there is a valid reason why you were not included or you assume that others just forgot to include you. We are interested in all kinds of exclusion experiences you might have, regardless of their duration, perceived importance or the reason for them. Please report all of them."

Need threat. After each event-contingent ostracism report, participants indicated their level of need satisfaction with one item per need (adapted from Rudert and Greifeneder, 2016): "Right now, I feel..." 1 = rejected, 7 = accepted (belonging), 1 = powerless, 7 = powerful (control), 1 = devalued, 7 = valued (self-esteem), and 1 = invisible, 7 = recognized (meaningful existence). We reverse-coded and averaged all items to represent need threat (Cronbach's $\alpha = .82$).

Attributions of ostracism. After each event-contingent ostracism report, we assessed locus of attribution ("The reason why I have been excluded and / or ignored is ...", 1 = outside of me to 7 = inside of me, adapted from McAuley et al., 1992). After that, we assessed specific attributions of ostracism with 10 categories assembled from the literature (e.g., Nezelek et al., 2012). All attributions are listed in Table 1. Selecting multiple attributions was possible.

6. Results

6.1. Effect size indicators

We report Cohen's d s for t -tests, correlation coefficients r for correlations, and unstandardized regression coefficients b for regression analyses. For linear models, we additionally report η^2 , for logistic models, we additionally report Odds Ratios as an indicator of effect size. All mixed models account for the nested data structure by adding a random intercept for participant.

6.2. Effects of depression on ostracism frequency

On average, combining event- and time-contingent reports of

¹ How long ago participants were diagnosed with depression and current depressive symptoms were not significantly correlated, $r(187) = -.10$, 95 % CI [-.24, .04], $p = .157$.

Table 1

Absolute frequencies of and results from logistic mixed models analyses for specific attributions of ostracism by depression.

The reason why I have been excluded and / or ignored is ...	Predictor: Diagnosed depression						Predictor: Depressive symptoms	
	Overall sample		Not diagnosed		Diagnosed		Results mixed model	
	no	yes	no	yes	no	yes	Results mixed model	
because I am different.	747	106	410	59	326	47	$b = 0.34, p = .475, OR = 1.40, 95 \% CI [.56, 3.53]$	$b = 0.12, p = .422, OR = 1.13, 95 \% CI [.84, 1.54]$
because I broke a (social) rule.	820	33	459	10	350	23	$b = 1.43, p < .001, OR = 4.17, 95 \% CI [3.90, 4.47]$	$b = 0.25, p = .489, OR = 1.29, 95 \% CI [.63, 2.63]$
because I was perceived as a burden.	770	83	438	31	321	52	$b = 0.93, p = .002, OR = 2.54, 95 \% CI [1.39, 4.65]$	$b = 0.30, p = .003, OR = 1.35, 95 \% CI [1.11, 1.64]$
as a punishment.	802	51	455	14	336	37	$b = 1.42, p = .003, OR = 4.13, 95 \% CI [1.61, 10.61]$	$b = 0.30, p = .058, OR = 1.35, 95 \% CI [.99, 1.85]$
the roles within the situation dictated it.	763	90	417	52	337	36	$b = -.53, p = .161, OR = 0.59, 95 \% CI [.28, 1.23]$	$b = -.04, p = .748, OR = 0.96, 95 \% CI [.77, 1.21]$
because I wanted to be alone.	820	33	449	20	360	13	$b = -.19, p < .001, OR = 0.82, 95 \% CI [.81, 0.84]$	$b = -.26, p = .141, OR = 0.77, 95 \% CI [.54, 1.09]$
because I was forgotten.	714	139	390	79	317	56	$b = -.05, p = .855, OR = 0.95, 95 \% CI [.57, 1.58]$	$b = -.02, p = .780, OR = 0.98, 95 \% CI [.83, 1.15]$
because I was overlooked.	576	277	316	153	252	121	$b = -.07, p = .705, OR = 0.93, 95 \% CI [.65, 1.34]$	$b = -.01, p = .894, OR = 0.99, 95 \% CI [.89, 1.11]$
because the person(s) that excluded me are mean.	796	57	442	27	344	29	$b = 0.28, p = .515, OR = 1.32, 95 \% CI [.57, 3.07]$	$b = 0.16, p < .001, OR = 1.17, 95 \% CI [1.17, 1.18]$
because the other person(s) didn't want to be with me.	735	118	417	52	310	63	$b = 0.43, p = .111, OR = 1.54, 95 \% CI [.91, 2.62]$	$b = 0.18, p = .031, OR = 1.20, 95 \% CI [1.02, 1.42]$

Note. "Yes" indicates how often the specific attribution was selected, "no" indicates how often the specific attribution was *not* selected. Depressive symptoms were mean-centered prior to analysis. Significant effects ($p < .05$) are bold-faced.

ostracism as pre-registered, participants reported 3.43 ostracism experiences during the 14-day period ($SD = 7.66, Range = 0 - 26$).²

Retrospective Ostracism Frequency. Those who had reported a diagnosis of depression also reported higher retrospective frequency of ostracism ($M = 3.07, SD = 1.29, t(339.21) = -5.85, p < .001, d = -0.57, 95 \% CI [-.76, -.38]$) than those who had never been diagnosed with depression ($M = 2.25, SD = 1.64$), see Fig. 1. Similarly and in line with H1, depressive symptoms correlated positively with retrospective ostracism frequency, $r(488) = .51, 95 \% CI [.44, 0.57], p < .001$, see Fig. 2.

Experience Sampling Ostracism Frequency. Experience sampling frequency of ostracism was also higher among those who had been diagnosed with depression ($n = 116, M = 3.67, SD = 4.02$) compared to those who had never been diagnosed with depression, $n = 204, M = 2.68, SD = 3.60, t(217.99) = -2.20, p = .029, d = -0.26, 95 \% CI [-.49, -.03]$, see Fig. 1. Again similarly and in line with H1, depressive symptoms also correlated positively with experience sampling ostracism frequency, $r(320) = .16, 95 \% CI [.05, 0.27], p = .004$, see Fig. 2.

6.3. Effects of depression on need threat after ostracism in real-life

Compared to those who were never diagnosed with depression ($M = 4.93, SD = 1.10$), those who were ($M = 5.46, SD = 1.01$) reported significantly higher need threat after event-contingent ostracism, $b = 0.47, p < .001, \eta_p^2 = 0.07$, see Fig. 3. Similarly and in line with H2, stronger depressive symptoms were associated with higher need threat after ostracism, $b = 0.19, p < .001, \eta_p^2 = 0.10$, see Fig. 3.

6.4. Effects of depression on locus of attribution of real-life ostracism

A mixed-effects model showed no significant difference in locus of attribution between those who had been diagnosed with depression ($M = 2.95, SD = 1.81$) and those who had never been diagnosed with depression ($M = 2.83, SD = 1.53$), $b = 0.17, p = .331, \eta_p^2 = 0.005$. In exploratory fashion, we tested whether time since diagnosis would affect

locus of attribution, assuming that a longer time since diagnosis would lead to healthier (i.e., more external) attributions of ostracism. Indeed, among those who had been diagnosed with depression before, how long ago they received the diagnosis (mean-centered) was significantly associated with more external attributions, $b = -.01, p = .042, \eta_p^2 = 0.05$.

Lending no support to H3a, there was no significant association of locus of attribution with depressive symptoms, $b = 0.08, p = .172, \eta_p^2 = 0.01$.

6.5. Effects of depression on specific attributions of real-life ostracism

Table 1 shows the frequencies of the specific attributions for being ostracized as well as their associations with diagnosis of depression (no vs. yes) and with depressive symptoms (mean-centered). Those who had been (compared to not) diagnosed with depression attributed being ostracized more frequently to breaking a social rule, to being perceived as a burden (in line with H3b), or as a punishment, but less frequently to them wanting to be alone. Among those who had been diagnosed with depression before, how long ago they received the diagnosis (mean-centered) was not significantly associated with any specific attribution, $ps = .107 - .797$.

Stronger depressive symptoms were significantly associated with attributing ostracism more frequently to being perceived as a burden (again in line with H3b), and to the other person(s) being mean, or not wanting to be with them.

7. General discussion

Just as depression alters individuals' emotions and cognitions (e.g., Liu and Alloy, 2010; Platt et al., 2013), depression also negatively alters individuals' social relationships and how they experience them (e.g., Allen and Badcock, 2003; Baddeley et al., 2013; Gadassi and Rafaeli, 2015; Hammen, 2005; Hirschfeld et al., 2000). The present research focused on examining frequency, emotional consequences, and attributions of everyday ostracism (being excluded and ignored, Williams, 2009) among depressed individuals. Previous research has, to our knowledge, ignored the relation between depression and subsequent attributions of ostracism, even though cycles may ensue between

² One extreme outlier who reported 110 additional exclusion experiences in the evening questionnaire was not included in the analyses.

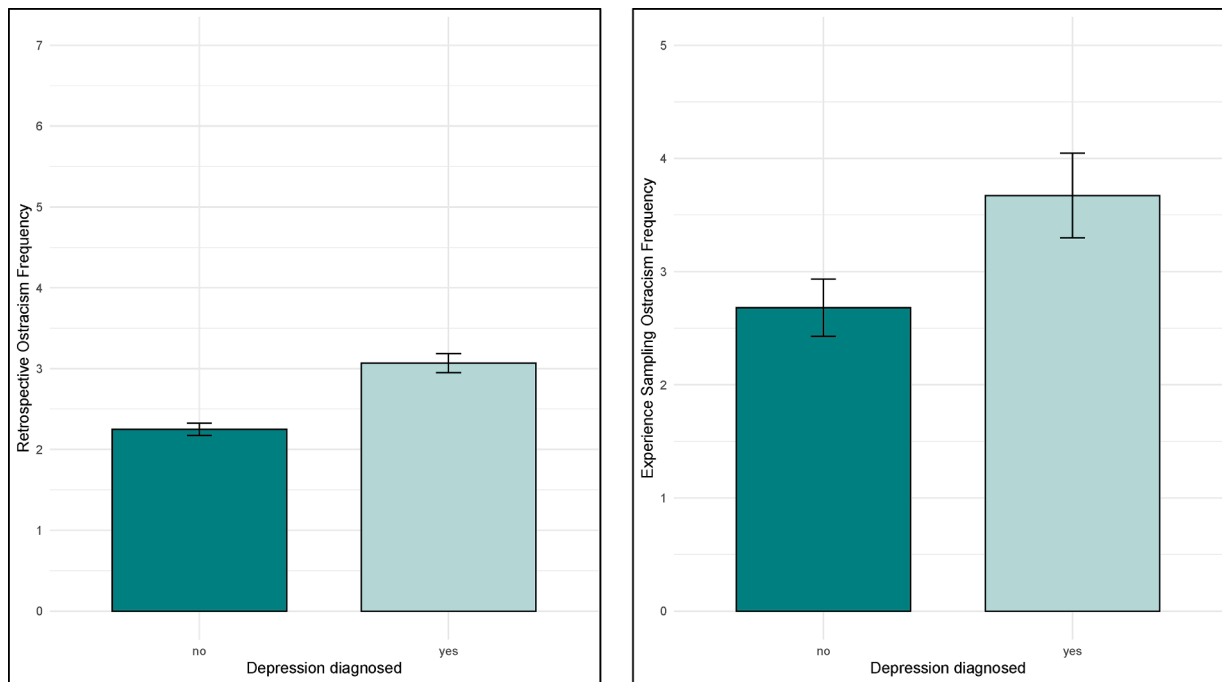


Fig. 1. Retrospective ostracism frequency (left graph) and experience sampling ostracism frequency (right graph) by diagnosed depression. Note. Vertical bars show standard errors of the mean.

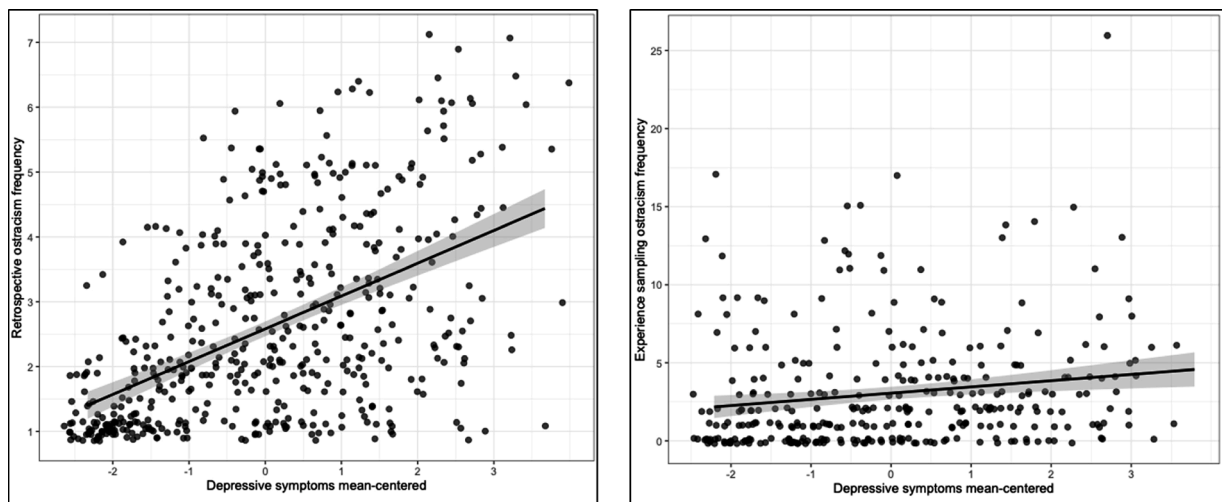


Fig. 2. Correlation of depressive symptoms (mean-centered) with retrospective ostracism frequency (left graph) and experience sampling ostracism frequency (right graph).

Note. Grey areas around regression lines represent standard errors.

experiencing ostracism, attributing it maladaptively, and responding with stronger depressive symptomology. Most research on the connections between depression and ostracism has been conducted using short experimental inductions of ostracism (e.g., Büttner et al., 2021), or retrospective assessments in panel surveys (e.g., Rudert et al., 2021). While these approaches may offer insights into the social cognitive intricacies of depressed individuals' reactions to lab-controlled ostracism (experiments), or overarching summaries of depressed individuals' ostracism experiences over months and years (panel surveys), the present research questions warranted experience sampling methodology to examine depressed individuals' social reality in everyday life. In summary, we find that depressed individuals report more frequent experiences of everyday ostracism, respond with higher need threat, and attribute ostracism more frequently to being a burden to others and to a

range of attributions implicating hostile intent of the ostracizer(s). We now turn to a detailed discussion of the results.

In line with previous panel data and experimental findings (e.g., Büttner et al., 2021; Rudert et al., 2021), depressed individuals report more ostracism, as well as higher threat to their needs of belonging, control, self-esteem, and meaningful existence after everyday experiences of ostracism. In disagreement with our hypotheses, depressed individuals do not show significantly more internal attributions of ostracism. Interestingly, however, among those who had been diagnosed with depression before, how long ago they received the diagnosis was significantly associated with more *external* attributions. This could cautiously be interpreted in a way such that those who had been diagnosed a long time ago have addressed and changed maladaptive cognitive tendencies to more healthy attributional styles, for instance, in

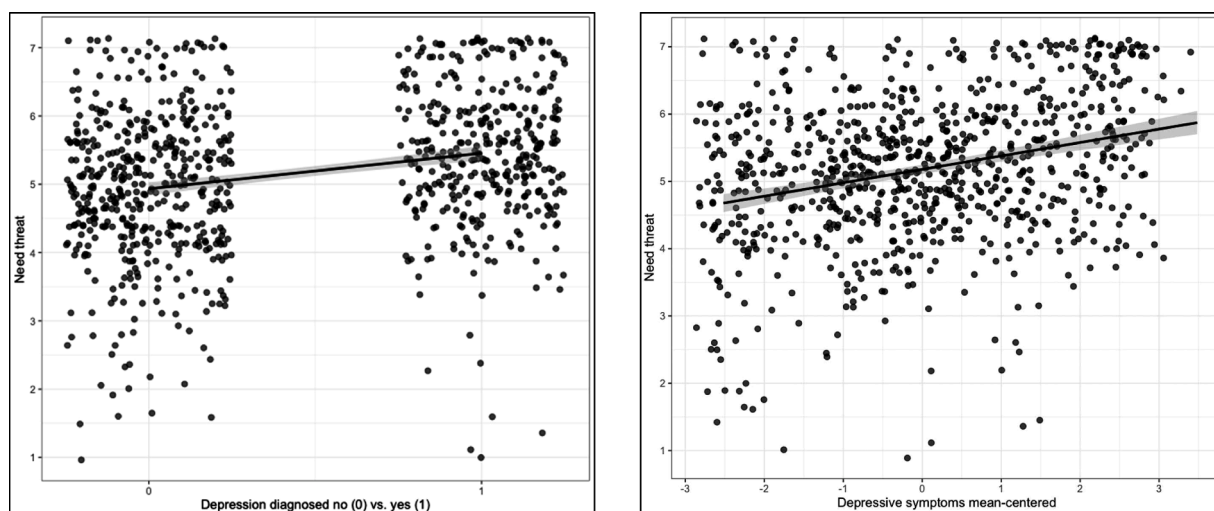


Fig. 3. Need threat after ostracism by diagnosed depression (no vs. yes; left graph) and by depressive symptoms (mean-centered, right graph). Note. Grey areas around regression lines represent standard errors.

therapeutic settings. Put differently, those with a more recent diagnosis of depression indeed show more internal, potentially maladaptive, attributions of ostracism.

Regarding specific attributions of ostracism, depressed individuals consistently attribute ostracism more frequently to being a burden to others. This aligns with literature on depressed individuals' self-perceptions as burdensome (e.g., De Catanzaro, 1995; Van Orden et al., 2010), but also others' perceptions of depressed individuals as burdensome (e.g., Baddeley et al., 2013; Potthoff et al., 1995). Importantly, the interpersonal theory of suicide (Van Orden et al., 2010) posits "the most dangerous form of suicidal desire is caused by the simultaneous presence of two interpersonal constructs—thwarted belongingness and perceived burdensomeness" (p. 576). Put differently, the co-occurrence of ostracism and the attributions of burdensomeness is a lethal combination for depressed individuals that strongly predicts suicidal ideation, attempts, and completed suicides (e.g., De Catanzaro, 1995; Joiner et al., 2002; Van Orden et al., 2008). Perceptions of burdensomeness also explain suicidal ideation in other disorders such as eating disorders (e.g., Forrest et al., 2016) and social anxiety disorder (e.g., Duffy et al., 2020). Individuals affected by these disorders may also be at a heightened risk for ostracism (e.g., Reinhard et al., 2020) and less well-equipped to recover from ostracism (e.g., Zadro et al., 2006). Therefore, attributing ostracism to burdensomeness may be dangerous to other patient populations as well and should be examined in future research.

Results regarding other specific attributions of ostracism show less consistency: Those diagnosed with depression in the past also attributed ostracism significantly more frequently to breaking a social rule, or as a punishment, but less frequently to them wanting to be alone. Individuals with stronger current depressive symptoms significantly attributed ostracism more frequently to meanness of the ostracizer(s), or to the ostracizer(s) not wanting to be with them. While the observed differences between those who were diagnosed with depression and those who were not are certainly interesting, in general, the observed associations with *current* depressive symptoms might be more informative in a study of daily experiences, especially because the time since the diagnosis of depression showed considerable variance in the present sample (i.e., $M = 110.13$ months, $SD = 107.25$, $Range = 1 - 504$). Therefore, focusing on the associations of depressive symptoms with specific attributions, the pattern may be interpreted in a way that depressed individuals show hostile attribution patterns that focus on the ostracizer(s)' motives for ostracizing them (i.e., meanness, not wanting to be with them). These findings align with previous observations of severe hostile attribution biases in depressed individuals (e.g., Quiggle

et al., 1992; Smith et al., 2016).

7.1. Strengths and implications for theory and practice

Experience sampling allowed us to delve deep into the everyday social reality of depressed individuals. Previous experimental and survey research (e.g., Büttner et al., 2021; Reinhard et al., 2020; Rudert et al., 2021) disregards the complexity and potential ambiguity of depressed individuals' daily experiences. Our approach allowed us to capture a wide variety of everyday ostracism experiences, likely in different contexts and by different ostracizers; lack thereof had been criticized in previous experimental investigations employing single ostracism paradigms where individuals were excluded for short periods by strangers within a relatively context-free scenario (cf. Büttner et al., 2021).

Our study leaves open whether depressed individuals are indeed ostracized more often, for instance, based on being perceived as burdensome (e.g., Rudert et al., 2023; Wesselmann et al., 2015), or whether their cognitive biases render them hypersensitive to ostracism (e.g., Downey and Feldman, 1996; Liu et al., 2014; Reinhard et al., 2020), or both. Irrespective of the true cause of more frequent ostracism reports of depressed individuals, we can conclude that they suffer more from everyday ostracism. Previous research has already noted the potential vicious cycles ensuing from the bi-directional relationship between ostracism and depression (e.g., Büttner et al., 2021; Reinhard et al., 2020; Rudert et al., 2021). Harmful attributions may further feed into this cycle: More hostile attributions may decrease depressed individuals' chances for re-inclusion and propel cycles of depression, negative attributions, and further negative interpersonal experiences. For instance, depressed individuals may misattribute others' intentions which may aggravate interpersonal conflicts they experience (e.g., Gadassi and Rafaeli, 2015), and undermine coping efforts to deal with ostracism (e.g., Goodwin et al., 2010). Moreover, burdensomeness is associated with self-blame (e.g., Van Orden et al., 2010); an attribution associated with withdrawal tendencies (e.g., Zimmer-Gembeck et al., 2016). When depressed individuals exhibit higher levels of self-blame because of attributions to burdensomeness, and then withdraw as a consequence, they may be excluded because others exclude those who withdraw (e.g., Ren and Evans, 2021); another perpetuating mechanism for the cycle between depression and ostracism. However, while the present results provide first empirical grounds to make assumptions about potential cyclic processes, the present approach does not allow for formal testing of cyclic associations. The approach is constrained by assessing depressive symptoms only once, and only before the sampling

of ostracism experiences. The approach is further constrained by examining specific attributions as an outcome variable only, and not, for instance, as a predictor of further ostracism or withdrawal reactions that may be amplified after specific attributions (e.g., self-blame, Zimmer-Gembeck et al., 2016). Longitudinal studies can build on the present findings by assessing depressive symptoms, ostracism, and its attribution, as well as reactions to ostracism at multiple time points. Moreover, longitudinal studies should also consider the role of persistent, trait-like attributional styles of depressed individuals (i.e., attributing negative experiences to internal and stable reasons, e.g., Seligman et al., 1979) and their potential bi-directional relationship with ostracism experiences over time.

Our results point out the necessity of defining healthy and adaptive versus unhealthy and maladaptive attributions of ostracism in the context of depression more clearly. Attribution theories (e.g., Seligman et al., 1979; Sweeney et al., 1986) posit that internal attributions of negative experiences are maladaptive. In conjunction with the assumption that ostracism is always a negative experience, this would mean that all internal attributions of ostracism are maladaptive. However, external but severely hostile attributions of ostracism may also be maladaptive because they may decrease chances of re-inclusion (e.g., Gadassi and Rafaeli, 2015), and harm individuals' social relationships in the long term. Thus, not locus of attribution per se defines what makes for an adaptive attribution of ostracism, but rather its impact on the depressed individual (e.g., burdensomeness may be a particularly dangerous internal attribution, e.g., Van Orden et al., 2008) and its long-term impact on social connections (e.g., attributions to intentional meanness of the sources may particularly hinder coping efforts and re-inclusion, e.g., Goodwin et al., 2010). Moreover, given that depressed individuals report being ostracized more often (e.g., Rudert et al., 2021; Wesselmann et al., 2015), correctly attributing individual ostracism experiences externally or internally may aid their social relationships over time. Without blaming depressed targets for their ostracism experiences, behavior change prompted by internal attributions of ostracism may be beneficial under certain circumstances. For instance, imagine that a depressed individual is not invited to an event because their friends have a hard time dealing with their negative self-expression (e.g., Baddeley et al., 2013; Potthoff et al., 1995; Rudert et al., 2021). If the depressed individual attributes correctly (i.e., internally), this may be an opportunity to change the behavior, ideally, facilitated in a therapeutic setting. However, suppose they attribute that their friends are just mean (i.e., external attribution). Then, the social situation does not improve and may aggravate symptomatology through further withdrawal (e.g., Zimmer-Gembeck et al., 2016). Thus, finding correct, unbiased attributions of ostracism should be an aim of research and clinical work with depressed patients.

Taken together, understanding how depressed individuals interpret ostracism is an important issue for clinical practice. Clinical practitioners, social workers, and relatives of depressed individuals should be mindful of depressed individuals' altered attributions of ostracism. Future research should test whether established interventions against cognitive biases in depression (e.g., Fodor et al., 2020) are also helpful in reducing maladaptive attributions of ostracism.

7.2. Limitations

The present contribution did not rely on a patient sample. Instead, we investigated depressive symptoms and previous diagnoses of depression in a crowd-sourcing sample. The obvious advantage is that we were able to represent more diverse lived experiences of individuals with depressive symptoms. However, future studies should aim to research the social realities of patients in treatment regarding ostracism and its attribution, including matching with healthy controls.

Another caveat to the interpretation of our results arises from the way we addressed previous diagnoses of depression. In general, individuals likely memorize correctly whether they have been diagnosed

with depression before (cf. Rudert et al., 2021), however, recall and self-presentational biases cannot be ruled out. In our sample, the self-reported prevalence of depression amounts to 39.18 %. This surmounts US prevalences reported in the literature (i.e., state-level range: 12.7 % - 27.5 %, Lee et al., 2023). Crowd-sourcing samples differ from other samples (e.g., regarding age, living circumstances, etc.), therefore, representative samples are needed. Similarly, future research should assess the effects of depression on attributions of ostracism across different life stages, as our sample was relatively young ($M = 36.71$ years). Younger individuals have been found to experience more ostracism than older individuals in general (e.g., Rudert, Janke, and Greifeneder, 2020), but also in reaction to specific life events such as losing employment (Albath et al., 2023). Moreover, future studies should assess whether hostile and burdensomeness attributions of ostracism may chronify over time and how this relates to interpersonal conflict, continuous ostracism, and psychological distress (e.g., Büttner et al., 2024) in different age groups. Thus, long-term longitudinal studies that examine the trajectory of depression and ostracism over time are needed.

8. Conclusion

Depressed individuals report more frequent experiences of everyday ostracism (being excluded and ignored, Williams, 2009), higher need threat afterwards, and they attribute ostracism more frequently to being burdensome and to others' hostile motives. Our results challenge the assumption that internal attributions of ostracism are always maladaptive by showing that external but severely hostile attributions of ostracism are frequent and may also potentially harm depressed individuals. Such attributions may uphold vicious cycles between depressive symptoms, perceiving and experiencing more frequent ostracism, attributing ostracism in maladaptive ways, and showing reactions that lead to further ostracism. We conclude that experiences of ostracism, as well as their attribution should be the content of interventions against cognitive biases in depression treatments.

CRedit authorship contribution statement

Christiane M. Büttner: Writing – review & editing, Writing – original draft, Visualization, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Rainer Greifeneder:** Writing – review & editing, Supervision, Investigation, Conceptualization.

Declaration of competing interest

The authors declare that there are no conflicts of interest.

Role of the funding source

This research was supported by grant #P000PS_207236/1 from the Swiss National Science Foundation awarded to Christiane M. Büttner.

Acknowledgements

We would like to thank Louis Tay and everyone at Expiwell (<https://www.expiwell.com>) for their help in using the experience sampling app. We would like to thank Anna-Marie Bertram, Leyre Macías, and Daniel Strebel for their assistance with study programming, study material development, data preparation, and/or literature search.

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