Shared reality in romantic relationships promotes meaning in life by reducing uncertainty

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Abstract

I propose that, although deeply personal, meaning is facilitated by interpersonal processes. Namely, we theorize that experiencing a sense of shared reality with a close partner (i.e., perceiving an overlap in inner states about the world in general) reduces uncertainty about one's environment, which in turn promotes meaning in work and life. In the current research, we explore this hypothesis across 5 mixed-method studies (e.g., longitudinal, experimental). We find evidence for this association in a year-long longitudinal study (Study 1: N = 103 romantic dyads), and in ecologically rich samples of people experiencing highly uncertain situations, specifically Black people consistently facing racism in the United States (Study 2: N = 182) participants), and frontline healthcare workers directly treating COVID-19 patients during the pandemic (Study 3: N = 139 participants). Further, we provide causal evidence for this association in two experimental studies (Studies 4 & 5: $N_4 = 206$ participants, $N_5 = 125$ romantic dyads). Taken together, this work suggests that shared reality with close partners has real-world benefits for uncertainty reduction and meaning. In addition, we show that experimentally heightening shared reality, by reducing uncertainty, can promote a greater sense of meaning in life.

Résumé

Nous proposons que, bien que profondément personnel, le sens dans la vie est facilité par des processus interpersonnels. Notamment, nous théorisons que l'expérience d'un sentiment de réalité partagée avec un partenaire proche—c'est-à-dire, la perception d'un chevauchement d'états intérieurs concernant le monde extérieur en général-réduit l'incertitude quant à l'environnement d'une personne, ce qui à son tour donne du sens au travail et à la vie. Dans la recherche actuelle, nous explorons cette hypothèse à travers 5 études à méthodes mixtes (par exemple, longitudinales, expérimentales). Nous trouvons des preuves de cette association dans une étude longitudinale d'un an (Étude 1: N = 103 dyades romantiques) et dans des échantillons écologiquement riches de personnes vivant des situations très incertaines, en particulier les personnes Noires constamment confrontées au racisme aux États-Unis (Étude 2: N = 182participants) et les travailleurs de la santé de première ligne traitant directement les patients atteints de COVID-19 pendant la pandémie (Étude 3: N = 139 participants). De plus, nous fournissons des preuves causales de cette association dans deux études expérimentales (Études 4 et 5 : $N_4 = 206$ participants, $N_5 = 125$ dyades romantiques). Pris ensemble, ces travaux suggèrent que la réalité partagée avec des partenaires proches présente des avantages concrets pour réduire l'incertitude et pour promouvoir le sens dans la vie. De plus, nous montrons que l'augmentation expérimentale de la réalité partagée, en réduisant l'incertitude, peut favoriser un plus grand sens dans la vie.

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I would like to thank my advisor, Dr. John Lydon, for his guidance throughout my PhD. I can still recall our initial meetings before I started where we chatted endlessly about shared experiences, shared reality, transitions, and many other topics, and finally landed on an entire research program that we wanted to pursue together. Of course, as research goes, the present thesis looks almost nothing like what we had discussed, but I am grateful to him for his guidance and flexibility in allowing me to pursue the questions that interested me. It is rare to come across a mentor who so clearly understands that the PhD is part of the student's career path more than the advisor's, and John really let me take control of where I wanted to go and to form the type of researcher I wanted to be, while always putting my well-being above all else. I am also grateful for his creativity in the chats we had to fine-tune different experimental designs. I will miss those chats the most, going back and forth on pros and cons, new ideas, etc. It is inspiring to be mentored by someone who after so many years in the field still exudes a giddy excitement when discussing novel research ideas and designs. I hope that through the years that John has taught me, I have absorbed some of his passion and this, above all, is what I hope to take with me as I move onto what comes next.

I am also infinitely grateful to Dr. Maya Rossignac-Milon, who has taken me under her wing, mentoring me in all things shared reality and helping me carve out my path beyond the PhD. Without your guidance and faith in me as a researcher, I would not be where I am now. I am so happy to have crossed paths and to have the opportunity to learn from you, as both a researcher and a friend. Your knowledge, perseverance, and capacity to think of others inspire me, and I hope to one day be even half as great of a mentor as you have been to me in this short time that we have worked together. I cannot wait for all of the adventures that Barcelona has in store for us. I look forward to diving into new research ideas together and, of course, to many more pistachio gelatos walking down the Arc de Triomf.

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Contribution of Original Knowledge

Despite the strong desire to experience a sense of purpose in our lives, it can be difficult to make sense of things in our environment and establish meaning in the modern world. If we consider just the last two decades, we have experienced a once-in-a-lifetime pandemic, a global recession (both COVID-related and following the 2008 financial crisis), a wide range of natural disasters from hurricanes to wildfires, and increased polarization across social, cultural, and racial groups. Even as part of our daily lives, we face roadblocks to meaning, as we struggle to make sense of the office dynamics at a new job or adapt to ever-evolving social norms. However, I argue that it is through our interpersonal relationships that we can make sense of our environment and find a sense of purpose and coherence within it.

Across five mixed-method studies (e.g., dyadic, longitudinal, experimental) conducted across various social contexts (e.g., Black people experiencing racism in the aftermath of Black Lives Matter protests and frontline healthcare workers during the height of the COVID-19 pandemic), I identify shared reality with one's romantic partner—the experience of sharing common feelings, thoughts, and concerns about the world—as a novel interpersonal source of meaning in life. Although prior work has identified various intrapersonal (e.g., goals) and interpersonal (e.g., belonging) methods to achieving a sense of meaning, research has yet to explore the interpersonal construct of shared reality. I argue that this construct is especially relevant, as the epistemic function of shared reality, that is, the ability for shared reality to help people feel that their experience of the world is true and real, helps people make meaning out of their everyday experiences. In this thesis, I provide longitudinal and causal evidence that shared reality with one's romantic partner promotes meaning in life and in work by reducing uncertainty about one's environment. This has been suggested by previous research on transference

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(Przybylinski & Andersen, 2015), autobiographical memory (McLean & Pasupathi, 2011), goal theory (Cornwell et al., 2007), and shared reality (Rossignac-Milon et al., 2021) but never explicitly tested.

By highlighting the epistemic processes through which relationships promote meaning, our work departs from traditional interpersonal approaches to examining meaning in life, which focus on relational mechanisms (e.g., belonging: Lambert et al., 2013). Specifically, I find that shared reality, by reducing uncertainty, uniquely increases meaning in life and in work above and beyond relationship satisfaction and belonging. These findings contribute to both relationship science and well-being science by identifying a particular mechanism through which close relationships increase meaning in life.

This thesis also contributes to the organizational behaviour literature. Previous work shows how coworker relationships influence people's experience of meaning in work, but no prior research has examined whether shared reality between romantic partners can be strong enough to spillover into one's experience of work. Our findings shows that shared reality with one's romantic partner has implications for how much meaning people derive from their work and should be further studied as a contributor of work meaningfulness.

Lastly, this thesis contributes to the shared reality literature by demonstrating the potent epistemic benefits of shared reality in helping people make sense of real-world concerns, like their experiences of racism and their work on the frontlines of the pandemic.

Contribution of Authors

The present research consists of five studies. I had the leading role in the conceptualization of the research questions studied across all five studies. I also had a leading role in developing, designing and implementing the study (except for Study 1). I was also responsible for collecting the data (except for Study 1), conducting the statistical analyses, and writing the initial draft. My supervisor, John E. Lydon, provided his support and feedback at every stage of the research process across all given studies.

The second chapter of the thesis reports findings from one study that was conducted by Dr. Amanda Forest and Dr. Maya Rossignac-Milon. The data was shared with me after data collection had been completed. I came up with the research question, analyzed the data, and wrote up the study as part of this thesis.

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Chapter 1

General Introduction and Literature Review

"Construct systems can be considered a kind of scanning pattern which a person continually projects upon his world. As he sweeps back and forth across his perceptual field, he picks up blips of meaning. The more adequate his scanning pattern, the more meaningful his world becomes. The more in tune it is with the scanning patterns used by others, the more blips of meaning he can pick up from their projections."

— George Kelly (1955, p. 145)

People have a need for meaning to establish a sense of purpose and coherence in their lives (Baumeister, 1991; Cornwell et al., 2017; Heine et al., 2006; Johnson, 1987; Ryff & Singer, 1998). As such, decades of research have explored the construct of meaning in life (e.g., George & Park, 2016; Steger et al., 2006; Yalom, 1980) and how people can obtain this sense of meaning through intrapersonal (e.g., goals: Baumeister, 1991; Emmons, 2003) and interpersonal means (e.g., belonging; Heine et al., 2006; Lambert et al., 2013; Murray et al., 2015). Traditional thinking on meaning focused primarily on intrapersonal processes, which are often exemplified in popular culture, whereby characters find meaning through embarking on a long and difficult journey (see Into the Wild, 2007). In contrast, another stream of thought outlines how others allow people to achieve a sense of meaning. The purpose of the present research is to offer a new perspective to understand the interpersonal processes that promote meaning in life, exploring how people obtain meaning in their lives through the lens of shared reality theory in romantic relationships. This novel approach departs from prior work on the interpersonal processes that promote meaning in life by focusing on epistemic mechanisms—how relationship partners make sense of the world together—as opposed to purely relational mechanisms, such as belonging and support. In so doing, this work identifies specific aspects of relationships that drive their effects

on meaning. Thus, this package of studies applies shared reality theory to bring to life George Kelly's (1955) notion that the more "in tune" people are with others' interpretations of the world, the more "blips of meaning" they can pick up from each other.

Meaning in Life

The literature has varied in its definition of meaning in life across the decades. For instance, meaning has been defined as perceiving one's life to be significant (Crumbaugh & Maholick, 1964). In contrast, meaning has been conceptualized as living the "good life" (Cornwell et al., 2017), or as the successful pursuit of one's goals (Emmons, 2003). However, as argued by Frankl (1965), there is no one sense of meaning for all human beings and people experience meaning in different ways. As such, the current research draws from prior literature broadly defining meaning as a sense of coherence and purpose in one's life (Battista & Almond, 1973; Steger et al., 2006; Reker & Wong, 1988; Ryff & Singer, 1998), which allows for capturing people's diverse experiences of meaning in life across various contexts. Decades of research show that experiencing meaning in life is beneficial to one's well-being (Steger et al., 2006; Yu & Chang, 2021): Meaning in life increases proactive coping (Miao et al., 2017), happiness (Debats et al., 1993) and life satisfaction (Chamberlain & Zika, 1988), while also reducing distress (e.g., Debats et al., 1993; Harlow et al., 1986) and morbidity (Hooker et al., 2018). It also has positive interpersonal benefits; for instance, people who report higher meaning in life are rated more favorably after an interaction (Stillman et al., 2011). In addition, meaning in life has been associated with increased connectedness, along with a greater likelihood of joining voluntary associations and getting married, and a decreased likelihood of marital separation (Stavrova & Luhmann, 2015).

Scholars have proposed several pathways to obtaining a sense of meaning in life. For example, Baumeister (1991) highlighted the meeting of four needs—purpose, value, efficacy, and self-worth—as a way to obtain meaning. He argued that these needs are met based on how individuals engage with their environment. In addition, people can live a meaningful life by pursuing goals that are personally significant (Emmons, 2003). While these means have a more intrapersonal focus, other research also outlines the centrality of interpersonal paths to obtaining meaning. Some work goes as far as to suggest that social relationships are more powerful for meaning than some intrapersonal experiences (Adamczyk et al., 2022). For instance, there is substantial evidence to suggest that having a sense of belonging gives people a sense of meaning (e.g., Chen et al., 2020; King & Hicks, 2021; Lambert et al., 2013; Prinzing et al., 2023; Sedikides & Wildschut, 2018). This line of research argues that the feeling of belonging allows people to experience themselves as part of something bigger, which provides significance to their lives. Similarly, social support provided by one's romantic partner has been shown to explain part of the variance in people's meaning in life (Dunn et al., 2009). Overall, people list personal relationships as their primary source of meaning in life (Fave & Coppa, 2009). While this research suggests that interpersonal relationships are important for meaning in life, less is known about the specific aspects of relationships that drive the effect of relationships on meaning. Further, the work that explores how relationships influence meaning in life often focuses on the relational processes, such as how they fulfill meaning in life, whereas the present work will focus on epistemic processes, specifically how people make sense of what is true and real. Specifically, I propose a novel construct that allows romantic partners to create meaning in their lives through co-constructing shared inner states about the world around them, that is, by creating a sense of shared reality.

Shared Reality Theory

People rely on others to make sense of their experiences, often preferring to believe a reality that is socially constructed (Sherif, 1936), even when that reality is not objectively true (e.g., Asch, 1951). More recent work in groups found similar evidence, whereby people tuned their world views to align with their ingroup (Jost et al., 2008). The current work considers this process as a pathway to meaning through the lens of shared reality theory (e.g., Hardin & Higgins, 1996; Echterhoff et al., 2009; Rossignac-Milon & Higgins, 2018; Rossignac-Milon et al., 2021). Shared reality is defined as the perception of sharing inner states (e.g., feelings, attitudes, beliefs) in common with another person about the world (Echterhoff et al., 2009). For example, if Nyles watches a horror movie with his wife Sarah and perceives that he and Sarah both find it scary, Nyles would experience a sense of shared reality with Sarah about the movie. While this example highlights a co-experienced situation where romantic partners establish a shared reality in the moment, it is also possible to establish shared reality after-the-fact, and even about an event that only one partner initially experienced. For instance, upon describing to Nyles a stressful experience she had, Sarah may perceive that Nyles shares the same interpretation of her experience.

Shared reality has been conceptually and empirically distinguished from related constructs in several ways (Echterhoff et al., 2009; Rossignac-Milon et al., 2021). Conceptually, shared reality involves the perception of sharing *inner states*, such as attitudes, feelings, or opinions—thus, it differs from constructs like perceived personality similarity or perceived demographic similarity, which involve the perception of sharing the same traits or characteristics. Second, unlike actual similarity of inner states, shared reality involves the individual's subjective *perception* of sharing inner states—in our prior example, Nyles would

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experience a shared reality with Sarah about the movie so long as he believes that they both find it scary, even if Sarah does not actually find it scary. Third, shared reality is about a *target referent*, like a third person, event, or idea. Thus, unlike emotion contagion or positivity resonance, in which someone might "catch" someone else's happiness without knowing what they were happy about, or emotional similarity, in which two people might feel happy about different things, shared reality involves the perception of sharing the same inner states *about* particular topics, like a movie, a stressful day, an injustice. Similarly, shared reality can be distinguished from interpersonal relationship constructs like inclusion of the other in the self, perceived social support or perceived partner responsiveness, which involve the individual's perception of their partner (e.g., perceiving one's partner as supportive and caring, or perceiving that "*my partner* gets *me*") as opposed to the individual's perception that they share inner states in common with their partner about the world, including the world external to the relationship (e.g., perceiving that "*we* get *it*").

Because of this orientation to the world external to the relationship, shared reality should be especially relevant for making meaning of everyday experiences. As couples like Nyles and Sarah come to accumulate shared reality experiences throughout their relationship, perceiving shared feelings, shared goals, and shared memories with their partner, they come to develop a sense of *generalized shared reality*—that is, the perception of sharing a set of inner states in common with another person about the world in general (Rossignac-Milon & Higgins, 2018; Rossignac-Milon et al., 2021). Generalized shared reality has been empirically distinguished from related constructs, such as perceived similarity, intimacy, inclusion of the other in the self, and perceived partner responsiveness, among others (Rossignac-Milon et al., 2021). In the

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present work, I examine this generalized form of shared reality specifically between romantic partners.

Shared reality is essential for fulfilling both one's relational needs, such as the need to belong, and epistemic needs, such as the need for certainty and truth (Higgins et al., 2021). When people report higher shared reality with a close other on a given day, they also experience greater relationship closeness, thereby meeting belongingness needs (Rossignac-Milon et al., 2021). In addition, strangers who established a shared reality while creating impressions of images were also more certain of their impressions, thereby meeting epistemic needs (Rossignac-Milon et al., 2021). More generally, experiencing a shared reality with another person has been shown to promote personal outcomes, such as satisfying one's goals for sharing an autobiographical memory and promoting one's psychological well-being (Boytos & Costabile, 2022), as well as their sense of authenticity and self-esteem (Boytos et al., 2021).

Despite the benefits of shared reality in close relationships, researchers have only just started to explore shared reality in the context of romantic relationships. Recent research highlights how contextual features shape shared reality, how romantic partners react to threats to their shared reality, and downstream consequences of shared reality once it's been established. For instance, daily changes in spatial proximity have been found to predict romantic partners' perceptions of shared reality (Enestrom et al., 2022), and perceiving one's partner as responsive during event disclosure also promotes shared reality (Bar-Shachar & Bar-Kalifa, 2021). Once a sense of shared reality has been established, romantic partners are motivated to uphold it: in response to an experimental threat to their shared worldview, couples with greater levels of generalized shared reality engaged in interaction behaviors like finishing each other's sentences and bringing up inside jokes to re-establish their shared reality in a subsequent conversation with their partner (Rossignac-Milon et al., 2021). Further, shared reality has been found to predict important relational benefits: frontline healthcare workers during the COVID-19 pandemic who experienced greater shared reality with their non-healthcare romantic partners felt more supported by their partners and in turn experienced greater relationship satisfaction (Enestrom & Lydon, 2021), and romantic partners who reported greater shared reality and who had more Isharing experiences (i.e., an in-the-moment shared reality experience) experienced greater relationship satisfaction, intimacy, and commitment (Rivera et al., 2019; Rossignac-Milon et al., 2021). Taken together, shared reality provides relational benefits for romantic partners and couples are motivated to protect their sense of shared reality. However, additional work is needed to understand the epistemic benefits of shared reality in romantic relationships.

Shared Reality and Meaning in Life

Prior research suggests that shared experiences, which are key to establishing a sense of shared reality (Rossignac-Milon & Higgins, 2018), promote a sense of meaning in life (Machell et al., 2015). Further, Przybylinski and Andersen (2015) theorize that in close relationships, people construct shared meaning systems (e.g., shared values and political beliefs), which provide them with a greater sense of meaning. Supporting this idea, Przybylinski and Andersen (2015) found that people expected to have more meaningful conversations with a stranger who resembled their partner, because this resemblance indirectly activated their shared meaning system. Similarly, McLean and Pasupathi (2011) found that people were more likely to retain the meaning of a story they told their romantic partner when the meaning of the story was shared by both partners. Further, blocking participants from discussing their shared values with the stranger activated the goal to restore meaning (Przybylinski & Andersen, 2015). In a similar line of work, when romantic partners were given threatening feedback that they did not experience the sensory

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world in the same way, those high in baseline shared reality created more shared meaning linguistically (i.e., using words with the same meaning) when subsequently given the chance to converse (Rossignac-Milon et al., 2021). This work suggests that people are motivated to restore their sense of shared meaning when their shared reality is threatened, indirectly supporting the idea that shared reality contributes to meaning.

Research conducted by Murray and colleagues (2017) also supports the idea that close relationships promote meaning and coherence. Specifically, when partners' sense of everyday coherence was threatened, they engaged in motivated reasoning to boost their sense of relationship satisfaction. However, unlike Przybylinski and Andersen (2015) and the present research, Murray and colleagues (2017) theorize that participants boost their sense of relationship satisfaction in response to threats to coherence in order to experience a sense of consistency with the broader cultural shared expectation of being in a satisfying close relationship—and not in order to restore their sense of having created a shared reality specifically with their romantic partner. The present research focuses on the effects of having created a shared reality with one's romantic partner on the experience of meaning in life.

Cornwell and colleagues (2017) theorize that shared reality with close others promotes meaning in life by validating people's sense that their life is "going in the right direction." Cornwell and colleagues (2017) approach this idea specifically from a goal-theory perspective, theorizing that people experience their life as meaningful to the extent that others socially verify their goals as worthwhile. Similar research exploring the quest for significance in one's life theorizes that social validation is essential for finding meaning; however, this work is based on the validation of one's values as opposed to one's goals (Kruglanski et al., 2022). Although the present research also conceptualizes shared reality as a key contributor to meaning in life, I

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theorize that shared reality contributes to meaning by creating understanding out of the chaos in life, and specifically out of the chaos in one's personal environment. Thus, the current research focuses on the epistemic function of shared reality in allowing people to develop a sense of coherence about their environment, which does not have to be specific to their goals or their values. However, I acknowledge that the theories proposed by Cornwell and colleagues (2017) and Kruglanski and colleagues (2022) may provide possible alternative explanations for how shared reality can promote meaning in life.

Finally, there is recent empirical evidence that positivity resonance (i.e., co-experienced positive affect) promotes meaning in life by allowing people to build social resources, such as supportive relationships (Prinzing et al., 2023). Although the synchrony component of positive resonance (i.e., "Did you feel in sync with others?"; Prinzing et al., 2023) aligns with the component of shared reality involving synchronous inner states, positivity resonance can be conceptually distinguished from shared reality in that shared reality is about target referents in the world, whereas positivity resonance involves the co-experience of positive affect without reference to particular targets (e.g., someone could 'catch' another person's positivity without knowing what made them feel positive affect in the first place). Critically, the authors focus on positivity resonance as promoting meaning in life through the relational mechanism of increasing social resources (e.g., one's sense of belonging). As I will discuss, our theory centers around the epistemic mechanisms linking shared reality and meaning in life, specifically the reduction of uncertainty in one's environment. Thus, part of the goal of this research is to show that this epistemic mechanism is separate from, and functions independently of, any relational mechanisms, like one's sense of belonging.

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Despite various theories and assumptions about the link between shared reality and meaning in life, and the research on relational constructs that promote meaning, the effect of shared reality on meaning in life has yet to be explicitly tested. The present work will explore the effect of shared reality on meaning in romantic couples across various contexts. In addition to examining this direct link, this research will explore uncertainty reduction as a potential mechanism.

Uncertainty Reduction as a Mechanism

One potential mechanism explaining the association between shared reality and meaning is reduced uncertainty. People experience uncertainty about various aspects of their lives, such as their social relationships (e.g., Kramer & Wei, 1999), behavioural expectations (Berger & Calabrese, 1975), and their own attitudes and attitudes of other people (Berger & Calabrese, 1975). Researchers have theorized that uncertainty fosters the sense that life is meaningless (Van Den Bos, 2009; Stillman & Baumeister, 2009). Indeed, prior research provides evidence that uncertainty plays a role in people's experience of meaning (Morse et al., 2021; Olivares, 2010). For instance, there is evidence that uncertainty inhibits people's ability to experience meaning even if they are searching for it. Thus, reducing uncertainty should presumably have the opposite effect, boosting meaning in life.

People reduce uncertainty through interaction with their social network (Berger, 1987). According to shared reality theory (Rossignac-Milon et al., 2021), self-verification theory (Sedikides & Strube, 1995), and terror management theory (Mikulincer et al., 2003), romantic partners may also help to reduce uncertainty. The present research focuses on the epistemic function of uncertainty reduction in romantic relationships through the lens of shared reality theory. Prior research suggests that sharing a reality with another person reduces uncertainty. For Chapter 1

example, after discussing ambiguous images, dyad members who experienced a greater sense of shared reality with an interaction partner felt more certain about their interpretation of the images —a type of uncertainty reduction (Rossignac-Milon et al., 2021). Similarly, conversational flow promotes feelings of shared reality, which is related to people feeling that their opinions have been validated (Koudenburg et al., 2013; 2017). People are also more likely to create a shared reality with their partner when they need to make sense of an event that is more uncertain, which further suggests that shared reality might play a role in reducing one's uncertainty (Bar-Shachar & Bar-Kalifa, 2021). Recent findings show that not having a sense of shared reality is associated with feeling greater uncertainty, whereby existential isolation did not allow people to validate their beliefs with another person (Long et al., 2021). Lastly, experiencing shared reality with the network of one's romantic partner reduced uncertainty about the partner (Parks & Adelman, 1983), likely due to validation provided by others. By turning to one's close other who can validate one's interpretation of something in their environment, like an event, people feel more sure that what they are experiencing is true and real.

Further evidence of this has been found in the intergroup literature. Specifically, Hogg (2007) theorizes about the process of how people identify with social groups and ultimately create a shared reality with those groups. People are especially motivated to identify and create a shared reality with a group when self-uncertainty is high, whereby people seek groups who are highly entitative, meaning they have distinct boundaries, shared goals, and a clear structure (Hogg & Rinella, 2018). Hogg and colleagues theorized that in doing so, people reduce the uncertainty they feel about themselves. While the current research focuses on contextual uncertainty as opposed to self-uncertainty, and romantic relationships as opposed to social relationships more generally, the notion that building a sense of shared reality to reduce

uncertainty is consistent with the research conducted by Hogg and colleagues (2018) and provides evidence to support the hypothesis that shared reality reduces uncertainty.

In terms of the link between uncertainty and meaning, Higgins and colleagues (2013; 2014) argue that people have a truth motivation that drives them to find meaning through making sense of the objects and events in their lives. Similarly, being able to control one's environment engenders a sense of efficacy that helps people make sense of their environment and in turn increase meaning (Baumeister, 1991). Uncertainty should therefore undermine one's sense of meaning as it inhibits this process of sensemaking (Higgins, 2013; Stevens & Fiske, 1995; Vallacher & Wegner, 1987), and factors that reduce uncertainty, such as shared reality, should thus promote meaning.

Taken together, I propose that shared reality promotes greater meaning in life—and in important domains of people's lives—and that this is achieved through reducing uncertainty in their personal environment. For instance, imagine Sarah is a Black American presently living through the recent wave of the Black Lives Matter movement following the murder of George Floyd. As she experiences the BLM movement, including attending protests and discussing racism with her partner Nyles, the extent to which she feels that she and Nyles have the same thoughts and feelings about various aspects of her environment—police violence, racism, community involvement—the more certain she should feel about her interpretation of racism and the sociopolitical climate (e.g., who was at fault, how to stand up for the cause). In turn, her romantic partner's validation helps her make sense of what to make of the movement and how to engage with it, allowing her to extract a greater sense of meaning in life.

In addition, shared reality may reduce uncertainty in important domains of people's lives, like their work, thereby promoting meaning in work. Imagine Nyles recently took on a new,

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important project at work. As he navigates this project, the extent to which he feels that he and Sarah have the same thoughts and feelings about various aspects of his environment—coworker dynamics, his management style, his career goals —the more certain he should feel about his interpretations of the project (e.g., how to approach the project, or how to delegate different tasks). As a result, the validation Nyles receives from Sarah helps him make sense of how he is managing the project, providing him with a greater sense of meaning in work.

Overview of the Research Program

The current research broadly investigates the influence of shared reality on uncertainty in one's environment across various contexts (e.g., work, sociopolitical climate) and in turn on meaning in life and work. This paper will be the first to directly examine the effect of shared reality on meaning in life. Thus, the research questions pursued in the present work are: (1) Does shared reality with one's romantic partner promote greater meaning in life and work? And (2) Is this effect mediated by a reduction in people's uncertainty about the world around them?

As a first step, in Study 1, I examined the cross-sectional and longitudinal associations between shared reality and meaning in life in a lab study of romantic dyads with an online follow-up. In Study 2, I examined uncertainty as a mechanism in the association between shared reality and meaning in life in a unique, diverse, and ecologically valid sample. Specifically, I explored uncertainty with regards to racism and the sociopolitical climate for Black people in the United States. In doing so, I distinguished the effect of shared reality on meaning in life from that of a general "relationship goodness" effect. In Study 3, I tested the directionality of the association between shared reality and uncertainty using longitudinal data and extended our consideration of meaning outcomes by considering the effects of shared reality on meaning at work. That is, I explored work-related uncertainty and work meaning for frontline healthcare workers during the COVID-19 pandemic.

After providing correlational evidence for our proposed hypotheses, I conducted two experiments. Study 4 tested the effect of shared reality on uncertainty and meaning in romantically-involved individuals using an online recall paradigm. Lastly, Study 5 replicated these findings in a dyadic Zoom study with romantic couples who were provided false feedback about their interpretations of various images. This study also served to further distinguish the epistemic effects of shared reality from other relational mechanisms that could explain the effect on meaning in life (e.g., sense of belonging: Lambert et al., 2013).

Chapter 2

Study 1 – Couples Lab Study

In Study 1, I examined the cross-sectional and longitudinal association between shared reality with one's romantic partner and one's sense of meaning in life in a year-long laboratory study of romantic dyads with a one-year follow-up survey. I predicted that shared reality would be associated with meaning in life cross-sectionally and that shared reality at Time 2 would be associated with a residual increase in meaning in life (at Time 2 controlling for Time 1). That is, an increase in shared reality over time would be associated with a corresponding increase in meaning. These analyses were pre-registered and can be found on OSF (https://osf.io/at6sx/?view_only=5b5ca499647f4b25907a0c97c1fa4032)¹. The materials, syntax, and deidentified data can also be found on OSF

(https://osf.io/bsj49/?view_only=da3bcd4b3f1e40b09795158d2fd62b1e).

Method

Participants

In Study 1, romantic couples were recruited from an urban community to participate in a dyadic lab study with a one-year online follow up. To be eligible for the study, participants were required to be adults (18 years and older) who were in their current romantic relationship for at least six months², and both members of the couple had to be willing to participate in an on-campus lab session. I collected data from a sample size of 103 couples (206 participants) at Time 1. However, data from one participant were not included in analyses due to attention issues during the lab session, resulting in a final Time 1 sample size of 205 participants. At Time 2, 148 participants of the original 206 participants completed the survey³. In addition, data were missing from 13 participants who did not complete the shared reality measure at Time 2. Of these

participants, 10 participants did not complete the measure because they and their partner had broken up by Time 2. In our final Time 1 sample, participants were on average 36 years old (SD = 17.07) and identified as White/Caucasian (68%), Black/African American (13%), Asian (10%), Hispanic (3%), Biracial/multiracial (2%), or Other/another identity (4%). Participants had been in their relationship for about 10 years (SD = 13.61). A plurality of the sample was married (41%), followed by 28% seriously dating, 18% cohabiting, 12% engaged, and 2% Other/Casually dating. Lastly, the Time 1 sample consisted of 92 male-female couples, 7 female-female couples, 1 malemale couple, 1 female-other/do not identify as male or female couple, and 1 couple in which the composition is unknown.

I conducted sensitivity analyses using Monte Carlo simulations (Lane & Hennes, 2018). For the cross-sectional model, based on 1000 Monte Carlo draws and a sample of N = 103 dyads (2 people per dyad), power was calculated to be 81%, indicating there was sufficient power to detect the effect⁴. For the longitudinal model, based on 1000 Monte Carlo draws and a sample of N = 74 dyads⁵, power was calculated to be 45%, indicating that I may be underpowered to detect a longitudinal effect.

Procedure

Couples were recruited from the community to take part in a study about how people communicate in romantic relationships. Recruitment was carried out through a university research registry, a Psychology Department Subject Pool listing, ads in newspapers or on Craigslist, and flyers posted on campus and around the community. Those recruited from the community responded to the ad/listing and communicated by phone or email with the research assistant, who provided relevant information and answered any questions about the study. The research assistant also confirmed the inclusion criteria Those who were interested and eligible were scheduled for a lab session where they completed baseline measures and in-lab tasks⁶. During the lab session, participants were separated when they completed the baseline measures. They were then invited to complete a follow-up survey online one year after their session. To try to increase retention rates, participants were also sent a check-in email 6 months after the lab session. Participants could earn course credit or up to \$30 USD each.

Measures

Generalized Shared Reality ($M_{TI} = 5.40$, $SD_{TI} = 1.01$, $\alpha_{TI} = 0.86$; $M_{T2} = 5.32$, $SD_{T2} = 1.02$, $\alpha_{T2} = 0.87$). Shared reality was assessed using the Generalized Shared Reality Scale (Rossignac-Milon et al., 2021) which includes 8 items such as "We typically share the same thoughts and feelings about things" and "Events feel more real when we experience them together" ($1 = Strongly \ disagree$, $7 = Strongly \ agree$). Participants completed this measure at the beginning of the in-lab session and in the online follow up survey one year later.

Meaning in Life ($M_{TI} = 5.33$, $SD_{TI} = 1.32$, $\alpha_{TI} = 0.93$; $M_{T2} = 5.09$, $SD_{T2} = 1.34$, $\alpha_{T2} = 0.92$). Meaning in life was measured using the Presence of Meaning subscale of the Meaning in Life Scale (Steger et al., 2006). This scale consists of 5 items such as "My life has a clear sense of purpose" (1 = Absolutely true, 7 = Absolutely untrue). Given our focus on the role of shared reality and uncertainty in *obtaining* or *achieving* a sense of meaning. I did not include the Search for Meaning subscale, which captures the *motivation* to find meaning. Participants completed this measure as part of a broader set of measures administered at the beginning of the in-lab session and in the online follow up survey one year later.

Data Analysis

Since the dataset consisted of participants nested within couples, I used multilevel modelling to conduct my analyses. Specifically, I ran a regression analysis whereby shared

reality at Time 1 predicted meaning in life at Time 1 using 'lme4' multilevel modelling packages (Bates et al., 2015) in R version 4.2.2. Individual reports (Level 1) were nested within couples⁷ (Level 2) and intercepts were allowed to vary randomly across individuals. I ran this model again but with shared reality at Time 2 predicting meaning in life at Time 2, including meaning in life at Time 1 as a covariate. Thus, this second model explored whether shared reality at Time 2 predicted a residualized change in meaning in life across the two time points (Bolger & Laurenceau, 2013). These analyses were pre-registered and can be found on the OSF page (<u>https://osf.io/at6sx/?view_only=5b5ca499647f4b25907a0c97c1fa4032</u>). Lastly, as an exploratory analysis to test the consistency of the cross-sectional effect, I also ran a model testing shared reality at Time 2 predicting meaning in life at Time 2. All correlations between measued variables can be found in Table 1.

Results

In line with our pre-registered hypothesis, shared reality at Time 1 was positively associated with meaning in life at Time 1, b = 0.26, 95% CI [0.08, 0.43], t = 2.87, p = .005; see *Figure 1*. Further, shared reality at Time 2 was positively associated with meaning in life at Time 2, b = 0.38, 95% CI [0.14, 0.61], t = 3.12, p = .002. Lastly, shared reality at Time 2 marginally predicted residualized increases in meaning in life across the two timepoints, b = 0.14, 95% CI [-0.01, 0.30], t = 1.86, p = .066; see *Figure 2*.

The intraclass correlation for Time 1 shared reality and Time 1 meaning in life was .24, where for Time 2 shared reality and Time 2 meaning in life it was .13. As an exploratory analysis, we examined Time 1 shared reality predicting Time 2 meaning in life controlling for Time 1 meaning in life, which was not significant, b = 0.04, p = .67.

Discussion

Study 1 provides initial evidence that shared reality with one's romantic partner is positively associated with meaning in life. These findings suggest that to the extent that romantic dyads perceive that they have co-constructed a set of shared thoughts, beliefs, and concerns with our partner about the world, they find meaning and purpose within this co-constructed world. Critically, shared reality at a given timepoint marginally predicted a residual increase in meaning in life from a year prior, which is important given the stability of the construct of meaning in life (Hicks & King, 2008).

Attrition is a common concern in longitudinal couples studies (Karney & Bradbury, 1995). Although the rate of attrition at Time 2 may have impacted findings involving Time 2 data (e.g., biased our sample to more committed couples at Time 2), our concerns about the effects of attrition were reduced as additional analyses revealed that those who dropped out (or did not complete Time 2 shared reality measures due to break-up) did not differ from those who completed Time 2 measures in ways that would have provided stronger evidence for our hypothesis. Instead, attrition might have decreased statistical power leading to a marginal finding for changes in meaning. In addition, the cross-sectional findings at Time 2 paralleled those at Time 1. The subsequent studies in this package will provide further empirical evidence to support the patterns found in this study. Specifically, Study 2 aims to replicate the Study 1 findings in a unique sample of Black Americans with respect to their experiences of racism and their sociopolitical climate, which should be especially relevant to their sense of meaning in life.

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Footnotes

¹ Data in Study 1 were collected as part of a larger investigation of couples' communication and relationship functioning. I pre-registered our hypotheses, exclusion criteria, and analytic plan after data collection but before beginning analyses related to the present hypotheses. At present, the data set is used in one published paper (Elnakouri et al., in press). It is also being used in other manuscripts in prep/under review. However, this is the first investigation involving this dataset to examine relations between shared reality and meaning in life.

² Five couples indicated having a relationship length shorter than six months (M = 3.4 months; range = 2-5 months), while two couples did not report on their relationship length. I do not believe the research question being tested requires a minimum relationship length of six months and therefore included data from these couples in our analyses.

³ This drop in participation is likely due to the large amount of time between the in-lab study and the follow up survey (1 year), which is likely to have been more impactful for those in less steady relationships. To understand the degree to which attrition may have biased our Time 2 sample, I compared the mean and standard deviation of the shared reality (SR) and meaning in life (MIL) measures of those who dropped out or experienced relationship dissolution after Time 1 (SR: M = 5.27, SD = 1.27; MIL: M = 5.45, SD = 1.36) to those who did not (SR: M = 5.46, SD = 0.85; MIL: M = 5.28, SD = 1.30). While the descriptives are similar, those who dropped out were marginally lower in their levels of shared reality, t(78.03) = 1.76, p = 0.08, but not different in their levels of meaning in life, t(98.70) = -0.52, p = 0.60. Given opposite patterns were found between these two groups on the two measures of interest, where those who dropped out had lower means for SR but higher means for MIL (although not near significance), I do not anticipate this to have a strong impact on our results. This attrition is similar to those typically observed in longitudinal couples' studies (Karney & Bradbury, 1995). However, I acknowledge that the attrition rate is a limitation, and discuss this later on.

⁴ I re-ran the sensitivity analyses with 102 dyads to account for the one dyad where I only had data for one member of the couple and the power calculated was consistent.

⁵ These analyses require I choose a sample size at the dyad level. While I had 148 participants at Time 2, only 54 were complete dyads. If I use a sample size of 54 dyads (as opposed to 74 dyads), the power reduces to 36%.

⁶ Participants completed a 90-120 minute lab session that involved completing surveys and interaction tasks. Analyses reported in this manuscript only use measures from the background/pre-interaction survey portion of the lab session and from the one year online follow-up survey.

⁷Although I did not have data for both members of one of the couples.



Cross-sectional Association Between Shared Reality and Meaning in Life:

Figure 1. Cross-sectional association between shared reality at Time 1 and meaning in life at

Time 1, in Study 1.


Longitudinal Association Between Shared Reality and Meaning in Life:

Figure 2. Longitudinal association between shared reality at Time 2 and meaning in life at Time 2 controlling for meaning in life at Time 1, in Study 1.

Variables	1	2	3	Δ
v ariables	1.	2.	5.	т.
1. Shared Reality T1	-			
2. Meaning in Life T1	.21**	-		
3. Shared Reality T2	.55***	.25**	-	
4. Meaning in Life T2	.16*	.73***	.29***	-

Table 1. Correlations for Study 1

Note. Correlations displayed between Time 1 variables include the full Time 1 sample. *p < .05, **p < .01, ***p < .001.

Study 2 – Black Lives Matter Movement Study

While there has been progress in the fight against racism over the past few decades (Schuman et al., 1997), discrimination against Black people continues to exist and negatively affects the lives of those who experience it (Bleich et al., 2019; R. Williams & Williams-Morris, 2000). These stressful experiences have major consequences for society, as is often seen with race-related fatalities at the hands of the police as well as deleterious health effects (Paradies, 2006; Williams et al., 2019; Williams & Mohammed, 2013). In the wake of the global antiracism movement inspired by Black Lives Matter (BLM), racism has become a central topic in today's society with mass demonstrations worldwide. For instance, in the United States, the murder of George Floyd sparked global anti-Black racism protests (Lebron, 2023). Such experiences that directly impact the core of one's identity can challenge one's experience of meaning in life (Thoits, 1983; 2012). As such, in Study 2, I collected data from a sample of romantically-involved Black individuals within one year of the murder of George Floyd. This study was therefore conducted in the aftermath of this event, during the protests that ensued and the Black Lives Matter movement more generally, allowing me to replicate the findings from Study 1 in a unique, diverse, and ecologically valid sample in which meaning in life may be especially relevant. In this study, I also explore uncertainty reduction about Black people's experiences of racism and their sociopolitical climate as a mechanism in the association between shared reality and meaning in life. Overall, the study aimed to understand whether developing a sense of shared reality that can influence people's experience of something complex and important in the real-world, particularly how certain Black people feel about experiences of racism and, in turn, their sense of meaning in life. I expected to replicate our findings from Study 1 in this unique context and predicted that the association between shared reality and meaning would be partially explained by the reduction of uncertainty in Black people's interpretations of their experiences of racism and the sociopolitical climate.

In addition, I sought to provide evidence for the uniqueness of the effect of shared reality on meaning through uncertainty by showing that this association is not simply explained by a "relationship goodness" effect. As such, I controlled for relationship satisfaction and predicted that the mediation through reduced uncertainty would hold beyond any effect of general positivity in the relationship. These analyses were not pre-registered; however, the materials, syntax, and deidentified data can be found on OSF

(https://osf.io/bsj49/?view_only=da3bcd4b3f1e40b09795158d2fd62b1e).

Method

Participants

In Study 2, I recruited participants from the crowdsourcing website Amazon Mechanical Turk (MTurk) for an online study between April and July of 2021. Participants were asked about their experiences related to the Black Lives Matters movement and their romantic relationship over the previous year. To be eligible to participate, participants had to be 18 or above, identify as Black or African American, and be in an exclusive relationship for at least 6 months with either a White, Black, or African American partner¹. In total, 231 participants were eligible and participated in the online survey. Prior to data analysis, 33 participants were excluded due to providing suspicious or nonsensical responses such as responding with "This scenario is based upon relationship" when asked about whether racism is a frequent topic in their relationship. I ran additional analyses (i.e., longstring, intra-individual response variability) to detect careless responders that should be excluded from the data analysis, given the use of MTurk (Meade &

Craig, 2012). This resulted in a final sample size of 190 participants², 118 in intraracial relationships (i.e., Black-Black) and 72 in interracial relationships (i.e., Black-White)³. In our final sample, participants were on average 35 years old (SD = 9.18), had been in their relationship for about 5.5 years (SD = 6.46), and 90% identified as heterosexual. Couples were either married (53%), cohabiting (7%), or dating exclusively (40%). Of those in intraracial relationships, 47% identified as male, 52% as female, 1% as other. Of those in interracial relationships, 51% identified as male, 49% as female. This sample provided us with 80% power to detect an effect as small as f^2 = .04; as per Cohen's (1988) guidelines, .02 is defined as a small effect size and .15 is defined as medium effect.

Procedure

Participants were first recruited from Amazon Mechanical Turk with an online ad describing that they would complete demographic questions during a 3-minute survey. Once the participants clicked on the ad's link, they were taken to a consent form outlining the study, where they either clicked "agree" or "disagree" to participate. If they clicked "agree", they would be taken to the online questionnaire. If they clicked "disagree", they would be taken back to the Amazon Mechanical Turk homepage and would receive no compensation. If eligible, I invited them to complete a bonus 30-minute survey for additional compensation, in which they answered questions about their experiences surrounding race, the recent wave of anti-Black racism protests, and their relationship. It was made clear in all of the advertisements and study announcements that they might not be eligible to participate and would not be compensated should this be the case.

Measures

Generalized Shared Reality (M = 5.32, SD = 0.90, $\alpha = 0.87$). Shared reality was assessed using the same scale as in Study 1. However, participants were asked about their generalized shared reality since the onset of the recent wave of anti-Black racism protests (i.e., May 2020).

Meaning in Life (M = 5.55, SD = 1.21, $\alpha = 0.87$). Meaning in life was measured using the same scale as in the previous study.

Uncertainty (M = 2.42, SD = 1.08, $\alpha = 0.86$). Uncertainty was assessed using 3 reversescored items (1 = Strongly disagree, 7 = Strongly agree), adapted from Rossignac-Milon and colleagues (2021) such that participants rated their certainty "with respect to racism and the sociopolitical climate", such as "I am certain of what I think is really going on".

Relationship Satisfaction (M = 5.70, SD = 1.21). Relationship satisfaction was measured using one item from the Dyadic Adjustment Scale (DAS; Goodwin, 1992; adapted from Spanier, 1989). Research supports the use of this item (called "Magic Question 31"; Goodwin, 1992) as it helps spread participant responses across the full scale, given that most participants tend to rate their relationship highly positively, and it correlates well with the overall DAS. Participants were asked to rate their degree of happiness in their relationship on a 7-point Likert scale (1 = Very*unhappy*, 4 = Happy, 7 = Perfectly happy).

Data Analysis

I carried out mediation analyses using the 'lavaan' package in R version 4.2.2 (Rosseel, 2012), which allowed us to model all paths and the indirect effect simultaneously using the "sem" function. To test the hypothesis that uncertainty mediates shared reality's effects on meaning (see Figure 3 for model layout), I computed the confidence interval for our indirect effect using the bias-corrected bootstrap (MacKinnon et al., 2004). In addition, I examined the

total effect of shared reality on meaning in life (Path C) using a separate regression model which only included the effect of shared reality on meaning in life with no additional covariates. This allowed me to see the reduction in the effect of shared reality on meaning in life when uncertainty reduction was included as a mechanism. Lastly, I re-ran the full mediation model including relationship satisfaction as a covariate to assess the robustness of the effect. All correlations between measured variables can be found in Table 2.

Results

In support of our hypotheses, our findings revealed a pattern consistent with mediation whereby shared reality was associated with increased meaning in life through reduced uncertainty (see *Figure 3*). Specifically, experiencing shared reality since the onset of the anti-Black racism protests was associated with reduced uncertainty about racism and the sociopolitical climate, b = -0.43, 95% CI [-0.71, -0.21], z = -3.33, p = .001. In turn, this reduced uncertainty was associated with greater meaning in life, b = -0.37, 95% CI [-0.51, -0.18], z = -4.36, p < .001. The total effect of shared reality on meaning in life was positive and significant, b = 0.61, 95% CI [0.39, 0.85], z = 5.05, p < .001, and was reduced when controlling for uncertainty, b = 0.45, 95% CI [0.24, 0.70], z = 3.79, p < .001. The indirect effect of shared reality to meaning in life through uncertainty was significant, ab = 0.16, 95% CI [0.05, 0.33], z = 2.34, p = .019. In addition, the total effect remained significant when controlling for relationship satisfaction, b = 0.55, 95% CI [0.33, 0.81], z = 4.58, p < .001, as did the indirect effect, ab = 0.13, 95% CI [0.04, 0.30], z = 2.10, p = .036.

Of note, relationship satisfaction was not found to be a significant mechanism in the association between shared reality and meaning in life when controlling for uncertainty about one's experience of racism and the sociopolitical climate. Specifically, those who experienced higher levels of shared reality with their romantic partner reported greater relationship

satisfaction compared to those who experienced lower levels of shared reality with their partner, b = 0.31, p = .004. However, experiencing greater relationship satisfaction was not associated with greater meaning in life, b = 0.11, p = .167, even though shared reality was associated with meaning in life. These results did not provide evidence that shared reality promotes meaning in life through increased relationship satisfaction.

Discussion

Overall, these findings suggest that shared reality may be an important interpersonal construct for helping people reduce uncertainty about complex, real-world societal concerns outside of the relationship and ultimately predicting their sense of meaning in life. Beyond replicating the association between shared reality and meaning in life found in Study 1 in a realword context that affects people's everyday lives, Study 2 also introduces uncertainty reduction as a mechanism in this association, providing evidence for our proposed model. In addition, this study examined the question of uncertainty and meaning in an critical setting, during a time where people may be especially uncertain and seeking a shared reality with their romantic partners (see Bar-Shachar & Bar-Kalifa, 2021) and in a context in which meaning in life may be especially relevant, given that negative experiences that challenge one's identity, such as one's racial identity, directly impacts one's sense of meaning (Thoits, 2012). Further, unlike the majority of shared reality research, which has focused on examining shared inner states like attitudes and feelings (see Higgins et al., 2021 for a review), this context provided the opportunity to explore the shared inner state of *concern* about racism and the Black Lives Matter movement. Taken together, although Black people struggle with racism everyday (Schuman et al., 1997), the consequences of which are significant for society as a whole, perceiving a sense of shared reality with their romantic partner may help them find a sense of meaning in their lives by reducing the uncertainty of their

feelings about their experiences of racism. In addition, these findings held controlling for relationship satisfaction, suggesting that the effect is not simply a "relationship goodness" effect whereby being satisfied in the relationship more generally leads to reduced uncertainty and increased meaning. Instead, the mechanistic effects of uncertainty reduction are independent of possible relational effects that could explain shared reality's effect on meaning in life.

Further, I tested relationship satisfaction as an alternative mechanism in the association between shared reality and meaning in life. While this is not the focus of the present research, doing so would allow me to explore whether epistemic processes may take place in parallel to the relational processes proposed in prior research (e.g., Lambert et al., 2013; Prinzing et al., 2023; Stillman & Baumeister, 2009). I found that relationship satisfaction did not significantly mediate the association between shared reality and meaning in life, as it did not predict meaning in life above and beyond uncertainty about one's experience of racism and their sociopolitical climate. It is possible that in the given context (i.e., following the aftermath of George Floyd's murder and the ensuing protests), epistemic processes may be stronger in influencing meaning in life, as participants were experiencing a highly uncertain situation that may have threatened their identity (Thoits, 2012). More than feeling good about one's relationship, feeling that one's partner is on the same page as them about their interpretation of the outside world could help Black Americans find a sense of meaning out of the uncertainty of their experiences of racism and the more sociopolitical climate more generally.

Overall, Study 2 provided initial evidence regarding uncertainty's mediating role, and did so in an important context in today's society, that of Black people's experiences of racism. However, correlational designs limit causal conclusions. Therefore, I will explore longitudinal directionality of the association between shared reality and uncertainty in Study 3 before moving onto experimental designs in Studies 4 and 5 to test directionality experimentally. In the next study, I aim to explore our hypotheses in a specific domain that make up an important part of people's lives, their work.

Footnotes

¹ I was originally interested in exploring the non-shared experience of racism between interracial and intraracial couples. As such, I chose a demographic that would be mostly likely to have extremely different experiences of racism (if any, as is likely the case with White Americans).

² I re-ran our analyses with the full sample and the results were consistent.

³ Despite original interest in exploring differences between interracial and intraracial couples, our sample showed no differences in shared reality, nor did I find that relationship type moderated any of our paths of interest. Therefore, I do not distinguish the sample based on these differences and instead move forward with exploring Black participants more generally, regardless of relationship type.

Shared Reality Promotes Meaning in Life Through Reduced Uncertainty Related to the Black



Lives Matter Movement

Figure 3. Pattern consistent with mediation whereby shared reality promotes meaning in life through reduced uncertainty about racism and the sociopolitical climate in Study 2. **p < .01, ***p < .001.

Variables	1.	2.	3.	4.
1. Shared Reality	-			
2 Uncertainty	_ 35***	-		
2. Oncortainty	55			
3. Meaning in Life	.45***	45**	-	
e				
4. Relationship Satisfaction	.28***	22**	.27***	-

Table 2. Correlations for Study 2

Note. *p < .05, **p < .01, ***p < .001.

Study 3 – COVID-19 Study

People spend an average of 90,000 hours at work across their lifetime (Pryce-Jones, 2010). Unsurprisingly, work is the second most common source of meaning, falling only behind family (Pew Research Center, 2021). Indeed, the study of work meaning has become increasingly important as people spend a lot of their time at work (Pryce-Jones, 2010) and associate a large part of their identity with their occupation (Kirpal, 2004). Meaning in life and meaning in work have been similarly defined and measured in the literature (Schnell et al., 2013) and there is evidence that meaning in work and meaning in life go hand-in-hand (Steger & Dik, 2009). In addition, data from the Kelly Global Work Force Index (2009) suggests that many people would be willing to accept a lesser role or lower wage in exchange for contributing something meaningful through their work, highlighting the importance of finding meaning in one's work. With regards to uncertainty, the pandemic shifted workplace norms and expectations (Barrero et al., 2021; Vandecasteele et al., 2022), which might increase workers' uncertainty around their workplace experiences.

Taken together, work is an especially important context in which to explore the processes of uncertainty reduction and meaning. As such, in Study 3, I collected data from healthcare workers on the frontlines during the COVID-19 pandemic. In contrast to the previous studies which explore meaning in life more generally, this study aims to replicate the earlier findings in a particularly important domain in one's life, one's work. In addition, the COVID-19 pandemic context adds another layer of complexity in terms of people's experiences at work. While the pandemic was a period of great uncertainty for society as a whole, frontline healthcare workers were facing extreme circumstances as they assumed the burden of treating patients who had been

infected with the virus (Maunder et al., 2004; Nickell et al., 2004; Styra et al., 2008). While the long-term repercussions of the pandemic are still unclear, it is evident that health-care workers experienced increased levels of stress and uncertainty (Shanafelt et al., 2020), largely stemming from an excessive workload, lack of personal protective equipment, and a greater risk of infection (Cai et al., 2020). The present research investigated the experiences of these healthcare workers at work during the first two waves of the pandemic.

Prior research finds that positive relationship experiences between colleagues can promote work meaning (Colbert et al., 2016; Dutton et al., 2017; Mao et al., 2012; Methot et al., 2016). More recent work has also found this effect when exploring shared reality between colleagues (Rossignac-Milon & Matz, 2023). However, no work to our knowledge has investigated whether people's relationships in their personal lives outside of their work can affect their work experiences. Given that people can experience a sense of shared reality even if they do not co-experience the event, I was interested in investigating whether the experiences that healthcare workers have at home with their romantic partners could spillover onto their experiences at work. Specifically, can shared reality between romantic partners reduce uncertainty about one's work environment and in turn promote meaning in work?

In light of the overlap between meaning in work and meaning in life, along with the importance of work-related meaning, this study examined whether the association between shared reality and meaning extends beyond the broad construct to a domain-specific sense of meaning. Beyond the extension to work uncertainty and meaning, I also sought to expand on our previous findings by including longitudinal data across the first two waves of the pandemic in Eastern Canada. This data allowed us to test directionality in the association between shared reality and uncertainty reduction. I expected to replicate our findings from the previous study and

for the mediational pathway to hold controlling for relationship satisfaction. These analyses were not pre-registered; however, the materials, syntax, and deidentified data can be found on OSF (<u>https://osf.io/bsj49/?view_only=da3bcd4b3f1e40b09795158d2fd62b1e)^1</u>.

Method

Participants

I recruited frontline healthcare workers and their significant others across Canada and the United States through health-care associations (e.g., Canadian Nurses Association, Canadian Medical Association) and social media (e.g., Facebook groups). This included emails to healthcare associations as well as flyers posted on social media by members of my research lab. Any social media accounts to which I posted recruitment materials were public and participants were reminded to not post comments directly. Interested participants were asked to email the lab in response to the advertisement materials for more information and to confirm that their partner was interested in participating. Of note, I did not recruit from any healthcare organizations that required additional or alternative ethics approvals (e.g., Montreal University Health Center, Jewish General Hospital, Ministère de la Santé et des Services sociaux).

To be eligible, participants had to be between the ages of 21 and 49². One member of each couple was required to be a frontline healthcare worker either directly or indirectly exposed to COVID-19 positive patients and their partner could not be a healthcare worker. Participants were required to be in an exclusive relationship and to have been dating for at least six months. For the purpose of this research, I only analyzed data collected from the healthcare workers. Responses were collected from 155 frontline healthcare workers at Time 1, 139 of whom completed the Time 2 measures. Participants were residing in either Canada (81%) or the United States (19%). Whereas within Canada participants were largely from Quebec (33%) or Ontario (26%), those from the United States were widely scattered across states, with the largest percentage residing in New York State (7%). Lastly, of the 155 health-care workers, 50% were doctors, 36% were nurses, and 11% held other healthcare occupations, including respiratory therapists and technicians. This sample provided us with 80% power to detect an effect as small as $f^2 = .06$; as per Cohen's (1988) guidelines, .02 is defined as a small effect size and .15 is defined as medium effect.

Procedure

Couples were recruited through social media (e.g., Facebook groups) and healthcare associations (e.g., bi-weekly newsletters) across Canada and the United States. The sample was collected in late April and early May of 2020 when regions like Quebec, Ontario, and New York had reached the height of daily confirmed Covid-19 cases from the first surge of the pandemic (Bergquist et al., 2020; Urrutia et al., 2021). Interested couples completed an eligibility survey which included questions about their relationship and occupation. Eligible participants were then invited to take part in an online survey and were subsequently compensated with a \$5 gift card. Participants were then recontacted 6 months later (i.e., October 2020) to complete the survey a second time, after which they were again compensated with a \$5 gift card.

Measures

Generalized Shared Reality ($M_{TI} = 5.26$, $SD_{TI} = 0.83$, $\alpha_{TI} = 0.92$). Shared reality with their romantic partner was assessed using the same measure as in the previous two studies. The instructions were modified from the original scale whereby participants rated their agreement with the items since the onset of the pandemic.

Work-related Uncertainty ($M_{T1} = 3.60$, $SD_{T1} = 1.29$, $\alpha_{T1} = 0.92$; $M_{T2} = 3.41$, $SD_{T2} = 1.30$, $\alpha_{T2} = 0.96$). Uncertainty was assessed using the same measure as in the previous study.

However, participants were instead asked about their uncertainty with respect to their work environment.

Work-related Meaning ($M_{TI} = 5.55$, $SD_{TI} = 0.96$, $\alpha_{TI} = 0.78$). Meaning in work was measured using an adaptation of the Work and Meaning Inventory (Steger et al., 2012). Specifically, I used one item from each subscale (i.e., positive meaning, contribution to meaningmaking, and greater good motivation³) and added an additional face-valid measure (i.e., "My work is meaningful to me"). Participants responded to these 4 items using a 7-point Likert scale (1 = Absolutely untrue, 7 = Absolutely true).

Relationship Satisfaction. ($M_{TI} = 5.05$, $SD_{TI} = 1.39$). Satisfaction was measured using the same item as in Study 2 (Goodwin, 1992).

Data Analysis

The analyses conducted were in line with those in Study 2; the only difference was that Time 1 work uncertainty was included as a covariate in Path A. Therefore, Path A represents the effect of shared reality during the first wave of the pandemic on work-related uncertainty during the second wave of the pandemic, controlling for work-related uncertainty during the first wave. In other words, Path A now represents the extent to which shared reality at Time 1 is predicting decreases in work-related uncertainty from Time 1 to Time 2. All correlations are included in Table 3.

Results

In line with our hypotheses, our results revealed a pattern consistent with mediation whereby shared reality predicted decreases in work-related uncertainty over time, b = -0.33, 95% CI [-0.58, -0.09], z = -2.70, p = .007 (see *Figure 4*), which was in turn associated with increases in work-related meaning later on in the pandemic, b = -0.33, 95% CI [-0.48, -0.22], z = -5.25, p < -5.25, p <

.001. Of note, Time 1 work-related uncertainty was included as a covariate in Path A; thus, shared reality predicted decreases in work-related uncertainty. In other words, the more shared reality that frontline healthcare workers perceived with their non-healthcare partner at the onset of the pandemic, the less uncertain they felt about their work environment over time, and this in turn predicted a greater sense of meaning about their work later on in the pandemic. Despite the lack of a total effect (Hayes, 2018; Shrout & Bolger, 2002), b = -0.008, 95% CI [-0.19, 0.18], z = -0.08, p = .94, the indirect effect from shared reality to meaning through a reduction in uncertainty was significant, ab = 0.11, 95% CI [0.04, 0.25], z = 2.22, p = .027, which suggests that shared reality may promote work meaning to the extent that it reduces uncertainty about one's work environment. Lastly, the indirect effect held controlling for relationship satisfaction at Time 1, ab = 0.09, 95% CI [0.02, 0.19], z = 2.03, p = .043, suggesting that shared reality's effect on meaning via uncertainty was not attributable to a "relationship goodness" effect.

Of note, relationship satisfaction was found to be a significant mechanism in the association between shared reality and work meaning when controlling for uncertainty about one's work environment. Specifically, those who experienced higher levels of shared reality with their romantic partner reported greater relationship satisfaction compared to those who experienced lower levels of shared reality with their partner, b = 0.45, p < .001. In addition, experiencing greater relationship satisfaction was associated with greater work meaning, b = 0.20, p = .004. The indirect effect was significant, ab = 0.09, p = .022, providing evidence that experiencing a shared reality with one's partner has the potential to influence healthcare workers' sense of work meaning through increasing their relationship satisfaction.

Discussion

These findings provide additional evidence for the power of one's relationships in influencing important aspects of people's lives. Specifically, the experience of shared reality with one's romantic partner was found to be strong enough to predict changes in frontline healthcare workers' experiences of life-threatening work conditions, even though the romantic partner was not a part of this context or a healthcare worker themselves. Despite frontline healthcare workers struggling with an unprecedented work crisis, to the extent that their sense of shared reality with their partner helped them feel more certain about their work environment, they experienced a greater sense of meaning at work. This adds to the literature on how relationship experiences with coworkers can promote work meaning (Colbert et al., 2016; Dutton et al., 2017; Mao et al., 2012; Methot et al., 2016; Rossignac-Milon & Matz, 2023), to show that relationship experiences with one's romantic partner also influences work meaning. In addition, the results held controlling for relationship satisfaction, adding additional evidence for the robustness of the effect of shared reality on uncertainty and meaning beyond "relationship goodness." Unfortunately, work-related meaning was not measured at Time 1, and I was therefore unable to explore the link between shared reality and changes in work-related meaning although I was able to show that changes in work uncertainty predicted Time 2 meaning.

In addition, I investigated relationship satisfaction as an alternative mechanism in the association between shared reality and meaning in work. I found that relationship satisfaction significantly mediated the association, which is not in line with findings from Study 2 but is in line with prior research exploring relational processes that promote meaning in romantic couples (e.g., Lambert et al., 2013; Stillman & Baumeister, 2009; Prinzing et al., 2023). Compared to the sample in Study 2, participants in the current sample were facing extremely unprecedented and

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life-threatening work circumstances. As such, it may be that simply feeling good about one's relationship is sufficient for allowing people to find meaning in their work. Indeed, research on terror management theory suggests that close relationships provide a shield against the existential threat of one's own mortality (Mikulincer et al., 2003). Given that healthcare workers in this sample were consistently facing a threat to their lives, it may be that they used their positive views of their relationship as a protective method, which allowed them to find meaning in their work despite the life-threatening context. Another explanation may be that relationship satisfaction is capturing other aspects of a good relationship, such as increased partner support, which has been shown to be beneficial to healthcare workers in this context (Enestrom & Lydon, 2021) and, as suggested by these findings, may also be instrumental in allowing healthcare workers to extract meaning from their work.

Overall, these findings suggest that the association between shared reality, uncertainty, and meaning extends beyond the broad construct of meaning in life to examine a specific domain of meaning within one's life. This is an important finding given that work is a common source of meaning (Pew Research Center, 2021). Work is also an environment in which people spend a large amount of their time (Pryce-Jones, 2010), and people tend to prioritize finding meaning at work over other outcomes, like increased financial compensation (Kelly, 2009). In addition, the findings from the present study highlight a key interpersonal construct that can help people navigate the uncertainty surrounding changing workplace norms and expectations (Barrero et al., 2021; Vandecasteele et al., 2022). This link was tested in a particularly unique sample of frontline healthcare workers during the pandemic, wherein the constructs of work-related uncertainty and meaning may be especially central to their lives. Finding meaning in unprecedented work situations may have downstream consequences for overall well-being,

including reduced distress (e.g., Debats et al., 1993; Harlow et al., 1986). Beyond replicating earlier findings around meaning in life more generally, the present study also provides evidence of directionality between shared reality and uncertainty, whereby shared reality predicted decreases in uncertainty about healthcare workers' work environment between the first two waves of the pandemic.

Footnotes

¹ Data in Study 3 were collected as part of a larger investigation of healthcare workers' romantic relationships and work experiences during the pandemic. At present, the data set is used in one published paper (Enestrom & Lydon, 2021). However, this is the first investigation involving this dataset to examine relations between shared reality, work uncertainty and meaning in work.

² I chose this age range as I wanted to minimize adding additional stress to young adults (18-21 years old), who are likely new to the field and less experienced. In addition, I wanted to reduce sampling an at-risk population (50+ years old) to avoid additional confounds.

³ Although the name of the subscale suggests that it captures people's search for meaning, the subscale indeed captures people's presence of meaning. The item I used was: "The work I do serves a greater purpose."

Shared Reality Promotes Meaning in Work Through Reduced Uncertainty Related to Frontline





Figure 4. Pattern consistent with mediation whereby shared reality promotes work-related meaning through reducing work-related uncertainty for frontline healthcare workers during the pandemic. Path A controls for Time 1 work-related uncertainty. **p < .01, ***p < .001.

Variables	1.	2.	3.	4.	5.	6.	7.
1. Shared Reality T1	-						
2. Uncertainty T1	11	-					
3. Relationship Satisfaction T1	.40***	25**	-				
4. Shared Reality T2	.68***	19*	.42***				
5. Uncertainty T2	25**	.45***	26**	-			
6. Relationship Satisfaction T2	.43***	28**	.50***	.58***	36***	-	
7. Work Meaning T2	01	32***	.24**	.15†	42***	.28***	-

Table 3. Correlations for Study 3

Note. $\dagger p < .10$, *p < .05, **p < .01, ***p < .001.

Study 4 – Recall Paradigm Experiment

After providing strong support for our hypotheses through correlational and longitudinal designs, I sought causal evidence for the association between shared reality, uncertainty, and meaning by experimentally manipulating shared reality. Using a recall paradigm, participants were asked to recall either a low shared reality experience or a high shared reality experience with their partner. Afterwards, they completed measures of uncertainty related to the recalled experience (i.e., recall-target uncertainty) and meaning in life. For example, in the low shared reality condition, Sarah might recall a recent experience where she watched a documentary with her partner Nyles, and they interpreted it in completely different ways. Sarah would be asked about her uncertainty about her interpretation of the documentary, in other words, the target of the recalled experience. In the present study, I explored differences between conditions, predicting that those who were asked to recall a high shared reality experience would report lower uncertainty and in turn greater meaning in life compared to those who were asked to recall a low shared reality experience. I also expected these results to hold controlling for relationship satisfaction, participants' mood following the manipulation, and whether or not the experience was considered a conflict. I only recruited couples who were exclusively dating or cohabiting, as I expected married couples to be more committed and have been together for longer, making it more difficult for a recall experience to shift their views of their partner and their relationship. These analyses were not pre-registered; however, the materials, syntax, and deidentified data can be found on OSF (https://osf.io/bsj49/?view_only=da3bcd4b3f1e40b09795158d2fd62b1e).

Method

Participants

Participants were recruited from the crowdsourcing website Amazon Mechanical Turk for an online study. To be eligible, participants had to be 18 or older, in an exclusive relationship for at least 6 months, and either exclusively dating or cohabiting, not married. In total, 258 participants took part in the online survey. Prior to data analysis, 43 participants were excluded for misunderstanding the prompt (e.g., responding with high shared reality events in the low shared reality condition)¹ and 4 participants for failing the attention check. I also ran additional analyses to detect and remove careless responders (Meade & Craig, 2012), which flagged an additional 11 participants. This resulted in a final sample size of 200 participants, 94 in the low shared reality condition and 106 in the high shared reality condition². In our final sample, participants were on average 32.5 years old (SD = 10.92 years), 33% identified as male, 66% as female, 1% as other. Participants were mostly White (76%), with some also identifying as Hispanic (9.5%), Asian (9.5%), Black (2.5%), and Other (2.5%). In addition, participants had been in their relationship for about 4 years (SD = 4.30) and 78% identified as heterosexual. Couples were either exclusive (44%) or cohabiting (56%). This sample provided us with 80% power to detect an effect as small as $f^2 = .04$; as per Cohen's (1988) guidelines, .02 is defined as a small effect size and .15 is defined as medium effect.

Procedure

Participants were recruited through Amazon Mechanical Turk to complete a 3-minute demographic questionnaire, in line with the procedure used in Study 2. Eligible participants were then invited to complete a 15-minute bonus survey for additional compensation. Those who agreed were randomly assigned to one of two conditions where they were either asked to recall a

high shared reality experience with their partner or a low shared reality experience with their

partner.

Both conditions:

Psychologists are often interested in how people engage with and perceive sensory experiences. This includes experiences of food, images, events, etc. We are particularly interested in how couples overlap in these sensory experiences and whether they experience the world in the same way. That is, whether couples feel that they are on the same "wavelength". Research has shown that couples can have experiences where they overlap while also having experiences where they see the world differently. Both experiences can have benefits for a relationship, and both are good.

High shared reality condition:

With this in mind, please recall a recent time in which you felt like you and your partner WERE on the same page, experiencing the world in the SAME way. For example, you and your partner may have watched a movie and shared in your opinion of how scary it was. Similarly, you and your partner might have heard a joke and had the same thought come to mind, exchanging a knowing glance. Most couples have these types of experiences from time to time and they are a normal part of romantic relationships.

Low shared reality condition:

With this in mind, please recall a recent time in which you felt like you and your partner were NOT on the same page, experiencing the world in a DIFFERENT way. For example, you and your partner may have watched a movie and had different opinions of how scary it was. Similarly, you and your partner might have heard a joke and had a different thought come to mind. Most couples have these types of experiences from time to time and they are a normal part of romantic relationships.

Participants were then asked to think about the event and visualize the recalled

experience for 15 seconds, after which they were asked to describe the experience in 2-3

sentences. Participants then completed a measure of their uncertainty towards the target of the

recalled experience and a measure of their meaning in life. I also included a measure of whether

the recalled experience was a conflict and a measure of positive affect following the

manipulation. These covariates were measured to ensure that the manipulation was not having an

influence due to participants recalling conflict experiences when in the low shared reality

condition, or due to its effect on participants' mood. As in the previous two studies, I also

included a measure of relationship satisfaction following the manipulation.

Measures

Recall-Target Uncertainty (Low SR: M = 2.46, SD = 1.13, $\alpha = 0.90$; High SR: M =

1.88, SD = 0.77, $\alpha = 0.87$). Uncertainty was measured using the same items as in the previous studies, modified to ask about the target of their recalled experience (e.g., their certainty of their impression of the movie). Specifically, participants were provided with the following prompt

before being presented the three items used in Studies 2 and 3.

Please rate your agreement with the following items with respect to the **target (e.g., food, image, event)** of the experience that you recalled earlier. So, for instance, if you recalled an experience where you and your partner watched a movie together then the target is the movie you watched.

Please note that your responses should reflect how you felt **about the target** during the experience and not how you felt about the experience more generally.

Meaning in Life (Low SR: M = 4.47, SD = 1.44, $\alpha = 0.92$; High SR: M = 4.68, SD =

1.39, $\alpha = 0.94$). Meaning was measured using the same scale as in Study 1 and Study 2 (i.e.,

MLQ; Steger et al., 2006).

Relationship Satisfaction (Low SR: M = 5.16, SD = 1.39; High SR: M = 5.03, SD =

1.43). Relationship satisfaction was measuring using the same item as in the previous studies

(Goodwin, 1992).

Positive Affect (Low SR: M = 4.52, SD = 1.12, $\alpha = 0.93$; High SR: M = 4.75, SD = 1.08,

 $\alpha = 0.93$). Positive affect was measured using 13 items from the Modified Positive and Negative Affect Schedule (Watson et al., 1988), which measures positive affect. Participants were asked to indicate the extent to which they *typically* felt, for instance, "inspired" and "happy on a 7-point Likert scale (1 =*Not at all*, 7 = *Extremely*).

Conflict (Low SR: M = 3.73, SD = 2.19; High SR: M = 1.40, SD = 1.01). To control for conflict in the recalled experience, participants were asked "Could the recalled experience be considered a conflict between you and your partner?" Participants indicated their response on a 7-point Likert scale (1 = Not at all, 7 = Extremely).

Data Analysis

As in the previous studies, 'lavaan' was used to explore a pattern of mediation³. However, the current study included a categorical variable as a predictor for Path A, Path C, and Path C'. Thus, a dummy-coded variable was created to compare the low shared reality condition (0) to the high shared reality condition (1). I then used this dummy-coded variable to predict both recall-target uncertainty (Path A) and meaning in life (Path C and Path C').

In addition, to explore the robustness of the manipulation and its effect on uncertainty, I examined the association between condition and uncertainty (Path A) controlling for positive affect and conflict. Moreover, I included relationship satisfaction as a covariate in the full mediation model in order to control for overall "relationship goodness" as a potential alternative mechanism explaining the manipulation's effect on meaning in life. All correlations can be found in Table 4.

Results

In line with the findings from the correlational studies, those who were asked to recall a high shared reality experience⁴ reported lower uncertainty about the target they recalled compared to those who were asked to recall a low shared reality experience, b = -0.58, 95% CI [-0.85, -0.33], z = -4.30, p < .001 (see *Figure 5*). In turn, experiencing less uncertainty about the target of what they recalled was associated with greater meaning in life, b = -0.27, 95% CI [-0.48, -0.04], z = -2.55, p = .011. There was no total effect of condition on meaning in life, b = -0.27, 95% CI [-0.48, -0.04], z = -2.55, p = .011.

0.21, 95% CI [-0.18, 0.60], z = 1.03, p = .301. However, the indirect effect was significant, ab = 0.16, 95% CI [0.04, 0.33], z = 2.12, p = .034, providing evidence that experimentally manipulating shared reality has the potential to influence meaning in life through reducing uncertainty about the target of one's experience. The effect of the manipulation on recall-target uncertainty was consistent when controlling for positive affect, ab = 0.14, 95% CI [0.04, 0.33], z = 2.03, p = .043, and whether the experience represented a conflict, ab = 0.13, 95% CI [0.03, 0.28], z = 2.06, p = .040. In addition, the mediation effect was consistent controlling for relationship satisfaction, ab = 0.14, 95% CI [0.03, 0.33], z = 1.94, p = .052.

Relationship satisfaction was not found to be a mechanism in the association between shared reality and meaning in life when controlling for target-specific uncertainty. Specifically, those who were asked to recall a high shared reality experience did not report different levels of relationship satisfaction compared to those who were asked to recall a low shared reality experience, b = -0.22, p = .29. However, experiencing greater relationship satisfaction was associated with greater meaning in life, b = 0.20, p = .006. These results suggest that relationship satisfaction did not mediate the association between shared reality and meaning in life when controlling for target-specific uncertainty.

Discussion

The present study found initial causal evidence to support the pattern of mediation found in Studies 2 and 3. By reducing people's uncertainty about an experience, experimentally heightening shared reality through a simple recall task can promote a greater sense of meaning in life. When participants recalled an experience where they felt on the same page as their partner, like reacting in the same way to an inside joke, they experienced less uncertainty about their understanding of the joke they heard compared to those participants who recalled a low shared reality experience, like a time they laughed in response to an inside joke that their partner did not understand. The effect of the manipulation on uncertainty was not explained by participants simply feeling a more positive mood or recalling an experience that was conflictual, nor was the overall mediation model explained by a "relationship goodness" effect.

Further, I tested relationship satisfaction as an alternative mechanism in the association between shared reality and meaning in life. This analysis allowed me to casually test whether the epistemic and relational functions of shared reality that promote meaning might exist simultaneously. If this were the case, these findings would support prior research which finds evidence for the relational function of close relationships in promoting meaning, while also distinguishing my model, and its focus on the epistemic function of shared reality, from this earlier work. I found that relationship satisfaction did not significantly mediate the association. Whereas the shared reality manipulation influenced uncertainty, it did not influence relationship satisfaction. However, uncertainty was measured with respect to the recalled experience, whereas relationship satisfaction was not, which might explain why there was no significant mediation when I examined relationship satisfaction as a mechanism. Similarly, relationship satisfaction may be a more chronic construct that partners are less likely to vary on and may be easier for partners to maintain positive illusions about (e.g., Murray et al., 1996). In contrast, uncertainty about something, especially about the target of a recalled experience, may be easier to influence through a shared reality manipulation. As a result, future work could consider additional manipulations that may better influence the relational aspect of shared reality, while also including a measure that is more specific to the manipulation being used.

There was no total effect of condition on meaning in life, which is not in line with our earlier findings in Studies 1 and 2. This may be due to participants recalling relatively mundane

experiences that were not significant enough to directly influence their meaning in life. Indeed, prior research has found it difficult to experimentally manipulate meaning in life, given that it is such a stable construct (Hicks & King, 2018). This may have been further impacted by our sample being limited to romantically-involved individuals who were either dating or cohabiting, not married. While this could have made it easier to move their shared reality away from their baseline levels, it is also possible that it made it more difficult for participants to recall impactful experiences that could have directly influenced meaning.

Overall, I found reasonable evidence that shared reality reduces uncertainty about the target of their recalled experience which in turn predicts meaning and these results could not be explained by relationship satisfaction or positive affect. These findings suggest that shared reality is malleable, and that even a small intervention to enhance shared reality might make a difference in uncertainty and meaning. These results are especially promising given the difficulty of experimentally manipulating meaning in life.

Footnotes

¹ Of the 43 participants removed, 19 of them recalled an experience that did not align with the prompt (e.g., a shared experience or a high shared reality experience when in the low shared reality condition). Specifically, of those in the low shared reality condition, 15 participants recalled a shared experience or a high shared reality experience. In contrast, of those in the high shared reality condition, 4 participants recalled a low shared reality experience. This suggests that it might not simply be participants misinterpreting the prompt, but they may instead be exhibiting a defensive resistance to the manipulation. Regardless, I decided to exclude these participants, given that they did not complete the manipulation task in line with the prompt they were given. However, this did not change the results (see following footnote).

² The results were consistent when I tested our hypotheses using the full dataset including the 43 participants who apparently misunderstood the manipulation.

³ Due to converge issues, I changed the default optimizer ("nlminb") to an alternative ("BFGS").

⁴ See Appendix A for examples of experiences recalled by participants.

High vs. Low Shared Reality Condition Promotes Meaning in Life Through Reduced Recall-

Target Uncertainty



Figure 5. Pattern consistent with mediation whereby recalling a high vs. a low shared reality experience promotes meaning in life through reducing recall-target uncertainty in Study 4. *p < .05, ***p < .001.

Variables	1.	2.	3.	4.	5.
1. Uncertainty	-				
2. Meaning in Life	20**	-			
3. Relationship Satisfaction	08	.21**	-		
4. Positive Affect	29***	.54***	.35***	-	
5. Conflict	.23**	10	16*	18*	-

Table 4. Correlations for Study 4

Note. p < .05, p < .01, p < .01.
Chapter 6

Study 5 – False Feedback Experiment

In the final study, I aimed to address some of the limitations from Study 4 using a false feedback paradigm with romantic couples. Specifically, I sought to make the manipulation more powerful by recruiting romantic couples to complete the study together and deliver feedback about their shared reality in real-time. In addition, I measured uncertainty about life in general, not specific to a recalled experience, therefore extending our effect beyond recall-target uncertainty. Further, I measured both uncertainty and meaning in life in state terms ("right now"), as I believed this might better capture momentary fluctuations in these variables, given the difficulty of temporarily shifting meaning in life in Study 4. Lastly, I measured the sense of belonging and included it in the full mediation model as an alternative mechanism to show that the proposed model is driven by epistemic processes, and takes place above and beyond any relational effects, such as the fulfilment of one's belonging needs (Lambert et al., 2013; Prinzing et al., 2023).

With this in mind, I recruited romantic couples to take part in a Zoom session where they completed tasks for which they received false feedback. Participants were either told they overlapped highly with their partner on their interpretations of a set of stimuli that I asked them to view (High Shared Reality) or that they did not overlap much in their interpretations of the stimuli (Low Shared Reality). Participants then completed a manipulation check, along with measures of uncertainty and meaning in life. I predicted that those in the high shared reality condition would report lower uncertainty about life and greater meaning in life compared to those in the low shared reality condition. I also expected these results to hold controlling for relationship satisfaction, mood and participants' sense of belonging following the manipulation.

The latter would support our prediction that epistemic processes are key in explaining how shared reality promotes meaning in life. It would also allow us to distinguish our proposed model from earlier work exploring shared positive affect and the subsequent effects on meaning in life (Prinzing et al., 2023). This main hypothesis of shared reality predicting meaning in life through reducing uncertainty about life was pre-registered on OSF

(https://osf.io/jgc3p/?view_only=219c374a5e8b413685a9f601ab351cc9). The materials, syntax, and deidentified data can also be found on OSF

(https://osf.io/bsj49/?view_only=da3bcd4b3f1e40b09795158d2fd62b1e).

Overall, this work aimed to further the field's understanding of how shared reality within one's relationship can influence important aspects outside of one's relationship, like meaning. More specifically, this research would allow me to collect causal evidence that shared reality promotes meaning in life through reducing uncertainty in the world around us. This is especially important today, as the world we live in makes it especially difficult to make sense of things in our environment that would allow us to establish meaning.

Method

Participants

Participants were recruited from a large North American city. To be eligible, participants had to be age 18 or above and in an exclusive relationship for at least 3 months. In total, 290 participants (145 couples) took part in the study. However, prior to data analysis, 40 participants were excluded according to our preregistered exclusion criteria (additional details can be found on the OSF page; <u>https://osf.io/jgc3p/?view_only=219c374a5e8b413685a9f601ab351cc9</u>): 22 participants due to glitches in the manipulation task, 10 participants who were skeptical of the feedback, 4 participants whose interpretations of the manipulation materials undermined the false

feedback, 2 participants who communicated during the study, and 1 participant who received incorrect false feedback from the research assistant. In addition, I conducted careless responding analyses (Meade & Craig, 2012), which led us to remove data from one additional participant.

Our final sample size was 250 participants (125 couples), with 120 participants in the low shared reality condition and 130 participants in the high shared reality condition. Participants were on average 21 years old (SD = 3.04), 48% identified as male, 49% as female, 1% as other. Participants were mostly White (57%), with some also identifying as Asian (26%), Hispanic (4%), or other/another identity (13%). In addition, participants had been in their relationship for 2 years on average (SD = 4 years), and 80% identified as heterosexual, 15% as bisexual, 3% as homosexual, and 2% as Other. Couples were either exclusive (87%), cohabiting (11%), or married (2%).

I conducted sensitivity analyses using Monte Carlo simulations (Lane & Hennes, 2018). Based on 1000 Monte Carlo draws and a sample of N = 125 dyads (2 people per dyad), power was calculated to be 82% for Path A and essentially 100% for Path B, indicating there was sufficient power to detect the effect.

Procedure

Participants were recruited to complete a 45-minute Zoom session with their partner. Participants were led to believe that I was interested in broadly exploring experiences in close relationships, specifically those that romantic partners do not do together. They were told that they would participate in various tasks, either together or apart, in which these research questions would be assessed. Most were recruited through a university Psychology Participant Pool while others were recruited from the surrounding community through online posts on social media and flyers around campus and local cafes. To be eligible for the study, both members of the couple were required to email the study email from their own email accounts indicating that they were interested in taking part in the survey. Once both members of the couple confirmed their interest and eligibility, they were sent a 15-minute survey to collect baseline measures of shared reality and meaning in life, among other measures. Both members of the couple had to complete the initial survey and be deemed eligible before they were scheduled for an online session. The exclusion criteria were clearly outlined in the consent form. Eligible couples who completed the initial survey were then scheduled for a Zoom session with their partner, where they completed two tasks as part of the manipulation, followed by several measures.

For the tasks, participants were randomly assigned to a high shared reality or a low shared reality condition, which determined the type of feedback they received on the tasks. Randomization occurred at the participant level, meaning romantic partners could have the same or different conditions. In the first task, participants were separately shown 5 bistable images (i.e., images that can be interpreted in one of two ways) for half a second each and in the second task they were shown 4 moving images for 5 seconds each (i.e., images that can be interpreted as rotating in one of two directions) in different breakout rooms on Zoom (see Appendix B for stimuli examples). After seeing each image, they indicated in an online survey which of two ways they interpreted the images, after which they were given false feedback about the way in which their partner interpreted the image. Those in the high shared reality condition were told their partner interpreted the images in the same way for 4/5 of the still images and 3/4 of the moving images. Those in the low shared reality condition were told their partner interpreted the images in the same way for 1/5 of the still images and 1/4 of the moving images. After each of the two tasks, participants were shown a visual graph that summarized their overlap with their partner. The research assistant provided a verbal summary of what this meant with regards to

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their shared reality (see Appendix C for summary details). Once participants completed both tasks, they completed a manipulation check, along with measures of uncertainty about life and meaning in life. Once the study was completed, participants were debriefed about the use of deception in the study. Participants taking part in the study through the participant pool were compensated with one course credit, which is the university standard (1 hour = 1 credit). Participants receiving monetary payment were compensated with a \$10 e-transfer for participating in the study. This includes participation in the initial survey and the online Zoom session. Participants were only compensated once they took part in the entire survey (i.e., the initial survey and the Zoom session).

Measures

Manipulation Check (Low SR: M = 4.19, SD = 1.10, $\alpha = 0.71$; High SR: M = 5.77, SD = 0.72, $\alpha = 0.63$). I used a manipulation check (Rossignac-Milon et al., 2021) to ensure that participants in the two conditions felt a different sense of shared reality depending on the condition they were in. The check included 3 items such as "I felt like my partner and I were on the same wavelength" after completing the tasks. Participants rated these items on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). The overall internal consistency was high ($\alpha = .80$; average r = .58), although there was some variation between conditions.

Uncertainty about Life (Low SR: M = 2.60, SD = 1.00, $\alpha = 0.88$; High SR: M = 2.44, SD = 0.92, $\alpha = 0.89$). Uncertainty was measured using the same scale as in the previous study, but the prompt asked each participant about their certainty "with respect to your life right now". For instance, "Right now, I am certain of what I think is really going on". **Meaning in Life** (Low SR: M = 4.99, SD = 1.22, $\alpha = 0.89$; High SR: M = 4.89, SD =

1.20, $\alpha = 0.88$). Meaning in life was measured using the same scale as in the previous study. To capture state meaning in life, the phrase "Right now" was added to the front of each item.

Baseline Shared Reality (Low SR: M = 5.31, SD = 0.75, $\alpha = 0.73$; High SR: M = 5.38, SD = 0.83, $\alpha = 0.76$). Shared reality was measured using the same scale as in the prior studies (Rossignac-Milon et al., 2021).

Relationship Satisfaction (Low SR: M = 5.83, SD = 0.95, $\alpha = 0.92$; High SR: M = 5.48, SD = 1.01). Relationship satisfaction was measured using the same item as in the prior studies (Goodwin, 1992).

Positive Affect (Low SR: M = 5.22, SD = 0.73, $\alpha = 0.85$; High SR: M = 5.35, SD = 0.73, $\alpha = 0.85$). Positive affect was measured with the same scale as in the previous study (Modified Positive and Negative Affect Schedule; Watson et al., 1988)

Sense of Belonging (Low SR: M = 5.60, SD = 0.99, $\alpha = 0.92$; High SR: M = 5.62, SD = 1.00, $\alpha = 0.92$). Sense of Belonging was measured using 18 items from the Sense of Belonging Instrument (Hagerty & Patusky, 1995). Participants were asked to indicate the extent to which they agreed or disagreed with statements such as "Right now, I feel like people accept me" on a 7-point Likert scale ($1 = Strongly \ disagree, 7 = Strongly \ agree$).

Data Analysis

I tested our hypothesis using multilevel mediation modelling with Bayesian Regression Models using the 'Stan' (brms) package in R version 4.2.2 (Burkner, 2021). This follows the guidelines set out by Bolger and Laurenceau (2013) in how to accommodate "true" multivariate models, given the dataset includes romantic partners nested within couples. Bayesian models generate a distribution of possible parameters (referred to as the posterior distribution) from Chapter 6

which credibility intervals are generated. Making use of these models helps bypass issues related to the distribution of the indirect effect not being normal (see Bolger et al., 2019 for further details). I used a noninformative, default prior, which provides results similar to the classic frequentist approach. By default, brms will run 4 chains with 2,000 iterations each. For Path A of condition (Low SR. vs. High SR) predicting uncertainty about life, I modeled the random slopes of condition. For Paths B, that is, uncertainty about life predicting meaning in life controlling for condition, and Paths C', condition predicting meaning in life controlling for uncertainty about life, I modeled the random slopes of condition and uncertainty. I did not include the random intercepts due to convergence issues. These analyses were pre-registered on OSF (https://osf.io/jgc3p/?view_only=219c374a5e8b413685a9f601ab351cc9). All correlations between variables measured in this study are included in Table 5.

In addition, to explore the robustness of the manipulation, I ran additional models to control for positive affect in the association between condition and uncertainty about life. Further, I included sense of belonging and relationship satisfaction as covariates in all the paths modelled, the former to differentiate our model from prior work (Prinzing et al., 2023) and the latter to control for a general "relationship goodness" effect.

Results

The experimental manipulation influenced the manipulation check in the expected direction, b = 1.58, 95% CI [1.35, 1.80], z = 13.60, p < .001, whereby those in the high shared reality condition reported greater shared reality compared to those in the low shared reality condition. However, in contrast with findings from Studies 2-4 where shared reality, or a shared reality manipulation, was associated with lower uncertainty, condition did not have a main effect on uncertainty about life, b = -0.16, 95% CI: [-.41, .08]. In addition, in contrast with findings

from Studies 1 and 2, condition did not have a main effect on meaning in life, b = -0.16, 95% CI: [-.42, .11]. In investigating participants' responses, I found evidence that not all participants in the low shared reality condition believed the false feedback (see *Figure* 6), given the large variance in responses that covered almost the full range of the scale, and given some of the rationalization in participants' responses to what they thought of the feedback (e.g., "We saw things differently because of the angles of where we were sitting"), as opposed to interpreting it as indicative of a lack of shared reality. See examples below for the low shared reality condition.

Example 1:

"I find that the image interpretation task could have correlated more with which side of the image we each view first. I find that I always looked more towards the left of the image first and it seemed like [partner name]'s responses referred more often to the right side of the image."

Example 2:

"I don't really know because with my partner when we watch a movie or are at the restaurant we usually like very similar things and are on the same wavelength"

In light of this, I readjusted our statistical plan to incorporate the path from condition to manipulation check. This allowed us to test whether the manipulation did in fact influence uncertainty and meaning to the extent that it successfully produced in participants the intended feelings of shared reality. In addition to this baseline model, I ran an additional model controlling for pre-manipulation baseline shared reality so that it is not reflected in the manipulation check, which helps to rule out the manipulation check simply representing one's baseline levels of shared reality with their partner. In doing so, any effect of the manipulation check on uncertainty and meaning takes place above and beyond people's baseline levels of shared reality, suggesting that the effect is indeed a result of the false feedback provided in the manipulation.

In these exploratory analyses, I made use of multilevel modelling in 'lavaan', as it allows us to accommodate a mediation model that includes condition predicting the manipulation check

and also controls for condition in the subsequent paths (see *Figure 7*). I found that, controlling for condition, the manipulation check predicted lower uncertainty about life, b = -0.17, 95% CI [-0.30, -0.04], z = -2.61, p = .009, which in turn predicted greater meaning in life, b = -0.59, 95% CI [-0.72, -0.45], z = -8.48, p < .001. While the total effect of the manipulation check on meaning in life controlling for condition was significant, b = 0.18, 95% CI [0.02, 0.33], z = 2.23, p = .026, it became non-significant when controlling for uncertainty about life, b = 0.08, 95% CI [-0.06, 0.21], z = 1.10, p = .270, suggesting total mediation. To examine whether the indirect effects in this model were consistent with this pattern of mediation, I calculated the 95% confidence intervals for each indirect effect using the Monte-Carlo Method for Assessing Mediation (MCMAM; Preacher & Selig, 2012). The indirect effect was significant, ab = 0.10, 95% CI: [0.02, 0.19], z = 2.50, p = .012, suggesting that shared reality promoted meaning in life through reducing uncertainty about life. This model held controlling for baseline shared reality, ab = 0.11, 95% CI [0.03, 0.19], z = 2.54, p = .011, suggesting that this association is not driven by participants' baseline level of shared reality (see *Figure 8*). This conservative test provides evidence for how robust the effect of the manipulation was on people's sense of shared reality for those who believed the feedback, whereby it shifted participants sense of shared reality above and beyond their baseline levels. The findings were weaker but consistent when I controlled for post-manipulation positive affect in the path from the manipulation check to uncertainty about life, ab = 0.06, 95% CI [-0.01, 0.13], z = 1.67, p = 0.095. I found the same pattern when controlling for potential alternative mechanisms in the full mediation model, such as sense of belonging, ab = 0.07, 95% CI [0.01, 0.14], z = 2.23, p = .026, and relationship satisfaction, ab = 0.070.07, 95% CI [0.002, 0.14], *z* = 1.88, *p* = .061.

Relationship satisfaction was not found to be a mechanism in the association between shared reality and meaning in life when controlling for uncertainty about life. Specifically, those who were provided feedback that they had a high shared reality with their partner and believed the feedback, as indicated by the manipulation check, reported higher relationship satisfaction compared to those who were provided feedback that they had a low shared reality with their partner, b = 0.20, p = .004. However, experiencing greater relationship satisfaction was marginally associated with greater meaning in life, b = 0.17, p = .073. In addition, the indirect effect of the manipulation check influencing meaning in life through relationship satisfaction was not significant, ab = 0.03, p = .143. These results suggest that relationship satisfaction did not mediate the association between the manipulation check and meaning in life.

Lastly, one's sense of belonging was not found to be a mechanism in the association between shared reality and meaning in life when controlling for uncertainty about life. Specifically, those who were provided feedback that they had a high shared reality with their partner and believed the feedback, as indicated by the manipulation check, did not report different levels of belonging compared to those who were provided feedback that they had a low shared reality with their partner, b = 0.05, p = .39. However, experiencing a greater sense of belonging was associated with greater meaning in life, b = 0.38, p < .001. These results suggest that one's sense of belonging did not mediate the association between the manipulation check and meaning in life.

Discussion

Overall, these findings indicate that experiencing a threat to one's shared reality can influence uncertainty and meaning in life. I was able to show this with couples in real-time completing a study together about arbitrary images. Specifically, to the extent that participants Chapter 6

believed feedback about their shared reality being high vs. low, as indicated by the manipulation check, they experienced reduced uncertainty about life and increased meaning in life. This pattern of results was consistent even when I considered participants' chronic level of shared reality, along with possible alternative explanatory constructs that the manipulation could have influenced, such as positive affect. Further, the overall association was not explained by the sense of belonging or their relationship satisfaction.

Evidence that the effect of shared reality holds controlling for the sense of belonging is especially important and a unique contribution of this study. Prior research provides evidence that co-experienced positive affect promotes meaning in life as it allows people to establish social resources, such as the sense of belonging (Prinzing et al., 2023). Therefore, controlling for both positive affect and the sense of belonging, I provide empirical evidence to distinguish our proposed theoretical model from the model proposed by Prinzing and colleagues (2023). In doing so, I highlight that the effects of shared reality on meaning in life are through an epistemic process, that of uncertainty reduction, which takes place above and beyond the relational processes proposed by these authors.

Moreover, I tested relationship satisfaction and the sense of belonging as alternative mechanisms in the association between shared reality and meaning in life. I found that relationship satisfaction did not significantly mediate the association between the shared reality manipulation and meaning in life, as relationship satisfaction was only marginally associated with meaning in life, and the indirect effect was not significant. Similarly, one's sense of belonging did not significantly mediate the association between the shared reality manipulation and meaning in life, as it was not influenced by the shared reality manipulation. These findings provide evidence that the relational processes associated with shared reality may be less

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impactful on predicting meaning in life compared to the epistemic processes, particularly that of uncertainty reduction. Specifically, any increase in relationship satisfaction stemming from shared reality was not found to promote meaning in life, while shared reality did not influence one's sense of belonging, both controlling for uncertainty. However, it is important to note that the measure of belonging was about one's close relationships more generally, not specific to one's romantic relationship. Therefore, while a shared reality manipulation might influence one's belonging with their partner, this may not be strong enough to impact one's *general* sense of belonging. As such, future work may wish to measure sense of belonging specific to one's romantic partner.

In contrast to our predictions, the false feedback manipulation did not have a main effect on our outcomes of interest. In retrospect, these null effects may be due to participants being motivated to maintain their relationship in the face of threat (Auger et al., 2016; Murray et al., 2015; Ogolsky et al., 2017; Rossignac-Milon et al., 2021, Rusbult et al., 2001), and therefore less likely to internalize the low shared reality feedback as diagnostic of their sense of shared reality with their partner. Evidence of this motivated maintenance was found in the low shared reality condition where the mean score of the manipulation check was at the midpoint of the scale, suggesting that people may be inclined to perceive shared reality with their close partners even when presented with information suggesting they saw things differently. Future research should explore moderators that might help understand when and for whom a false feedback manipulation on shared reality would effectively influence one's sense of shared reality with their partner. It might also consider whether there are methods to successfully manipulate shared reality in ways that overcome possible relationship maintenance responses—for example, by exposing participants to repeated instances of not sharing a reality across various types of stimuli, or using a subtle implicit manipulation.

Overall, to the extent that participants believed the false feedback and the manipulation was effective, those made to believe they saw their world in a similar way as their partner found their life less uncertain and more meaningful compared to those who believed they saw their world differently from their partner. These effects are remarkable given the difficulty of manipulating a construct as broad as meaning in life, which has been found to be highly stable and difficult to manipulate (Hicks & King, 2018).

Main Effect of Condition on Manipulation Check



Figure 6. Main effect of condition on manipulation check, whereby high shared reality condition showed significantly higher scores on the manipulation check (b = 1.58, p < .001). Wide variation in responses from those in the low shared reality condition suggests not all participants believed the feedback.



Manipulation Check Promotes Meaning in Life Through Reduced Uncertainty About Life

Figure 7. Those who were provided high shared reality vs. low shared reality feedback and believed the feedback experienced greater meaning in life through reduced uncertainty about life. *p < .05, **p < .01, ***p < .001.

Manipulation Check Promotes Meaning in Life Through Reduced Uncertainty About Life,

Controlling for Baseline Shared Reality



Figure 8. Those who were provided high shared reality vs. low shared reality feedback and believed the feedback experienced greater meaning in life through reduced uncertainty about life, controlling for baseline shared reality. *p < .05, **p < .01, ***p < .001.

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Variables	1.	2.	3.	4.	5.	6.	7.
1. Manipulation Check	-						
2. Uncertainty	18**	-					
3. Meaning in Life	.08	47***	-				
4. Baseline Shared Reality	.20**	01	.09	-			
5. Relationship Satisfaction	.33***	28***	.26***	.31***	-		
6. Positive Affect	.19**	44***	.41***	.13*	.31***	-	
7. Sense of Belonging	.08	27***	.42***	.04	.21**	.36***	-

Table 5. Correlations for Study 5

Note. *p < .05, **p < .01, ***p < .001.

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General Discussion

People seek meaning in their lives and rely on a sense of purpose and coherence to thrive (e.g., to reduce distress: Debats et al., 1993; Harlow et al., 1986). However, it can be especially difficult to make sense of things in our environment and establish meaning in the modern world. For instance, society has just faced a global pandemic that has upturned the social and economic order. Even as part of people's daily lives, they face roadblocks to meaning, as they struggle to make sense of social movements, like the Black Lives Matter movement, that influence their racial identity and local community, or aspects of a dangerous work environment, like how to interact with COVID-19 positive patients. Even simple instances, like making sense of situations in one's environment, can influence a person's ability to experience meaning. However, human beings are a social species, and it is through social relationships that they can begin to make sense of the world and ultimately find meaning within it.

Meaning in Life

Across five studies with cross-sectional, longitudinal, and experimental designs, I found evidence to support the effect of shared reality on meaning. In Study 1, I provided crosssectional and longitudinal evidence for this association in romantic couples. I then provided evidence for uncertainty reduction as a mechanism across two important contexts, that of the experience of racism for Black people (Study 2) and frontline healthcare workers during the pandemic (Study 3). More specifically, people who experienced greater shared reality with their partner experienced less uncertainty about their experience of racism and about their work environment on the front lines of a global pandemic, which in turn promoted meaning in life and in work, respectively. Lastly, I found evidence for the proposed model experimentally, using a recall paradigm with romantically-involved individuals (Study 4) and a false feedback paradigm with romantic couples (Study 5).

Shared reality primarily had an effect on meaning through its reduction of people's uncertainty in their personal environment. The significance of the indirect effect was consistent across all studies in which I tested mediation models (Studies 2-5), despite the various contexts in which I explored shared reality, such as shared reality during the pandemic (Study 3), or low-stakes manipulations of shared reality (Study 4). In Study 4, the extent to which shared reality about a specific target experience reduced uncertainty about that experience and in turn increased meaning in life may depend on the significance of the experience for the individual's identity, values, or goals. At the same time, it may be that the cumulative effects of shared reality experiences about less significant targets can shift meaning over time. Both having a shared reality about significant targets or accumulating shared reality about less significant targets over time could help explain why I see main effects of shared reality on meaning in life when I examine a more trait measure, such as in Study 1. Future research could explore *what* partners share a reality about in order to test whether target significance may impact shared reality's effect on meaning in life.

Regardless of the possible explanations for the variations in the total effect, prior research suggests that the indirect effect is a more precise way to explain the relationships in the model, as compared to each of the individual paths including the total effect (Hayes, 2018; Shrout & Bolger, 2002). Specifically, the individual paths in the model are components of the indirect path and therefore do not tell the whole story of the relationship between the variables in the model. In light of this, the present research provides robust evidence that shared reality has an influence on meaning in life by reducing uncertainty in people's environment.

Through the results contributed by these five studies, this research program provides converging empirical evidence that people partly rely on a shared worldview with their romantic partners to find a sense of meaning in their lives. These findings stress the importance of social validation in perceiving one's experience of the world that in turn can foster a sense that life is meaningful. Specifically, the evidence provided in the current research suggests that one function of close relationships, specifically the shared reality that can be established within these relationships, is verifying one's worldview. This has been suggested by previous research on transference (Przybylinski & Andersen, 2015) and shared reality (Rossignac-Milon et al., 2021) but never explicitly tested. By exploring and providing evidence for the link between shared reality and meaning in life, this program of research introduces a novel interpersonal pathway through which romantic partners can establish a sense of meaning in their lives. This is a critical contribution to the field of meaning in life, given that decades of theory and research have focused on finding solitary, self-reflective intrapersonal pathways to meaning (Baumeister, 1991; Emmons, 2003). In addition, some interpersonal research has considered relational mechanisms (Heine et al., 2006; Lambert et al., 2013; Murray et al., 2015). In contrast, the present work provides evidence of the epistemic function provided by close relationships and how relationships can promote meaning in life above and beyond their relational function.

Meaning in Work

Shared reality with one's romantic partner was also found to influence an important domain in one's life, one's work. Meaning in work has been defined and measured similarly to meaning in life (Schnell et al., 2013; Steger & Dik, 2009). In addition, people spend a large amount of time at work (Pryce-Jones, 2010) and care deeply about establishing a sense of meaning at work (Pew Research Center, 2021). Despite prior work showing that relationships with colleagues (Colbert et al., 2016; Dutton et al., 2017; Mao et al., 2012; Methot et al., 2016), and shared reality with colleagues specifically (Rossignac-Milon & Matz, 2023), promote meaning in work, the present research provides evidence that shared reality with one's *romantic partner* is strong enough to shape how people engage with their work. Specifically, shared reality promotes meaning in work, even in an unprecedented and highly stressful work context, such as the frontlines of the pandemic. This may be a result of healthcare workers turning to their partner to help them make sense of their work environment, such as the new safety procedures or how best to connect with COVID-19 positive patients while in hazmat gear. This finding has important implications for how employers help promote meaning in the workplace; for instance, employers could encourage their employees to discuss their work lives with their partners or organize social events so that their partners can be further integrated into the employees' work life. Further, this finding highlights the importance of employees to consider their close relationships in the home context when thinking about their work context.

Certainty and Epistemic Processes

In using a novel lens through which to explore meaning in life, that of shared reality theory, our theoretical model is unique in its focus on uncertainty reduction in one's personal environment as a mechanism in promoting meaning. In doing so, it adds to previous literature that examines the epistemic benefits of close relationships (McLean & Pasupathi, 2011; Murray et al., 2017; Przybylinski & Andersen, 2015). Specifically, the present work shows that shared reality reduces uncertainty about important and relevant issues in one's environment, such as frontline healthcare workers' work situation and Black people's perceptions of racism and their sociopolitical climate.

Further, this work adds important findings to support the epistemic benefits of shared reality in romantic relationships, where the research has often focused on the relational benefits (e.g., Enestrom & Lydon, 2021; Rivera et al., 2019). Specifically, I show that the reduction of uncertainty that shared reality produces in turn predicts increased meaning. This demonstrates the positive effects that stem from the epistemic function of shared reality, which is central to this construct and not as often captured in other constructs, or in relationships research more generally. This effect is in line with the idea that uncertainty indicates that life is meaningless (Van Den Bos, 2009; Stillman & Baumeister, 2009) by threatening people's need for truth and understanding (Higgins, 2013; Stevens & Fiske, 1995; Vallacher & Wegner, 1987). By reducing uncertainty through the creation of a shared reality, partners are able to find meaning. These effects were found to emerge above and beyond people's general positive views of their relationship, along with one's sense of belonging, positive affect, and conflict with their partner.

These robustness checks, particularly controlling for one's sense of belonging and their relationship satisfaction, help distinguish the proposed theory from more recent work exploring the relational pathways to meaning in life in close relationships. Specifically, research has found that positivity resonance, that is, co-experiencing a sense of positive affect with a close other, promotes meaning in life (Prinzing et al., 2023). The authors argue that this takes place through relational mechanisms, such as the sense of belonging. By controlling for this construct in Study 5, I provide evidence that the epistemic function of shared reality promotes meaning in life above and beyond the relational processes proposed in Prinzing and colleagues' (2023) theory. In addition, many of the contexts investigated in the present research are inherently negative (e.g., frontlines of the pandemic, Black Lives Matter Movement), which conceptually distinguishes my theory from theirs, as they focus on shared *positive* affect.

Moreover, these results help to separate the present theory from theories proposed in prior research. For instance, Murray and colleagues (2017) theorized that people combat threats to their sense of order and coherence in their environment by reaffirming aspects of their relationship. While similar to the present theory in that the focus is on making sense of the outside world, their theory focuses on making sense of *other* aspects of one's life (i.e., one's relationship), not those aspects in which people are experiencing a lack of coherence in (i.e., their environment). This process of reaffirming their sense of order and coherence *elsewhere* by establishing a *new* sense of shared reality is meant to make up for a violation of expectations. In contrast, the present research illustrates how people can make sense of their outside world by relying on a shared reality with their partner, which directly validates their interpretation of their environment. Ultimately, this process allows partners to make sense of their world together, instead of attempting to compensate for a lack of coherence in their outside world by finding it in their relationship.

Lastly, I tested relationship satisfaction and one's sense of belonging as alternative mechanisms that speak to prior literature on the relational function of romantic relationships in promoting meaning in life (e.g., Prinzing et al., 2023). The results for relationship satisfaction were inconsistent, whereby relationship satisfaction was found to mediate the association between shared reality and meaning in only one study. Specifically, in Study 2, relationship satisfaction did not predict meaning in life controlling for uncertainty about racism and the sociopolitical climate. This may be due to uncertainty reduction being more important in the context of the aftermath of the murder of George Floyd, especially given it was an ambiguous context that directly threatened Black Americans' identity (Thoits, 2012). As such, uncertainty reduction could have been a more powerful predictor of meaning in life that was able to wipe out

the effects of relationship satisfaction. There is some research to support this explanation, as prior research suggests that more uncertain events are more likely to motivate people to create a sense of shared reality (Bar-Shachar & Bar-Kalifa, 2021). In Study 3, results revealed a significant mediation, whereby sharing a reality with one's partner promoted greater meaning in work through increased relationship satisfaction. This significant result may be explained by the unprecedented and dangerous situation that healthcare workers were in, which may be a context in which simply feeling good about one's relationship is sufficient to promote meaning. This can be supported by literature on terror management theory (Greenberg & Arndt, 2012; Mikulincer et al., 2003), which suggests that people reduce their existential fears about their own mortality through their romantic relationship. In this context, healthcare workers were facing constant threats to their lives by being consistently exposed to COVID-19 positive patients. Thus, feeling good about their relationship may have been important in allowing them to extract meaning from their work in the face of their chronic, existential threat. In Study 4, the manipulation did not influence relationship satisfaction controlling for recall-target uncertainty. This may be due to the measure being about chronic relationship satisfaction, whereas the uncertainty measure was specific to the manipulation. In addition, it may be more difficult to shift people's sense of relationship satisfaction as people tend to maintain positive illusions about their partners (e.g., Murray et al., 1996). Lastly, in Study 5, relationship satisfaction did not predict meaning in life controlling for uncertainty about life. This is consistent with the finding from Study 2, which again suggests that relationship satisfaction may be less important compared to epistemic constructs in promoting meaning in life in romantic relationships. Further, the manipulation was only found to marginally influence one's sense of belonging. This may be due to people considering other relationships beyond their romantic partner when asked about their sense of

belonging. Specifically, people might make up for a lack of belonging with their partner, as a result of the shared reality manipulation, by focusing on their sense of belonging with other people in their social network. If this were the case, it still speaks to the importance of shared reality with one's partner in reducing uncertainty, since uncertainty reduction was found to be a significant mechanism. Taken together, I show consistent results of the epistemic function of shared reality in promoting meaning in life through reducing uncertainty. This consistency was not found when exploring relational processes, such as relationship satisfaction and the sense of belonging, which suggests that the epistemic function of shared reality may be more reliable in promoting meaning than its relational function. It also highlights that relationship satisfaction may be a more downstream consequence of shared reality (Enestrom & Lydon, 2021; Rossignac-Milon et al., 2021), and therefore not sufficiently proximal to be a mechanism in the association between shared reality and meaning in life.

Implications for Shared Reality Theory

Two studies included in this research program show the wide range of contexts in which the effect of shared reality on meaning through uncertainty can take place, that of Black people's experiences of racism and frontline healthcare workers' experience of their work environment during the pandemic. These studies provide evidence that even in extremely difficult and uncertain contexts, shared reality can provide people with a sense of meaning to the extent that it reduces their uncertainty about their interpretation of the environment. As highlighted by Goldring and colleagues (2022), even in the face of a stressful event, having someone validate one's appraisal of that event reduces both self-reported stress and physiological ratings of stress reactivity. Thus, despite the objective uncertainty of the context, having a close other's validation of one's interpretation is sufficient to reduce uncertainty and help people find their place. Future work might therefore systematically vary the importance, stress, and uncertainty of the context to examine how these variables may play into the effect of shared reality on uncertainty and meaning in life.

In addition, two of our studies provide reasonable evidence that shared reality can be effectively manipulated, either directly influencing one's sense of uncertainty (Study 4) or influencing both uncertainty and meaning through participants believing the manipulation (Study 5). These findings build on prior work examining threats to romantic partners' shared reality (Rossignac-Milon et al., 2021) by showing that even a simple recall paradigm (Study 4) can successfully influence participants feelings of shared reality with their partner. In addition, the experimental paradigm used in Study 5 provides a novel approach to manipulate shared reality between couples online. Critically, by controlling for baseline shared reality (Study 5), I find evidence that the causal effects of our manipulation through the manipulation check are not a result of people's normative levels of shared reality with their romantic partner. Instead, people experience of shared reality is malleable, which has important implications for meaning in life and close relationships more generally. Specifically, our work highlights the opportunity to promote people's shared reality in a way that can allow them to experience their world in a more certain and meaningful way. While the intention of our experiments was to create a momentary sense of higher vs. lower shared reality in participants, future work could consider whether there are tasks that couples could be asked to do that help them find or develop areas of shared reality, possibly on their own.

People often face ambiguous situations for which it may be difficult to understand and control their environment. Turning to one's romantic partner as a way to feel more certain about

the world around them, people can create understanding out of chaos, and ultimately find purpose in the world they have co-constructed with that partner.

Limitations and Future Directions

Close Relationships. Future work could build upon the present research by extending the consideration of shared reality's effects on meaning via epistemic mechanisms to examine shared reality in other types of close relationships more broadly, beyond those with one's romantic partner. This work highlights how powerful shared reality with one's romantic partner is in allowing partners to make sense of the world around them together, even in contexts where one partner is not present, like at work. However, prior research in intergroup relations suggests that people can create multiple shared realities (Hogg & Rinella, 2018). Therefore, it would be interesting to explore whether these findings would replicate in other forms of close relationships (e.g., friends, family members). While research indicates that other close relationships tend to provide similar benefits to those of romantic relationships (e.g., responsiveness: Gable & Reis, 2015; personality accuracy: Connelly & Ones, 2010; capitalization: Reis et al., 2010; emotional convergence: Anderson et al., 2003), romantic partners might have a greater opportunity to create a shared understanding across more contexts (Biesanz et al., 2007; Rossignac-Milon & Higgins, 2018). Future work may also consider whether people tend to share a reality more with close others they choose (e.g., romantic partners, friends) compared to those where there is less choice (e.g., family, coworkers).

Similarly, it would be interesting for future work to explore when shared reality with one person, like a romantic partner, better promotes these epistemic processes than shared reality with another person, like one's family member. It is unclear whether the *strength* of the shared reality might matter (i.e., higher ratings of shared reality), or whether it might be more about

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what that shared reality encompasses (e.g., which close other was involved in the experience, how important the domain is to the people involved). It is possible that epistemic trust (Echterhoff et al., 2005; Wilson & Sperber, 2012) could play a role whereby, for instance, shared reality with a close other can reduce uncertainty and provide meaning to the extent that the person is perceived to be a credible source of information.

Dyadic Processes. The present research did not explore shared reality processes dyadically. That is, whether the shared reality experienced by one partner influences outcomes for the other partner, and vice versa. This is due to the literature often focusing on each partner's experience of shared reality separately since shared reality between romantic partners tends to be highly correlated. (~ r = .70; Rossignac-Milon et al., 2021). However, it may be interesting for future work to explore potential dyadic effects between shared reality and meaning, such as how one partner's sense of shared reality might influence the other partner's sense of meaning in life. There is some evidence to suggest that partner effects could exist with respect to shared reality and partner support (Enestrom & Lydon, 2021); however, this may only be the case when partners are experiencing different situations that may impact their experiences of shared reality and partner support differently. Specifically, the research finding partner effects in this area focused on healthcare workers and their non-healthcare partners during the pandemic. Regardless, future work should explore potential dyadic effects to consider whether they may be worth including more regularly in this field of research.

Similarly, it could be interesting to explore the extent to which shared reality is truly being shared by romantic partners, given that the construct is based on the *perceived* overlap of inner states. Specifically, future research could explore whether partners establish a shared reality based on a *real* overlap of inner states, and whether the extent to which their shared reality is based on reality might influence uncertainty reduction and meaning in life differently. In pursuing this line of work, future research could also explore the degree to which partners share a specific inner state and what effect this has on uncertainty and meaning. For instance, one romantic partner could *like* the band The Ramones, while the other romantic partner could *love* the band. Future research may wish to explore whether these varying degrees in the strength of a thought, belief, or attitude about something influences the effects of one's shared reality with their partner.

Boundary conditions. Future research may also wish to explore boundary conditions for the effects of shared reality on uncertainty and meaning. For instance, while the present work shows that shared reality is beneficial for reducing uncertainty and promoting meaning, it is possible that this may not be the case in certain contexts. One can imagine a context where *not* sharing a reality with another person about a specific target could be beneficial for meaning, for instance, a work situation where two colleagues have different perspectives on how to approach a project, which could create an optimal level of tension to allow for new ideas (see benefits of task conflict in teams: De Dreu & Weingart, 2003; Simons & Peterson, 2000). Beyond the workplace, initially not experiencing a shared reality could be beneficial in people's daily lives, such as when a friend suggests trying out a new cuisine that one is unsure about. In deciding to trust the friend's opinion about this cuisine, one could end up being exposed to and enjoying a new cuisine they would otherwise have not tried. However, it is unclear whether it would still be necessary for close others to ultimately establish a shared reality about the given target, like both end up having a positive opinion about the cuisine, and/or about the world more generally.

Similarly, there may be contexts in which sharing a reality with one's partner could increase uncertainty and/or decrease meaning. For instance, a person might have come to terms

with not sharing a reality with their partner about a specific aspect of their environment, such as their opinion about a friend's personality. Specifically, one partner might find that the friend is chatty while the other partner might find them timid. If the person later finds out that their partner has come to share in their reality (e.g., now also sees that friend as chatty), then this might ultimately increase one's uncertainty about their interpretation of this person. They may wonder why their partner now also sees their friend in the same way, and whether there is some information that they are missing. This newfound shared reality might go as far as to inhibit this person from construing meaning from their social environment, particularly from this friend or this social group. Taken together, these examples illustrate the importance of exploring boundary conditions and specific instances of shared (or not shared) reality in future work exploring shared reality, uncertainty, and meaning.

In addition, the construct of shared reality in this research program was examined across various samples and contexts. It is important to consider how shared reality might represent a slightly different experience, depending on the population studied and the context it was studied in. For instance, shared reality can be explored as a state or a trait measure. In the cross-sectional studies, I explored shared reality as a trait measure, given I examined chronic levels of shared reality. However, in the experimental studies, I intended to shift participants from their baseline levels of shared reality and as a result I was measuring their state levels. Capturing participants' state vs. trait shared reality might be associated with differences in what people think about when they reflect on their shared reality with their partner. As an example, state shared reality might rely on more recent evidence of shared reality, which may not generally be as meaningful or as relevant to people's general sense of shared reality with their partner. For instance, being told one sees an image in a different way as their partner might reduce shared reality in the moment,

but seeing images similarly in one's real life might not be an important aspect of one's general sense of shared reality. In contrast, trait shared reality might rely on more valued aspects of one's reality, such as the extent to which one sees the political landscape in the same way as their partner. In addition, for different populations/contexts, particular components might carry more weight in forming one's sense of shared reality. For instance, having a shared reality about racism might make up a larger proportion of shared reality for Black people compared to people who do not experience racism on a regular basis. Taken together, shared reality can mean different things for different people, and only by breaking this construct down into its components, that is, the specific pieces that come together to create one's sense of shared reality (e.g., having a sense of shared reality about the political landscape) could future work understand the nuances of how shared reality reduces uncertainty and promotes meaning across populations and contexts.

Individual differences. It may also be interesting for future research to consider individual differences that could impact the extent to which shared reality influences uncertainty and meaning, such as attachment style. Prior research has found that people with an insecure attachment style avoid threatening information when primed with threat (Fraley & Brumbaugh, 2007; Dewitte et al., 2007; Dozier & Kobak, 1992; Fraley et al., 2000; Van Emmichoven et al., 2003). This research suggests that insecurely-attached people might be less in tune to uncertainty in their environment, given it constitutes a sort of threat (Hogg, 2007; Stillman & Baumeister, 2009; Van Den Bos, 2009), which might make shared reality less impactful in reducing their sense of uncertainty. In contrast, research found that anxiously-attached children were more likely to choose an incorrect interpretation provided by their mother, likely someone they share a reality with, compared to a correct interpretation by a stranger, likely someone they do not share as much of a reality with (Corriveau et al., 2009). This study suggests that attachment style could influence the extent to which shared reality influences one's interpretation about something in their environment. Taken together, individual differences, such as one's attachment style, might influence the extent to which shared reality influences the outcomes examined in the present research.

Subcomponents of meaning in life. Lastly, more recent work has begun to distinguish meaning in life into different subcomponents (e.g., Comprehension, Purpose, and Mattering; George & Park, 2016). While I did not include this measure in my program of research, correlations from additional datasets suggest that the measure used in the current research correlates highly with these subcomponents (see Appendix D for correlation table). Specifically, I found recall-target uncertainty to correlate significantly with the subcomponents that best match my definition of meaning in life, particularly those of comprehension and purpose, but not with the subcomponent of mattering. While this supports my theoretical reasoning for the association between shared reality, uncertainty, and meaning, these discrepancies suggest that future work should explore the effect of shared reality on each subcomponent of meaning, and whether shared reality may promote some subcomponents over others.

Building on this, it may be that sharing a reality vs. not in certain contexts has different effects depending on the subcomponent of meaning being tested. For instance, healthcare workers on the frontlines of the pandemic could have felt that their partner did not share in their reality of the frontlines, that only they understood the type of work that they were doing and what it meant in the grand scheme of their lives. Inasmuch as this did *not* reduce their experiences of uncertainty, the present theory would suggest that healthcare workers would experience a decreased sense of meaning in life. However, it is possible that this is only the case

when meaning is tested as purpose and comprehension. If meaning were tested as mattering, that is, the extent to which a person feels that their existence is of value, significance, and importance in the world (George & Park, 2016), it is possible that this increased uncertainty would actually increase healthcare workers' sense of meaning. Particularly, it may have allowed healthcare workers to feel that, in doing a job that no one was able to make sense of, their work was of value, significance and importance.

Conclusion

Across five studies, the present research examined how romantic partners can obtain a sense of meaning by establishing a shared reality. I focused on the role of uncertainty reduction as a mechanism through which shared reality promoted meaning in life and meaning in work. Overall, I found reasonable evidence for a pattern whereby shared reality promoted meaning by reducing uncertainty about one's personal environment. Moreover, this association was examined in diverse samples considering socially important contexts, including frontline healthcare workers and their work experience during the pandemic, and Black people's experience of racism and the sociopolitical climate following the Black Lives Matter Movement. Taken together, the current work suggests that the more couples perceive that they are aligned in their interpretations of the world, the more they feel able to make sense of the world together and reduce their uncertainty, and in turn experience more meaning within this co-constructed world.

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Appendix A

Examples of Participants' Recalled Experiences from Study 4

High Shared Reality Condition

"We were watching a tv show together. Some plot twist happened and we looked at each other and simultaneously uttered the same phrase."

"We both went to a new restaurant and were equally blown away by not only the food by the service. The atmosphere was both of our styles. It was a restaurant we went to on a whim and easily became our favorite."

Low Shared Reality Condition

"We were eating a dessert. I thought there was too much coffee in it and made the dessert soggy, while he thought the dessert had the right amount of coffee and was not soggy."

"We were having a discussion about tattoos. He said that he thought tattoos were dumb while I thought that they could sometimes have a significant meaning."

Appendix B

Examples of Stimuli Presented to Participants in Study 4



Figure B1. Example of still image presented to participants during the first of two manipulation tasks.



Figure B2. Example of moving image (screenshot) presented to participants during the second of two manipulation tasks.

Appendix C

False Feedback Provided to Participants in Study 5 (Low SR condition)

"Based on your responses, you and your partner have a tendency of experiencing the world in a *different* way, that is, you often have different perspectives about your environment. Thinking back to the previous examples, you and your partner are more likely to have the restaurant experience where one of you interpret the way the food was spiced in one way whereas the other interprets the spicing in a different way."



Figure C1. False feedback shown to participants in the low shared reality condition after completing the first of two manipulation tasks.

Table 6. Mean, Standard Deviations, and Correlations Between Different Meaning in Life Measures

-	Steger	George & Park	Comprehension	Purpose	Mattering
Descriptives					
Mean	5.30	4.97	5.13	5.48	4.57
Standard deviation	1.26	0.88	1.11	0.98	1.38
Correlations					
Steger	-	.80***	.83***	.65***	.65***
Recall-uncertainty	18**	18**	15*	19**	07

Note. Descriptives and correlations provided for additional study not included in the present research. Study shows relationship between Steger and colleagues measure (2006) and George & Park measure (2016). *p < .05, **p < .01, ***p < .001.