Understanding Gaslighting: A Data-Driven Analysis of Themes, Features, and Effects on Subjective Memory

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Abstract

Gaslighting is a form of psychological manipulation where victims are led to doubt their own thoughts, perception of reality, or memories. Despite the growing popularity of the term and purported harmful implications, empirical efforts to operationalize and define gaslighting remain sparse. This study aimed to define common features and themes of self-reported gaslighting experiences. Young adults (N=250) completed several questionnaires and open-ended prompts relating to gaslighting experiences. Using a variety of natural language processing techniques, we explore the gaslighting construct using a data-driven approach from the perspective of self-reported targets of gaslighting. These data confirm that gaslighting is a type of interpersonal manipulation aimed at making a person feel 'crazy' or doubt their memories. Romantic partners were reported to be the most common perpetrators of gaslighting, and both beneficial (e.g., awareness of manipulative people) and detrimental (e.g., self-doubt) consequences of experiencing gaslighting appear to be long-lasting. Additionally, we found that more severe, frequent, and long-lasting gaslighting experiences are associated with broader subjective memory deficits, even extending to other memories outside of the gaslighting event itself. This study highlights pervasive cognitive and psychological impacts of gaslighting, and underscores the need for further empirical research and informed clinical strategies.

Introduction

Gaslighting is a particular form of psychological manipulation of recent intense interest in popular culture. The etymology of 'gaslighting' as a psychological construct has been widely linked to the 1944 Academy Award-winning film, "Gaslight." Gaslight is a suspense thriller set around the actions of a manipulative husband who uses a variety of tactics (including dimming the gaslights and denying that they are flickering) to erode his wife's sense of reality and mental stability. Gaslighting has since been adopted and integrated more widely into public discourse, with a 1740% increase in lookups in 2022, earning the honor of being named Merriam-Webster's 2022 word of the year (Merriam-Webster, n.d.-b). Although dictionary definitions of gaslighting do currently exist, psychology has yet to converge on a formal scientific or operational definition for this construct. Although many of us have intuitive notions of what gaslighting is, a deeper understanding of the phenomenon informed by empirical data remains limited.

Most academic papers on gaslighting are theoretical rather than empirical, focusing primarily on its historical roots and cultural implications (Sweet, 2019; Thomas, 2018). One common perspective is that gaslighting is used to harm and further disenfranchise marginalized communities, particularly in the context of perpetuating racism and misogyny (Graves & Spencer, 2022; Johnson et al., 2021; Stark, 2019; Sweet, 2019). Other work has discussed how the use of diagnostic pathological labels (e.g., borderline personality disorder) can contribute to gaslighting, as these labels may shift the focus away from the client's external circumstances and onto problems that lie within the client, potentially causing clients to doubt their own experiences and perceptions (Tormoen, 2019). A common throughline in these discussions is the exploration of power dynamics, highlighting that gaslighting can serve as a tool for exerting control and subjugation in various interpersonal and institutional relationships. These discussions are crucial, laying the foundation for important empirical work in a range of contexts.

While there has been some empirical work on gaslighting, most studies focus on very specific contexts, such as gaslighting in medical settings (Au et al., 2022; Fielding-Singh & Dmowska, 2022), workplace environments (Kukreja & Pandey, 2023), and romantic relationships (Graves & Samp, 2021; Hailes & Goodman, 2023; Klein et al., 2023; March et al., 2023; Miano et al., 2021). To our knowledge, no studies have examined experiences with gaslighting across multiple domains. A domain-independent approach would allow for the identification of common patterns in gaslighting behavior, regardless of context, thereby providing a more comprehensive and generalizable understanding of this phenomenon. Additionally, many studies have examined only very specific constructs, such as personality traits of the victim and perpetrator (Hightower, 2017; March et al., 2023; Miano et al., 2021), or whether gaslighting is associated with feelings of power imbalance between partners (Graves & Samp, 2021). Some qualitative studies have explored the consequences of gaslighting in romantic partnerships, finding that gaslighting

in intimate relationships severely undermines self-trust and well-being, with recovery often involving the rebuilding of self-trust (Hailes & Goodman, 2023; Klein et al., 2023). These studies lay important groundwork in isolating some of the motivations, mechanisms, and outcomes of gaslighting. However, they are largely limited in conceptual scope, and – in the case of the qualitative studies – rely on small samples.

Another limitation of the existing literature is that a consensus definition of gaslighting is not yet available. While many, including the Merriam-Webster definition, have posited that gaslighting is a form of psychological manipulation, the operational details of what constitutes gaslighting remains unclear. Some definitions assert that it is a type of abuse, while others define the experience based on the perpetrator's goals or intent (e.g., attempting to destabilize another's sense of reality), and still others focus primarily on the consequences for the target (e.g., questioning the veracity of their perspectives or feelings). Yet, these definitions are rarely based on empirical data and tend to be framed through narrow lenses, as opposed to finding commonalities shared by a wide range of gaslighting experiences. More specifically, we are not aware of any study that has used a data-driven approach to define gaslighting and report common features and themes related to the experience of being gaslit from a first-person perspective of the targets. This is surprising given the widespread use of the term in popular discourse. Without a well-defined, empirically grounded understanding of what gaslighting entails from the perspective of those directly affected, it is difficult to systematically study its psychological impact or develop targeted interventions.

Finally, while existing definitions of gaslighting may differ, a common theme involves causing doubt in one's perceptions, often specifically mentioning doubting one's memories. Despite this common assumption, the impact of gaslighting on memory has yet to be empirically tested. Assessing the impact of gaslighting on memory is particularly important in light of extensive evidence that other forms of interpersonal victimization, such as abuse, result in profound memory deficits (Masson et al., 2016; R.-Mercier et al., 2018; Su et al., 2019) and biases (Ayoub et al., 2006; Vrijsen et al., 2017). Given that general interpersonal victimization can impact memory, it is plausible that very intense gaslighting experiences (i.e., those that approach being traumatic or abusive) may have especially pronounced effects on memory. Memory deficits can be debilitating and distressing, so understanding the potential for this type of victimization to undermine the victim's memory is crucial, with significant implications for clinical practice. However, to-date there remains a lack of studies that directly examine gaslighting's specific effects on memory.

In the current study, we used a data-driven method to identify common features and themes of self-reported gaslighting experiences. We targeted young adults due to their heightened sensitivity to social stimuli (Foulkes & Blakemore, 2016; Nelson et al., 2016; Somerville, 2013) and shifting social contexts that may expose them to more complex

social dynamics with new forms of victimization (Duval et al., 2018; Lund & Ross, 2016; Muehlenhard et al., 2017). Using a variety of natural language processing techniques, we explore the gaslighting construct using a data-driven approach from the perspective of self-reported targets of gaslighting. We examined four main questions: (1) What are some basic features of self-reported gaslighting experiences? (2) What definition and sorts of experiences are most central to self-reported gaslighting? (3) What terms and themes are frequently used to discuss self-reported gaslighting? and (4) Are more intense (i.e., severe, frequent, or long-lasting) gaslighting experiences associated with perceived deficits in subjective memory?

Methods

Participants and Procedure
Participants were young adults (N = 251; 82% female, 16% male, 2% prefer not to respond; 18-28 years old; M=19.83±1.88 years) recruited from Temple University via SONA, an online recruitment website used by universities to enroll students into research studies. Participants were eligible to participate if they were between the ages of 18–30 and fluent in English. Once participants enrolled, they were provided a survey link, which included the consent form followed by a battery of self-report measures, including those described below. Participants received research credits upon completion of the survey. Study procedures were approved by the Institutional Review Board at Temple University. Data collection spanned from January 18th, 2022 to June 15th, 2022. One participant was excluded for entering incoherent data (i.e., random letters), leaving 250 participant responses eligible for data analysis. Data and study materials are available at OSF (https://osf.io/ems7u/).

Measures
In addition to basic demographic information and other questionnaires unrelated to the scope of this paper, participants completed several questionnaires and prompts relating to gaslighting. The first page had an open-ended prompt with the instructions: "Using your own words, please define gaslighting. Please include as much detail as you need." After this prompt, there was a closed-ended question with the instructions: "Based on the definition that you just provided, have you ever been the target of gaslighting?" Possible options were either "Yes" or "No." Individuals who indicated "No" saw no further items about gaslighting. Those who answered "Yes" were directed to a further battery of open- and closed-ended questions, shown in Supplemental Table S1. These items were generated from a group discussion between the authors and other contributors.

Analyses
All analyses were conducted using R and RStudio (Posit team, 2023; R Core Team, 2023). Analyses are described as they pertain to each of the four respective study questions below:

1. What are some basic features of self-reported gaslighting experiences?
For each closed-ended question, distributions of responses were plotted using ggplot (Wickham, 2016). To visualize item-responses, all distributions were plotted by percentage of participants endorsing each option.

2. What definition and sorts of experiences are most central to self-reported gaslighting?
In order to summarize average responses to each of our open-ended prompts, we used lexRank from the lexRankr package (Spannbauer & White, 2019). This form of summarization is designed to find the most representative textual unit within a collection of texts. This algorithm works by representing each textual unit (in this case, each response) as a node, using each nodes' lexical similarity to establish connections, and then calculating the centrality of each sentence to determine its importance (Erkan & Radev, 2004).

To implement this approach, the data from all open-ended prompts were first spellchecked using the hunspell function (Ooms, 2023) coupled with manual checking (e.g., looking at words used very infrequently, pulling words that often have hyphenation, etc.) to create a list of typos to correct. Next, all typo strings were replaced with manually designated corrections. This log of typos and their designated corrections is available on OSF (https://osf.io/ems7u/). Once each response was spellchecked, we ran the lexRank algorithm on all responses for each open-ended prompt, which returned the most central and representative response for each item.

3. What terms and themes are frequently used to discuss self-reported gaslighting?
For a more thorough look at common terms and themes that young adults use to describe gaslighting, we generated a web of words that were often used in succession across all open-ended prompts. This used the spellchecked responses from the prior analysis, which were then tokenized into bigrams (i.e., individual two-word phrases) using unnest_tokens from the tidytext package (Silge & Robinson, 2016). To condense slightly different usages of the same word, we used lemmatize_strings from the textstem package (Rinker, 2018) to change all tokens into their base lemmas (e.g., "manipulating" changed to "manipulate"). Usage of each lemmatized bigram was counted, and then fed into ggraph (Pedersen, 2022) to create webs of words frequently used in succession. In order to present only the most relevant terms, we removed bigrams consisting of stop words (e.g., "of," "the," etc.) and only plotted bigrams used more than once or twice.

4. Are more intense gaslighting experiences associated with perceived deficits in subjective memory?
Given that gaslighting is often assumed to sow seeds of doubt in one's perceptions and memories, we set out to investigate whether participants who endorse feeling gaslit report subjective memory problems, or a lack of confidence in one's own recollections. However, very mild experiences of gaslighting may not be sufficient to impact memory. Thus, we tested whether intensity of the gaslighting experience was associated with more subjective memory deficits. To accomplish this, we generated a gaslighting "intensity" composite

score, comprised of averaging self-reported frequency, duration, and severity of the gaslighting experience, and a "subjective memory" composite score, comprised of averaging across our eight subjective memory items (see Supplemental Table S1). We ran a simple linear regression to assess the relationship between intensity of gaslighting experience and subjective memory. Supplemental analyses included Pearson correlations between self-reported severity, duration, and frequency of participants' gaslighting experiences with each subjective memory item individually.
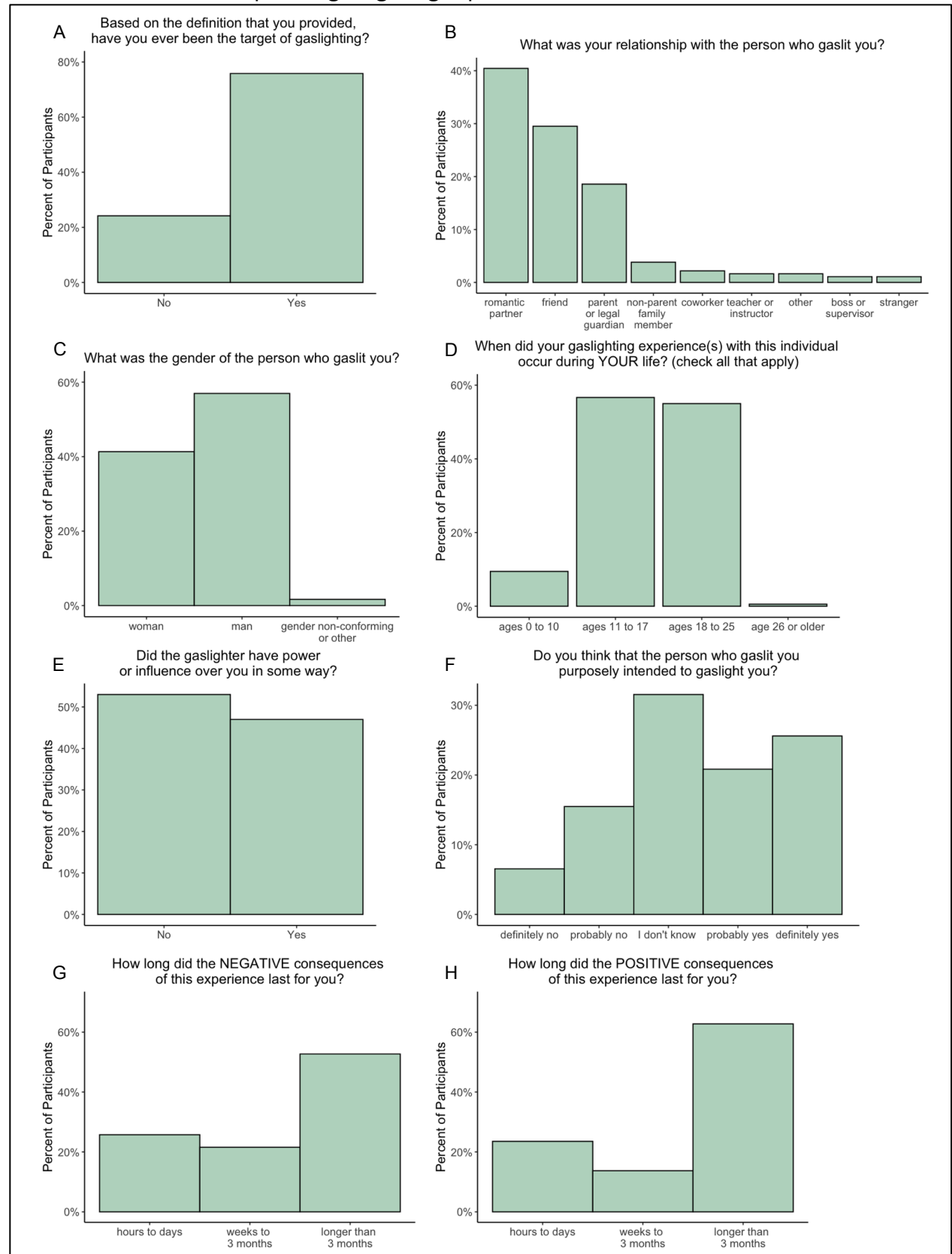
Results

1. What are some basic features of self-reported gaslighting experiences?
All response distributions are shown in Figure 1. A majority (~80%) of our sample felt they had been gaslit (Figure 1A), with romantic partners being the most commonly reported perpetrators (Figure 1B). Men were the reported perpetrators about 60% of the time, with women being the perpetrators the remaining ~40% (Figure 1C). The vast majority of these experiences occurred between ages 11-17 and 18-25 (Figure 1D). The sample was nearly evenly split on whether they believed their gaslighter had power over them (Figure 1E). Most respondents reported that they did not know whether their gaslighter purposefully intended to gaslight them, although the second most common answer was that the gaslighting was definitely intentional (Figure 1F). Finally, both positive and negative consequences of gaslighting experiences seem to be long lasting (>3 months; Figure 1G and 1H).

Figure 1.

Basic features of self-reported gaslighting experiences.

A — Based on the definition that you provided, have you ever been the target of gaslighting?

B — What was your relationship with the person who gaslit you?

C — What was the gender of the person who gaslit you?

D — When did your gaslighting experience(s) with this individual occur during YOUR life? (check all that apply)

E — Did the gaslighter have power or influence over you in some way?

F — Do you think that the person who gaslit you purposely intended to gaslight you?

G — How long did the NEGATIVE consequences of this experience last for you?

H — How long did the POSITIVE consequences of this experience last for you?

2. What definition and sorts of experiences are most central to self-reported gaslighting?

On average, each prompt received about 156 responses, with an average response length of 20 words. Using the LexRank algorithm, the most central response for each open-ended prompt appears in Table 1.

Table 1.
Most central responses to each open-ended prompt.

Open-Ended Question	Central Response
define gaslighting	*"Gaslighting is a type of manipulation in which a person attempts to make someone feel 'crazy,' or feel as though their memory or recollection is wrong."*
describe power/influence of gaslighter	*"My father, as an authoritative figure, I feel had power over me."*
describe your emotional response to the experience	*"I felt upset and as though I couldn't talk about my feelings."*
describe the events that occurred	*"My friend used to consistently judge me and made me feel like I was the problem in our friendship so I often found myself apologizing for things I didn't do or wasn't at fault for."*
difference between gaslighting and lying?	*"just being lied to is to get out of something whereas gaslighting is a form of manipulation people use to make you feel like you are the problem by straight up using you."*
describe negative consequences of experience	*"he really hurt my trust and made me feel so stupid that any interaction with other people i have to think if i sound crazy or if i'm believing things that aren't true."*
describe positive consequences of experience	*"It forced me to realize and learn that there are people like that out there in the world and it is nothing personally wrong with me."*
what was your gaslighter's purpose?	*"The gaslighter's goal was to make me feel bad about myself and to justify her actions when she knew she was in the wrong."*

3. What terms and themes are frequently used to discuss self-reported gaslighting?

Commonly used bigrams and multi-word phrases across all open-ended questions are shown in Figure 2. Participants often used phrases like "convince or make someone feel or sound crazy/bad/guilty," and "creating false narratives or reality." Other common phrases include "lost trust" and "trust issues," "second guessing," and "self esteem/self worth." Participants also talked about "power dynamics," "gaining control," and "romantic relationships or partners." Finally, "mental health" and "mental illness" were discussed, as well as "self harm" and "eating disorder."

Figure 2.
Common bigrams and multi-word phrases used to discuss gaslighting. Arrows signify consecutive direction of word use.
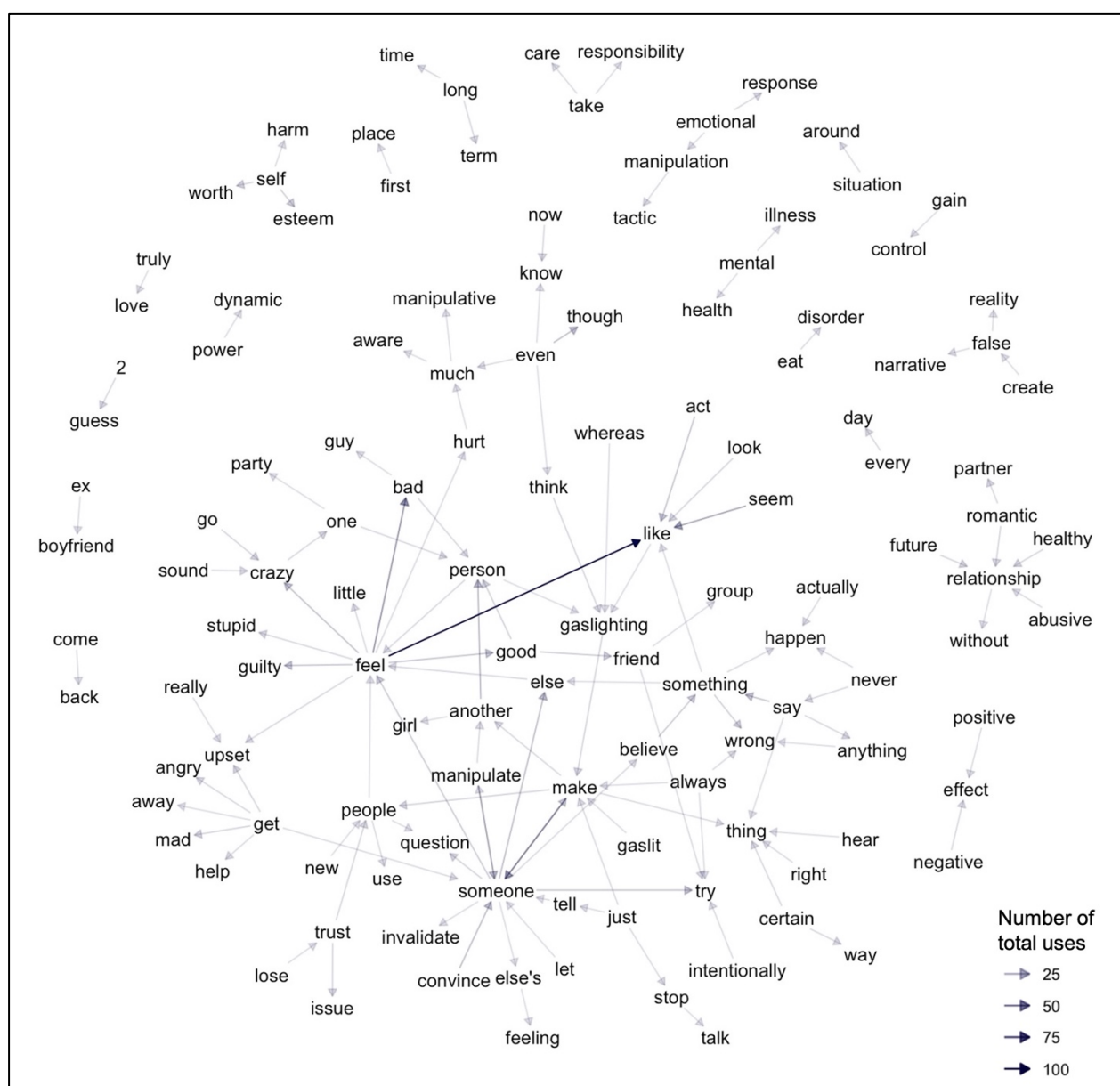
4. Are more intense gaslighting experiences associated with perceived deficits in subjective memory?

Intensity of one's gaslighting experience was indeed associated with more issues with subjective memory (β = 0.63, SE = 0.06, $t(175)$ = 10.67, $p < .001$; Figure 3). Individual scores of frequency, duration, and severity were associated with increased endorsement of all subjective memory items (Supplemental Table S2; all p's <.01). This suggests that frequent, long-lasting, and severe gaslighting experiences are associated with feelings of doubt, memory decline, and trusting others' perceptions above one's own. Crucially, these feelings were not limited to memories of the gaslighting event itself, but towards all memories, globally (see items 4 through 8 in Supplemental Table S2). Interestingly, individuals with more frequent, long-lasting, and severe gaslighting experiences also report that the general experience of recalling memories is unpleasant overall.

Figure 3.
More intense gaslighting experiences are associated with greater subjective memory deficits.
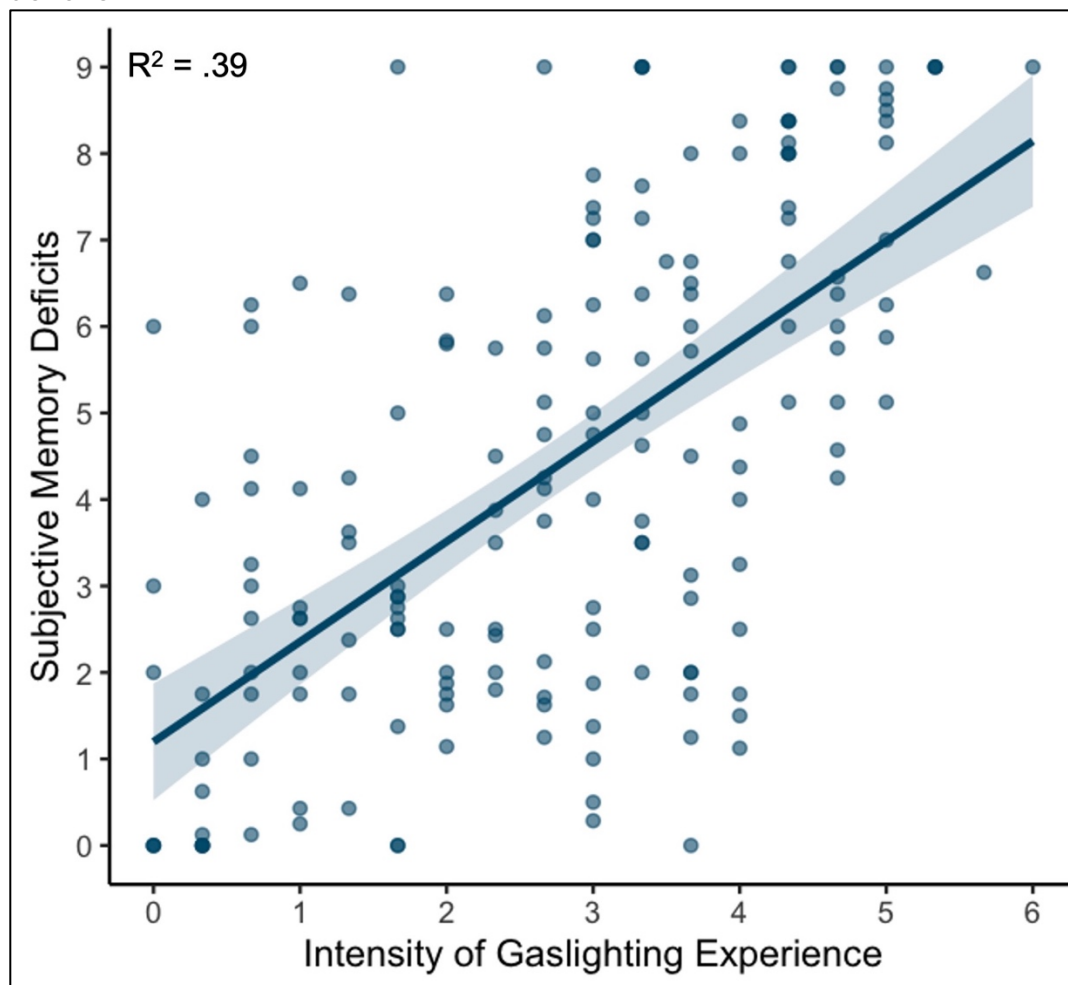
point to resilience effects that can be harnessed during recovery from gaslighting experiences. Our centrality analysis indicates that these positive effects may include recognizing manipulative individuals, which could help in avoiding being gaslit in the future, and not taking interactions with others personally. Future research should focus on identifying attitudes, approaches, and interventions that might foster greater resilience to gaslighting experiences.

Our focus on memory adds a crucial dimension to the scientific understanding of gaslighting. While it's been suggested that gaslighting leads victims to doubt their perceptions and memories (Merriam-Webster, n.d.-a), our study provides initial empirical support for these claims. We found that more frequent, long-lasting, and severe gaslighting experiences were associated with worse subjective memory outcomes. Interestingly, these effects are not constrained to how participants feel about their memory of the event that they've been gaslit about. Instead, more intense gaslighting experiences seem to be associated with doubting memories more broadly, and even in relationships distinct from those with the perpetrator. While this suggests that intense gaslighting experiences may have broader negative effects on one's trust in their own memories, other interpretations are possible. One alternative explanation is that individuals who are less trusting in their own recollections overall might be more prone to being gaslit, or more prone to negative memory consequences following a gaslighting experience. Further, the self-report nature of the current study only allows exploration of subjective (as opposed to objective) memory deficits. Future studies should explore this relationship more systematically to further characterize the impact of gaslighting experiences on objective and subjective measures of memory.

Despite this study's novelty and strengths, there are also important limitations. First, we studied only young adults, which may not fully capture generational differences in beliefs about and experiences with gaslighting. Additionally, our sample is primarily comprised of female psychology students, which may not represent broader populations as a whole. Future research should aim to include a more diverse sample to increase the generalizability of the findings. Additionally, our study relied on self-report data, which may be subject to biases in memory recall or social desirability. In particular, because this type of manipulation uniquely targets self-doubt, individuals who are most severely affected by gaslighting may be unaware that they have experienced gaslighting, and thus unable to self-identify. Future studies should work to target this population, perhaps through third-party reports or working with clinicians who have successfully helped patients uncover the impact of gaslighting experiences that they may have been manipulated into believing were innocuous.

Conclusion

In the current study, we aimed to explore common features and themes of self-reported gaslighting experiences. The majority of our sample reported being gaslit, with romantic partners being the most common perpetrators, and often experiencing gaslighting during

adolescence. Both positive (e.g., awareness of manipulative people) and negative (e.g., self-doubt) consequences of gaslighting appear to be long-lasting. We defined gaslighting as "a type of manipulation in which a person attempts to make someone feel 'crazy,' or feel as though their memory or recollection is wrong." Additionally, more severe, frequent, and long-lasting gaslighting experiences are associated with self-reported memory deficits, often expanding to memories totally unrelated to the gaslighting experience itself. This study highlights the pervasive nature of gaslighting in a range of contexts, and its significant cognitive and psychological impact. We hope these insights will guide future studies, enhance public understanding, and inform clinical practices to mitigate the negative mental health outcomes associated with gaslighting.

Author Contributions

- Contributed to conception and study design: all authors
- Contributed to acquisition of data: CRJ and JMJ
- Analysis and interpretation of data: CRJ
- Drafted the manuscript: CRJ and JMJ
- Provided critical feedback: BT, HST, JR, TMO
- Approved submitted manuscript for publication: all authors

Conflicts of Interest Statement

The authors have no competing interests to declare.

Data Accessibility Statement

Deidentified data, analyses scripts, and study materials can be found on OSF (https://osf.io/ems7u/). Due to privacy concerns related to the sensitive and qualitative nature of the data, full participant responses to open-ended prompts are only available upon reasonable request.

Supplemental Table S1.

Open- and close-ended questions used in the current study.

Question	Response Options
Using your own words, please define gaslighting. Please include as much detail as you need.	(open-ended)
Based on the definition that you just provided, have you ever been the target of gaslighting?	• Yes • No
(If answered "Yes" to the previous question) For the purposes of answering the following questions, we want you to think of an experience you've had in which you felt most gaslit. If you have multiple experiences to choose from, please select the one that impacted you the most.	
What was your relationship with the person who gaslit you?	• parent or legal guardian • non-parent family member • boss or supervisor • friend • romantic partner • coworker • teacher or instructor • stranger • other (please describe)
What was the gender of the person who gaslit you?	• woman • man • gender non-conforming/other
Did the gaslighter have power or influence over you in some way?	• No • Yes (please describe)
How frequently did this individual gaslight you? (Pick the closest answer)	0. just once 1. rarely 2. sometimes 3. occasionally 4. frequently 5. daily 6. multiple times a day
How long did your gaslighting experience(s) with this individual last? (Pick the closest answer)	0. one week or less 1. 1 week to 1 month 2. 1 to 6 months 3. 6 months to one year 4. 1 to 2 years 5. 2 to 5 years 6. across more than 5 years

How severely did the gaslighting experience(s) with this individual impact you? (Pick the closest answer)	0. slight 1. mild 2. moderate 3. somewhat serious 4. serious 5. severe 6. very severe or traumatic
When did your gaslighting experience(s) with this individual occur during YOUR life? (check all that apply)	▪ ages 0 to 10 ▪ ages 11 to 17 ▪ ages 18 to 25 ▪ age 26 or older
Please describe your gaslighting experience in as much detail as possible. Please write in full sentences.	
Please describe the events that occurred.	(open-ended)
Please describe your emotional response to those events.	(open-ended)
Please describe the negative effects or consequences of this experience for you.	(open-ended)
How long did these negative consequences last?	0. hours to days 1. weeks to 3 months 2. longer than 3 months
Please describe the positive effects or consequences of this experience for you.	(open-ended)
How long did these positive consequences last?	0. hours to days 1. weeks to 3 months 2. longer than 3 months
Do you think that the person who gaslit you purposely intended to gaslight you?	0. definitely no 1. probably no 2. I don't know 3. probably yes 4. definitely yes
What do you think the gaslighter's goal or purpose for gaslighting you was?	(open-ended)
What do you think makes the experience of being gaslit different from the experience of just being lied to?	(open-ended)
Respond to the statements below while thinking about yourself when you were in the relationship with the person who gaslit you, or if you currently feel this way as a result of the gaslighting experience. On a scale of 0 (never) to 9 (daily), where do you rank yourself on the following experiences or feelings about yourself?	
You doubted whether your memories about the event you were gaslit about were accurate.	0(never) to 9(almost daily)

You noticed that your memory was actually worse when trying to remember the event you were gaslit about.	0(never) to 9(almost daily)
You trusted other people's recollections of the event you were gaslit about more than your own.	0(never) to 9(almost daily)
You doubted whether your memories were accurate in general.	0(never) to 9(almost daily)
You noticed that your memory is actually worse in general.	0(never) to 9(almost daily)
In general, you trusted other people's memories more than your own.	0(never) to 9(almost daily)
You relied on other people's perceptions to know what was "real."	0(never) to 9(almost daily)
In general, you found the experience of recalling memories negative, unpleasant, or distressing.	0(never) to 9(almost daily)

Supplemental Table S2.

Correlations between different measures of gaslighting intensity and each subjective memory item.

Variable	Mean	SD	Gaslighting Frequency	Gaslighting Duration	Gaslighting Severity
1. You doubted whether your memories about the event you were gaslit about were accurate.	5.12	3.12	.52** [.39, .62]	.44** [.31, .55]	.59** [.49, .68]
2. You noticed that your memory was actually worse when trying to remember the event you were gaslit about.	4.85	3.13	.49** [.36, .60]	.53** [.40, .63]	.61** [.51, .70]
3. You trusted other people's recollections of the event you were gaslit about more than your own.	3.98	3.18	.44** [.31, .56]	.37** [.23, .50]	.56** [.44, .66]
4. You doubted whether your memories were accurate in general.	4.46	3.14	.38** [.25, .51]	.44** [.31, .55]	.49** [.36, .59]
5. You noticed that your memory is actually worse in general.	4.28	3.24	.40** [.26, .52]	.40** [.27, .53]	.50** [.37, .61]
6. In general, you trusted other people's memories more than your own.	3.85	3.14	.41** [.27, .53]	.33** [.19, .46]	.49** [.36, .60]
7. You relied on other people's perceptions to know what was "real."	3.78	3.18	.40** [.26, .52]	.33** [.19, .47]	.53** [.41, .63]
8. In general, you found the experience of recalling memories negative, unpleasant, or distressing.	5.19	3.17	.50** [.37, .60]	.45** [.32, .56]	.67** [.57, .74]

Note: Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

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