Together I Strive:

The Motivational Benefits of Shared Reality with Instrumental Others

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Why are some people more successful than others? Thus far, research suggests that success is not only related to individual factors (e.g., self-control), but can also be facilitated by relationships with others. Successful people seem to recognize this, as they tend to like and draw closer to both instrumental objects and instrumental humans (IOs; others who make goal success more likely). For instance, students who are successful at their academic goals tend to evaluate both their study materials and study partners more positively when these goals are activated and important. Yet instrumental people have one crucially distinct feature that instrumental objects do not: a mind of their own. One key way to relate to the minds of others is by establishing a shared reality—the experience of shared attitudes and judgments about the world with another person. Therefore, I propose that shared reality is an important, previously unexplored, component of successful people's relationship with their IOs. In six studies (N = 1,968), I explored (1) whether people are motivated to perceive, and indeed experience, greater shared reality with IOs vs. NIOs (non-instrumental others), and (2) whether those who do so are more likely to achieve their goals. Participants displayed greater shared reality with IOs versus NIOs—on both an implicit memory measure (Study 1) and on self-report measures (Studies 3-6). Further, when experimentally induced to feel like a goal was particularly important (vs. less important), participants reported decreased shared reality with NIOs (Study 2). Participants who experienced a greater sense of shared reality with IOs reported more goal success initially (Studies 3a, 3b, 5, 6), 3-4 weeks later (Study 3c), and achieved higher GPAs (Study 5). These effects generally held when controlling for NIO shared reality, as well as IO liking, closeness, and epistemic trust. Self-efficacy consistently mediated the effect of IO shared reality on goal success (Studies 4, 5c), indicating that IO shared reality may bolster people's epistemic confidence in their abilities.

Overall, findings suggest that being motivated to relate to the minds of IOs through shared reality may play an important role in goal success.

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Introduction

If you have ever been to an award ceremony, then you know the drill. Awardees dutifully list off those who helped them along the way: mentors, family, friends, and perhaps a surprisingly crucial acquaintance or two. Without them, the crowd is told, success would not have been possible. While this ritual might be partly in the service of avoiding suspicions of grandeur, there seems to be an undeniable element of truth. After all, doesn't success require being able to win friends and influence people (Carnegie, 1936)?

Historically, however, the empirical study of why goal success comes easier to some, but not others, has focused more on personal strengths than social connection. Psychologists have revealed a number of individual factors that are related to success, such as self-control (Baumeister et al., 1998; Mischel et al., 1996), grit (Duckworth et al., 2007), or a growth mindset (Dweck, 2008). Those with high self-control, grit, and a growth mindset are more likely to achieve their goals and live a life filled with greater health and well-being (Abele & Spurk, 2009; Boudreaux & Ozer, 2013; Wiese, 2007). But as award winners remind us, personal goal success is also often built on the shoulders of, or arm in arm with, others (Cohen, 2004; Feeney & Collins, 2015; Finkel et al., 2006; Hofmann et al., 2015; Laurin, 2016; Rusbult & Arriaga, 1997; Tomasello, 2009) Indeed, a growing body of work in social psychology highlights the importance of other people for goal success (Feeney & Collins, 2015; Fitzsimons & Finkel, 2018; Fitzsimons et al., 2015; Laurin, 2016; Orehek, Forest, & Barbaro, 2018). Instrumental others (IOs)—others who make it more likely for one to achieve one's goals—inspire transformative change through example (Jackson et al., 2015; Poldin et al., 2016; Scales et al., 2020), actively push people towards their potential (Finkel, 2018; Jakubiak & Feeney, 2016; Tomlinson et al., 2016), and boost motivation by shouldering extra workload when needed

(Briskin et al., 2019; Feeney, 2004). However, not all relationships with IOs are created equal. The quality of people's relationships with their IOs also matters. People who experience more liking and closeness with IOs (relative to non-instrumental others—others who are unrelated to goal success) tend to also experience more goal success (Fitzsimons & Shah, 2008; Shea & Fitzsimons, 2016; vanDellen et al., 2015).

However, the instrumental relationships that helped award winners arrive on that stage can be characterized by more than just a sense of liking and closeness. While liking and closeness are a critical part of effective relationships (Fitzsimons & Shah, 2008; Orehek, Forest, & Wingrove, 2018), cherished relationships often also grow out of deeply resonant shared experiences and perceptions of the world (Prinzing et al., 2023; Rossignac-Milon et al., 2021). Whether it be bonding over a shared emotional trauma, a shared political outrage, or shared excitement about the latest Netflix sensation, people seek to establish a shared reality—sharing subjective experiences (feelings; beliefs; concerns) in common with others about the world (Echterhoff, Higgins, et al., 2009; Hardin & Higgins, 1996; Higgins, 2019). Shared reality stands apart from liking and closeness in serving not only belongingness needs, but also epistemic needs (Auger, 2018; Bar-Shachar & Bar-Kalifa, 2021; Echterhoff, Higgins, et al., 2009; Przybylinski & Andersen, 2015; Rossignac-Milon et al., 2021). It is by establishing a sense of shared reality with others that subjective experiences come to feel objective, and that people feel certain of what is real and true about the world (Hardin & Higgins, 1996; Echterhoff & Higgins, 2017; Rossignac-Milon et al., 2021).

Despite recent research establishing the vital role of shared reality in relationship formation and maintenance (Enestrom & Lydon, 2021; Higgins, Rossignac-Milon & Echterhoff, 2021; Rossignac-Milon et al., 2021; Rossignac-Milon & Higgins, 2018), there is no prior work

examining the relation of shared reality to the processes through which humans pursue and achieve their goals. There are many reasons to suspect that experiencing a sense of shared reality with instrumental others—by fulfilling epistemic motives in addition to belongingness motives—may be a key variable explaining why certain relationships facilitate goal success more than others. Unlike closeness and liking, shared reality involves creating a shared understanding of events, people, and objects external to the relationship (Rossignac-Milon et al., 2021). Given that reaching one's goals involves successfully navigating this external world, I propose that creating this sense of shared reality about the external world may be especially critical for facilitating goal success. This reasoning is supported by theorizing on the critical role of shared reality in human evolution: Shared reality is considered "a cornerstone of social cognition" (Sebanz et al., 2006, p. 73) that facilitates successful coordination and complex cultural learning, processes posited to be central to our success as a species (Echterhoff, Higgins, et al., 2009; Hardin & Higgins, 1996; Higgins, 2019; Henrich, 2015; Muthukrishna & Henrich, 2016; Tomasello, 2014; Tomasello et al., 2005). I argue that shared reality plays not only a crucial role in the success of our species, but in individual goal success in everyday life. Accordingly, the goal of this dissertation is to examine whether people are motivated to perceive, and indeed experience, greater shared reality within relationships that are more instrumental and whether this tendency is related to goal success.

Interpersonal Influences on Goal Success

If someone's presence increases the likelihood that you will achieve your goal, they are an instrumental other (Fitzsimons & Shah, 2008, p. 326). In contrast, the presence of a non-instrumental other neither increases nor decreases the likelihood that you will achieve your goal (Fitzsimons & Shah, 2008). Unsurprisingly, then, having instrumental others by one's side can

be a boon for goal success. Instrumental others have been found to facilitate success for health and fitness goals (Orehek & Ferrer, 2019; Uchino, 2009), academic goals (Martin & Dowson, 2009; Roksa & Kinsley, 2019), and career goals (Allen et al., 2004; Eby et al., 2008), among many others (Orehek, Forest, & Wingrove, 2018).

The effect of instrumental others in supporting goal pursuit is clear. How, then, do people capitalize on the benefits that instrumental others (IOs) offer? Interestingly, research finds that people automatically and dynamically shift their liking and closeness toward IOs to support their active goals. In general, people tend to like and feel closer to instrumental others relative to non-instrumental others (Fitzsimons & Shah, 2008; vanDellen et al., 2015). This tendency grows when people's goals are salient. Thinking about achieving straight "A"s motivates people to maintain closeness with their study partner (an IO) while distancing themselves from a friend who is irrelevant for their academic goals (a non-instrumental other, NIO; Converse & Fishbach, 2012; Fitzsimons & Fishbach, 2010; Fitzsimons & Shah, 2008; Huang et al., 2015). People also seem sensitive to how many goals an instrumental other is instrumental for: the more goals, the better. An instrumental other who motivates you to go to the gym and is helpful for a work project is, on average, liked more than an instrumental other who only does one of those two things (Orehek, Forest, & Wingrove, 2018).

Part of what initially inspired researchers to explore whether people like and feel closer to instrumental others was earlier work showing that people display a similar pattern with non-social instrumental objects. If someone wants to achieve straight "A"s, they are more likely to increase their liking for instrumental objects such as the library or their textbooks (Ferguson, 2008; Ferguson & Bargh, 2004; Moore et al., 2011). In other words, prior work suggests that people will draw closer to anything, whether it be objects or other people, that serve as means

towards their goals. Yet people have one crucially distinct feature that objects do not have: a mind of their own. Therefore, successfully relating to instrumental others, rather than instrumental objects, may involve another key ingredient—an ability to successfully relate to their minds. Unique to humans (Higgins, 2019; Tomasello, 2009), shared reality is one critical way of connecting to other minds.

Shared Reality

Shared reality involves a mind meld of sorts. When two or more people feel like they are sharing the same subjective experience of the world, they are experiencing a shared reality (Hardin & Higgins, 1996; Higgins, 1992). Shared reality is defined as the perceived commonality of inner states (e.g., feelings or beliefs) with another person about a target referent (e.g., an event or object; Echterhoff, Higgins, et al., 2009; Higgins & Rholes, 1978; Higgins et al., 2021). More simply, two people sharing a reality have a "sense of having 'merged minds' and of having created their own reality—a shared world that they are motivated to uphold" (Rossignac-Milon et al., 2021, p. 21).

Shared reality can be distinguished from adjacent concepts (e.g., perspective taking, general similarity) by capturing the experience of sharing a similar subjective state about something in the world with at least one other person (for reviews, see Echterhoff, Higgins, et al., 2009; Higgins et al., 2021). Thus, shared reality is distinct from perceived similarity as frequently defined (e.g., shared demographic or personality traits) because it involves commonality of inners states about some target in the world (two individuals highly similar on other dimensions may or may not share reality about the new public transit system in town). Further, there is evidence that shared reality often takes precedence over other forms of similarity (Huneke & Pinel, 2016; Launay & Dunbar, 2015; Montoya & Horton, 2013) or has

effects above and beyond other forms of similarity (Montoya & Insko, 2008; Rossignac-Milon et al., 2021; Singh et al., 2017; Thielmann et al., 2023). For example, ideological shared reality was the strongest predictor of liking when compared to ten other types of similarity (e.g., age, ethnicity, occupation, education, income; Launay & Dunbar, 2015).

Shared reality is also distinct from perspective-taking, and indeed, may come about without any perspective-taking: two people could discover that they have the same perception of something without engaging in any kind of perspective-taking (i.e., they may both become aware that they see something in the same way, without needing to take the other person's perspective to understand their inner state). Perspective-taking itself can also come about without a sense of shared reality. A Democrat may temporarily adopt a Republican's point of view to see something through their eyes (without necessarily becoming convinced of their beliefs or taking on their judgements). In contrast, shared reality is the perception of sharing inner states with another person about a particular referent. Thus, while perspective-taking is a process that could certainly lead to shared reality to the extent to which it leads to inner state adoption, it is not necessary for or synonymous with share reality (Echterhoff et al., 2009).

Shared reality serves both epistemic (the desire to know and understand the world) and relational (the desire for connection; Higgins, 2019) needs. However, the experience of shared reality is not reducible to or synonymous with the experience of understanding or connection. Epistemic and relational needs can be met through other means. People can meet their epistemic needs by reading a book, attending a lecture, or listening to a discussion at a party. People can meet their relational needs by dancing with friends, volunteering at a local hospice, or even watching a media personality without ever meeting them (Hoffner & Bond, 2022). Therefore,

while shared reality is a powerful vehicle for meeting epistemic and relational needs, the experience of shared reality is distinct from these underlying motives.

Given its dynamic functions, people desire the intimate experience of shared reality (Bar-Tal, 2000; Festinger, 1950; Hardin & Higgins, 1996; Kruglanski et al., 2006; Rossignac-Milon et al., 2021; Rossignac-Milon & Higgins, 2018). People are eager to believe that vast swaths of the population and their immediate social circle see the world similarly to them (i.e., the false consensus effect; Holtz & Miller, 1985; Krueger & Clement, 1994; Lee et al., 2009; Ross et al., 1977; Thielmann et al., 2020). Some will even go as far as to move in order to be around like-minded others (Motyl et al., 2014). The desire to establish a shared reality is also sensitive to situational variables. People seek to experience shared reality when they feel threatened (Davis & Florquist, 1965; McGregor et al., 2005; Rossignac-Milon et al., 2021), when they are eager for connection (Sinclair, Huntsinger, et al., 2005; Sinclair, Lowery, et al., 2005), and when they feel existentially isolated (Pinel et al., 2006). But people do not indiscriminately experience shared reality with just anybody. People prefer to experience shared reality with ingroup members over outgroup members (Echterhoff et al., 2005; Echterhoff, Lang, et al., 2009) and with those whose judgment they trust over those they do not trust (Echterhoff et al., 2005; Echterhoff et al., 2017).

Empirical work has traditionally focused on how shared reality is constructed about particular, relatively concrete targets, such as events, objects, or other individuals (see Echterhoff & Higgins, 2017, for a review). More recently, Rossignac-Milon and colleagues (2021) documented a more generalized form of shared reality in which people perceive that they have merged their way of seeing the world at large with another person. This sense of sharing inner states about the world in general can be experienced both with a close partner and with a new acquaintance (Rossignac-Milon et al., 2021). Using a newly constructed scale (with items like

"During our discussion, we thought of things at the exact same time"), Rossignac-Milon et al. (2021) found that self-reported shared reality tracked real-world behavioral signatures of shared reality, such as expressing agreement and saying things at the same time. Participants who experienced a greater sense of shared reality in conversation with a stranger felt closer, had more rapport, had a greater sense of "clicking," and wanted to interact again (Rossignac-Milon et al., 2021), even when controlling for traditionally important relationship variables like inclusion of the other in the self (Aron et al., 1992), perceived partner responsiveness (Reis, 2003), and even other forms of perceived similarity, such as perceived personality similarity.

Shared reality also plays an important role in maintaining close relationships. Relationship partners who experience a greater sense of shared reality feel more supported by their partner, especially when facing daily uncertainty, and feel more committed to their relationship (Bar-Shachar & Bar-Kalifa, 2021; Enestrom & Lydon, 2021; Rossignac-Milon et al., 2021). Further, Rossignac-Milon and colleagues (2021) found that once generalized shared reality is established, close partners are motivated to protect it: in response to an experimental threat to their sense of experiencing the sensory world in the same way, close partners high on baseline generalized shared reality engaged in motivated interaction behaviors to reaffirm their sense of shared reality (e.g., displaying greater behavioral signatures, referencing inside jokes). Importantly, shared reality was the only relationship construct to predict these reaffirmation behaviors in response to the threat. Unlike other close relationship constructs like closeness or perceived partner responsiveness, in which the focus of attention is on the self, the partner, and the relationship, shared reality involves the experience of co-attending to the world external to the relationship, and thus is uniquely sensitive to a threat to the sense of experiencing the external world in the same way (Rossignac-Milon, et al., 2021).

Shared Reality and Goal Success

Despite the central role of shared reality in relationships, research has not yet explored whether shared reality may play an important role in facilitating goal success. There are several reasons to suspect that shared reality might do so, especially compared to other relationship constructs. While other relationship constructs focus on internal relationship dynamics (e.g., how each partner feels about the other), shared reality plays a vital function in establishing the experience of certainty about what is true and real in the external world (e.g., how each partner experiences the world). Indeed, shared reality helps to build a sense of certainty in one's perceptions of the world (Rossignac-Milon & Higgins, 2018; Rossignac-Milon et al., 2021) and in mutual epistemic trust—trusting the other person's judgments (Echterhoff & Higgins, 2017; Echterhoff, Higgins, et al., 2009). In other words, through shared reality, subjective judgments come to feel like objective reality (Hardin & Higgins, 1996). In the realm of goal pursuit, one's subjective judgments about one's goals may come to feel more objective. Specifically, experiencing a shared reality may validate not only the importance of one's goals and one's sense of how to achieve them, but also the feeling that one's goals are attainable and that one is *truly* equipped to attain them. In this way, shared experiences with an IO might change what people believe about themselves and the world in a way that makes goal success more likely.

Early theorizing on goal pursuit supports the idea that shared experiences with other people can have an influence on people's individual beliefs about their ability to reach their goals—i.e., their perceived self-efficacy. Bandura (1982) proposed that people's self-efficacy is often built on shared experiences with others. First, he proposed that *vicarious experiences,* or seeing "similar others perform successfully," can lead observers to "then judge that they too possess the capabilities to master comparable activities" (p. 126-127). In addition, convincing

others through *verbal persuasion* is a method "widely used to get people to believe they possess capabilities that will enable them to achieve what they seek" (p. 127). This idea is supported by research finding that people experience greater self-efficacy after hearing or seeing the success of others (i.e., vicarious experience) as well as after being told that they are capable of success (i.e., verbal persuasion; Arslan, 2012; El-Abd & Chaaban, 2021; Wise & Trunnell, 2001). Indeed, people tend to seek out instrumental others when they are feeling a lack of self-efficacy (Righetti et al., 2014), suggesting that people instinctively look to instrumental relationships as sources of self-efficacy. Shared experiences may be especially persuasive and likely to bolster self-efficacy when they are experienced with IOs with whom one has a higher sense of shared reality, helping people internalize that an IO's success is possible for them or believe an IO's verbal persuasion attempts. Thus, experiencing a shared reality with instrumental others could make people more certain that they can reach their goals (i.e., that they really *do* have the necessary capabilities).

Moreover, shared reality could facilitate the process of jointly pursuing shared or related goals. A strong shared reality with an instrumental other could change the relationship dynamic itself, making it easier to work together during joint goal pursuit. Shared reality with an instrumental other could facilitate effective communication and goal coordination (Rossignac-Milon & Higgins, 2018); when meeting with a co-worker to consult on a new project, the work session might feel effortless and productive when there is mutual trust in each other's judgments (Langfield-Smith & Smith, 2003; McAllister, 1995; Zaheer et al., 1998), allowing you to pursue your work more effectively. To the extent that relationship partners are *actually* on the same page about the world around them (i.e., objectively share reality), greater shared reality with an

instrumental other could also make it easier to "get in each others' heads," making complex coordination feel relatively effortless (Sebanz et al., 2006; Tomasello, 2010; Török et al., 2019).

Given all these potential benefits to shared reality with instrumental others, I predict that (1) people are motivated to perceive, and indeed experience, greater shared reality with IOs (relative to NIOs) and (2) those who experience more shared reality with instrumental others will tend to succeed at their goals. My first primary prediction is in line with a long history of work documenting how people bias their perceptions, memories, and beliefs in a way that serves their motivational needs (Greenwald, 1980; Kunda, 1990; Taylor & Brown, 1988). I further argue that people will also report experiencing greater shared reality with IOs relative to NIOs, something that may in fact be bolstered by the motivation to perceive shared reality with IOs relative to NIOs (i.e., a self-fulfilling prophecy). Motivated to create a shared reality, people might invest more in their relationship with the IO, making it more likely that they end up indeed cultivating a shared reality (see Rusbult et al., 2009 for an example of self-fulfilling prophecies in relationships). Therefore, I predict that people should also actually experience more shared reality with IOs. My second primary prediction (2) extends work done by Fitzsimons & Shah (2008), among others, which finds that the more people like and feel closer to IOs, the more they tend to succeed at their goals. If, as I detail above, shared reality has motivational benefits during goal pursuit, then the more people share reality with IOs, the more successful they should be.

The Present Research

Six studies (N = 1,968) investigated whether (1) individuals are motivated to perceive, and indeed experience, greater shared reality with IOs (relative to NIOs), and (2) whether this tendency is related to goal success. Using an implicit memory measure of shared reality (Higgins & Rholes, 1978), Study 1 assessed whether participants developed more shared reality with an IO relative to NIO. To further explore whether this is a motivated tendency, Study 2 examined whether experimentally heightening goal importance enhanced shared reality with IOs relative to NIOs. Next, Studies 3a-3c examined whether people report more shared reality with IOs (*vs.* NIOs) and whether this tendency is related to goal success. Specifically, Study 3 tested whether IO (but not NIO) shared reality was related to goal success, even after controlling for other key relationship variables (e.g., liking, closeness). While Studies 3a and 3b explored these questions at a single time-point, Study 3c examined whether IO shared reality at Time 1 was related to goal success 3-4 week later (Time 2). A pre-registered Study 4 began to investigate potential mechanisms linking IO shared reality and goal success (e.g., self-efficacy). In an initial pilot (Study 5a) and two pre-registered experiments (Studies 5b-5c), Study 5 examined the relation between IO shared reality and goal success using an objective and conservative measure of goal success—GPA. Finally, a pre-registered Study 6 explored whether the dynamics found among individual relationships in Studies 1-5 generalized to people's social networks on a between- and within-person level. Using experimental, correlational, and longitudinal designs, in combination with both self-reported and objective measures, I aimed to build a cumulative case for the importance of shared reality within instrumental relationships for goal success.

Study 1

The goal of Study 1 was to investigate whether people are motivated to create a shared reality with IOs relative to NIOs. Specifically, Study 1 manipulated the instrumentality of a potential interaction partner and examined whether people who expected to interact with an instrumental (vs. non-instrumental) interaction partner were more likely to create a shared reality with this individual, using a classic shared reality paradigm: the saying-is-believing effect (Higgins & Rholes, 1978).

In this paradigm, participants read an ambiguous description about an individual (the *target*), one that can be interpreted positively or negatively. Then they are asked to describe the target—without mentioning this person's name—to an ostensible third person (their *audience*) who will need to identify the target from a group of people they know. Before sending their description, participants are told that their audience either likes or dislikes the target. Most participants tune their description to match their audience's views: they describe the target more positively if their audience likes the target, or more negatively if they do not (*audience tuning*). "Tuning" in this way reflects typical conversational norms (Grice et al., 1975; Wänke, 2007) and a desire to have the audience correctly identify the target by describing the target in a way that matches the audience's attitude. Later, participants are asked to recall the *original* description of the target that they were shown as accurately as possible. The extent to which memories of the original description are biased in the direction of the audience's attitude is taken as a measure of shared reality. In other words, participants sometimes recall the target more positively or negatively in the direction that matches their audience's attitude (i.e., they exhibit *recall bias*). Recall bias reflects the extent to which participants believe that the tuned description they wrote reflects the truth about the target, aligning their memory of the target accordingly. If this

happens, the participant has created a shared reality with their audience about the target (i.e., their memory now reflects a shared judgment about the target person with the audience). Although participants consistently tune their description of the target person to the audience's attitude, they only exhibit recall bias when there is a motive to share reality. For example, participants exhibit recall bias when communicating with an ingroup, but not an outgroup, audience (Echterhoff et al., 2005); when they are told their audience did (vs did not) correctly identify the target (Echterhoff et al., 2005); and when they trust the audience's judgment (Echterhoff et al., 2017; Higgins et al., 2007).

In Study 1, participants "interacted" with an audience who was an alumnus from their university. Participants were either told that this alumnus would later give them personalized feedback for their careers (Instrumental Other condition; IO condition) or would later ask them questions about their undergraduate experience (Non-Instrumental Other condition; NIO condition). Across conditions, important features of this audience were held constant: participants were expecting to interact with an alumnus who was ostensibly an ingroup member and whose judgment they should trust. Thus, this study was designed to isolate the effects of instrumentality on the creation of shared reality.

Based on prior work that has shown that individuals tend to exhibit recall bias with trusted ingroup members, it would be reasonable to predict that under standard conditions, participants would exhibit a recall bias revealing shared reality with the audience. In other words, even in the NIO condition participants might be expected to exhibit a recall bias. Consequently, if there was an elevated recall bias in the IO versus NIO condition, this could be due either to the motive for shared reality increasing in the IO condition or to the motive for shared reality decreasing in the NIO condition, or both. However, if the primary effect is that the perceived

non-instrumentality of the audience decreases the motive for shared reality, then it is possible that the recall bias in the NIO condition might even be eliminated (as is observed for outgroup audiences; see Echterhoff & Higgins, in press, for a review).

In addition to the implicit saying-is-believing measure of shared reality, I also assessed participants' explicit sense of shared reality with the alumnus about a third target and their explicit anticipated shared reality for their future interaction. To my knowledge, this study represents the first attempt to include self-reported measures of shared reality within this paradigm. One possibility is that this explicit shared reality measure would converge with the implicit measure, suggesting that people both explicitly hope for, and implicitly show, shared reality with IOs. However, it could also be that implicit and explicit measures diverge. Indeed, previous research has found that people's implicit preference to share reality with ingroup (vs. outgroup) members significantly correlated with implicit, but not explicit, measures of ingroup favoritism (Echterhoff et al., 2017).

Methods

Participants

A total of 219 undergraduate students (73% Women, 26% Men, 1% Non-binary; M_{age}= 20.15 years, SD_{age} = 2.31; 47.1% Asian, 31.1% White, 5.5% Black, 9.6%, Other) at a large Canadian university completed the online study in return for course credit. A similar saying-is-believing study found that the effect sizes ranged between η_p^2 = .05 to .12 (Bebermeier et al., 2015). To be conservative, a η_p^2 = .05 effect size was used in an a priori G*Power calculation which suggested a sample size of 152 participants to achieve 80% power for a two group between-subject main effect. Since this paradigm was online, which may reduce the size of the effect, the stop rule was to collect data until the end of the semester with at least 200 participants.

Of the 219 participants in the study, 41 participants expressed explicit skepticism about whether they were actually communicating with another person, a crucial component of the study. In accordance with previous work, these participants were excluded (Kopietz et al., 2010), yielding a final sample of 178 participants and 86% power to detect an effect. Attrition rates did not differ between conditions, $p = .991$ (21 in IO condition and 20 in the NIO condition).

Procedure and materials

The study was advertised as examining undergraduate experiences and successful communication. All participants were told that the study had two parts and that they would be paired with an alumnus from their university for part two. Therefore, all participants were set up with a presumed in-group member (Echterhoff et al., 2005). Participants were told that this study was done in collaboration with the host university and that these alumni were recruited volunteers to help with the effort.

To manipulate instrumentality, the beginning of the study either informed participants that another primary purpose of the study was for the alumnus they would be matched with to help them become successful in their careers (Instrumental Other condition; IO condition) or that the study was also looking to gather information about their experiences as an undergraduate (Non-Instrumental Other condition; NIO condition). To increase the salience of the focal goal, participants in the IO condition participants were given the opportunity to write about their current career aspirations and unique needs and were told that this information, along with an anonymized resume, can be optionally send to the university alumnus at the end of the study such that they can customize their feedback to the participants in Part 2. Participants in the NIO condition were instead asked to write about what university resources they found helpful or unhelpful as an undergraduate, again with the option to send this information to the university

alumnus to whom they are paired so that they could ask them more customized questions about their undergraduate experiences in Part 2. All participants were told that Part 2 could either be conducted via chat or Skype session in order to alleviate concerns about privacy or nervousness about appearing in person.

All participants were then ostensibly matched with a live university alumnus. Participants had to wait as the study "searched through an online database". After at least 45 seconds, participants were told that a match had been found. All participants were matched with 'Steven", an alumnus who graduated in 2015 from the same faculty and major as them (participants had entered in their faculty and major earlier in the study).

The study then shifted to a communication task, adopted from the classic saying-is-believing paradigm (Higgins & Rholes, 1978). Here, participants were tasked with reading an ambiguous essay about another participant, "Michael", who supposedly participated in a previous long-term study along with the university alumnus. As a continuation of this long-term study, the participants were told that they would need to describe Michael to the alumnus without mentioning Michael's name such that the alumnus could identify Michael among a set of 30 other participants. Prior to reading the ambiguous description of Michael, participants listened to a pre-recorded audio in which they were casually and off-handedly informed about the alumnus' previous positive or negative impressions of Michael: *"Since [the alumnus] knows Michael personally, he has developed his own impression of Michael. Our observations indicate that [the alumnus] seems to like [doesn't seem to like] Michael and believes Michael has [doesn't have] many good qualities."*

Participants then went on to read the ambiguous description of Michael (taken from Rossignac-Milon, 2019; pre-tested for evaluative ambiguity), with each part of the description

amenable to either positive or negative framing (e.g., honest/rude). Participants later typed out a description of Michael and "sent" it to their university alumnus. Participants then received feedback that their university alumnus successfully received their message.

After completing 10-15 minutes of filler tasks and measures, participants were asked to recall the original passage they read as accurately as possible. Participants typed what they could remember from the passage.

Explicit shared reality. In addition to the implicit behavioral measure, I also measured the degree to which participants explicitly believed that they shared reality with their university alumnus about "Michael" (5 items, e.g., "*I think that [university alumnus] and I are on the same wavelength with regards to Michael*," "*I agree with [university alumnus]'s point of view of Michael*"; $\alpha = .95$). Moreover, participants were also asked about how much generalized (8 items, e.g., "During our interaction we will often anticipate what the other is about to say"; $\alpha = .85$; Rossignac-Milon et al., 2021) and ideological shared reality (25 items, e.g., [[university alumnus] and I will likely] "have similar political views"; $\alpha = .92$) they anticipated they would experience with the university alumnus during the ostensible second part of the study. All items were rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

At the end of the study, participants were probed for suspicion through an open-ended question asking, "Did anything seem strange to you in this study?".

Coding. Three coders blind to condition rated the overall valence of each original sent message as well as each recalled description (-5 = *extremely negative*, 5 = *extremely positive*). Coder ratings were averaged to create a composite score for the original message ($\alpha = .88$) and recalled description ($\alpha = .76$).To calculate shared reality with the university alumnus, scores in the negative attitude condition were multiplied by -1 (e.g., a -5 score became a +5 score),

consistent with previous work (e.g., Echterhoff et al., 2005; Echterhoff et al., 2008; Echterhoff et al., 2017). Scores in the positive attitude condition remained the same. Therefore, higher scores indicated greater saying-is-believing.

Two coders were also asked to read participants' open-ended responses at the end of the study for suspicion and to flag participants who expressed explicit doubt about the purpose of the study (e.g., "*Steve is not real*", "*How easily another participant was found at the same time. I think there was no''Steve*"). Coders mutually resolved any inconsistencies among themselves, ultimately resulting in 41 people being excluded for explicit suspicion.

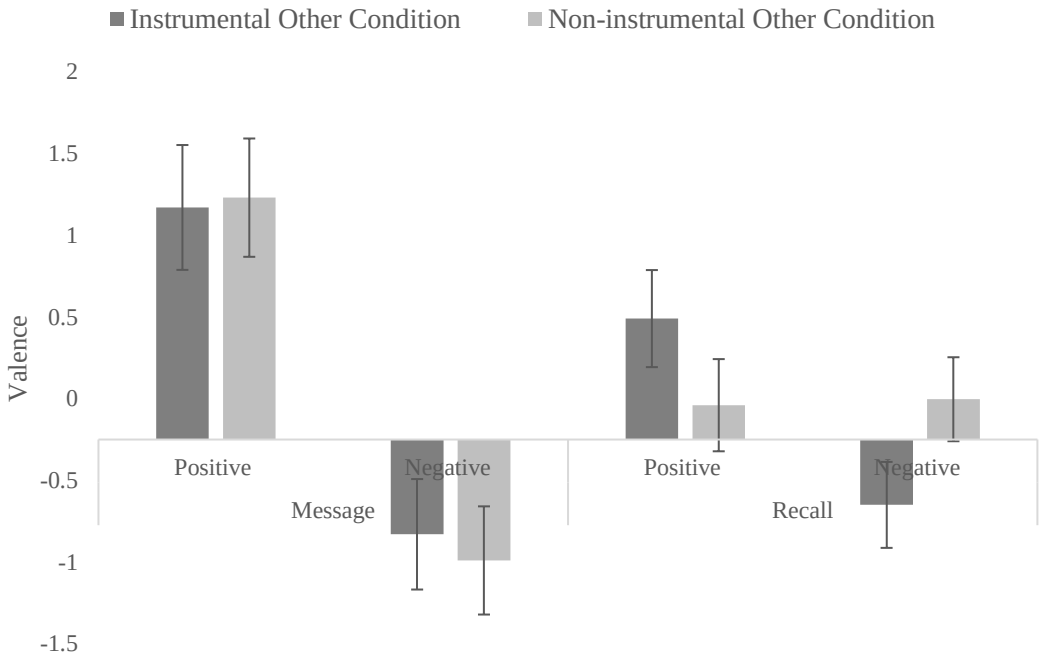
Results

Message valence

I first tested whether participants tuned their message based on their audience's attitudes. Consistent with past research, a main effect of valence was found for the original message participants sent, $F(1, 174) = 39.49$, $p < .001$, $\eta_p^2 = .18$ (see Figure 1). Therefore, participants tuned their message in accordance with their audience's attitudes. Valence (positive vs. negative) did not interact with instrumentality (IO vs. NIO), $F(1, 172) = 0.02$, $p = .883$, which is consistent with past research showing that people tune their message regardless of audience (Echterhoff, Higgins, et al., 2009).[1]

[1] There was no significant difference in the length of communication (i.e., number of words) between those in the IO condition ($M = 97.45$, $SD = 52.67$) and those in the NIO condition ($M = 85.08$, $SD = 40.20$) , $F(1, 174) = 3.12$, $p = .079$. Moreover, when controlling for how many words participants wrote in each condition, the effect of condition on recall bias remained significant $F(1, 167) = 4.14$, $p = .043$, suggesting that differences in length of the communication to the alumnus did not explain the memory effect.

Figure 1.



Note. Valence of message and recall descriptions as a function of instrumentality in Study 1.

Recall bias

Participants exhibited a recall bias in the IO condition (M = 0.58, SD = 1.84) but not in the NIO condition (M = -0.02, SD = 1.70), $F(1, 174) = 4.87$, $p = .029$, $\eta_p^2 = .03$[2]. Therefore, participants tended to implicitly align their memory with the university alumnus's attitude about Michael in the IO condition (See Figure 1)—i.e., only if they perceived the alumnus as instrumental to meeting their career goals. The same result was found when analyzing the data as an interaction without the unipolar shared reality measure. The interaction between valence and instrumentality for recall valence was significant, $F(1, 166) = 4.60$, $p = .033$, $\eta_p^2 = 0.03$, such that only people in the IO condition remembered their message in a biased way, regardless of valence.

Explicit shared reality

[2] For transparency, we also ran this analysis with the full sample included (i.e., including 41 participants who reported explicit suspicion). The results of this analysis yielded non-significant results, $F(1, 209) = 3.32$, $p = .070$.

The pattern of results on the implicit shared reality measure was not reflected in participants' explicit reports of shared reality. Participants in the IO condition (M = 4.61, SD = 1.09) were not significantly more likely to report that they shared reality about Michael compared to participants in the NIO condition (M = 4.36, SD = 1.03), $t(175) = 1.57$, $p = .119$, $d = .23$. They also did not anticipate that their ostensible future interaction with their university alumnus would involve greater generalized shared reality (IO condition M = 4.12, SD = 0.82, NIO condition M = 3.92, SD = 0.79), $t(175) = 1.45$, $p = .149$, $d = .23$, or ideological shared reality (IO condition M = 4.14, SD = 0.65, NIO condition M = 4.08, SD = 0.77), $t(174) = 0.54$, $p = .589$, $d = .01$. Moreover, none of these measures significantly correlated with the tendency to display an implicit recall bias, all ps > .512, suggested that the primary mechanism underlying the tendency to share a reality with a novel IO is through implicit means.

Discussion

My dissertation proposes that people are motivated to experience greater shared reality with IOs (relative to NIOs). I directly test this assumption in Study 1. Namely, I explored whether people share reality with IOs relative to NIOs using the classic saying-is-believing shared reality paradigm. Indeed, Study 1 found that people display the saying-is-believing effect only with IOs, but not NIOs. When participants communicated with an alumnus of their university whom they viewed as instrumental (vs. non-instrumental) to their career goals, they incorporated this alumnus's views into their recall, thereby creating a shared reality as assessed in an implicit behavioral measure. This result is particularly interesting given that participants were describing a target who was irrelevant to their goal, suggesting that instrumentality can shape shared reality about more than just the relevant goal domain. Therefore, these results provide initial causal evidence that shared reality with instrumental and non-instrumental others

is sensitive to motivational concerns.

While participants implicitly created a shared reality with instrumental others through the saying-is-believing effect, explicit reports of shared reality did not differ as a function of condition. This result potentially speaks to the mechanism behind how people create shared reality with new IOs that enter their lives. Namely, people may *unconsciously* shift their perceptions, beliefs, and memories to become more aligned with IOs. Indeed, past work finds that people do not consciously realize that they pursue friends who are instrumental (Slotter & Gardner, 2011), that they conform their views to persuade others (Sinclair, Huntsinger, et al., 2005; Smith et al., 2017), nor that they behaviorally mimic those they want to get along with (Lakin & Chartrand, 2003).

An open question in Study 1 is whether participants might primarily decrease shared reality with NIOs instead of increasing shared reality with IOs. If one assumes that participants saw the alumni with whom they were paired as an ingroup member, participants in both conditions should have shown some evidence of recall bias, in line with previous research showing that people reliably display recall bias with ingroup members (Echterhoff et al., 2005). People could have then shown an additive, elevated recall bias in the instrumental condition. However, participants did not exhibit a recall bias in the NIO condition, showing no evidence of tuning their memory of the initial ambiguous description of Michael to be more in line with the NIO alumnus' attitude about Michael. Therefore, it is possible to interpret these results as supporting the idea that participants decrease their shared reality with NIOs (vs. increase their shared reality with IOs). If this interpretation is valid, it implies a new way of thinking about the mechanisms that underlie shared reality with ingroup members. People may tend to share reality with ingroup members in part because there is an implicit assumption that these others could be

motivationally relevant (i.e., the default is that ingroup members are motivationally relevant). However, once people get a clear cue that an ingroup member is not motivationally relevant, they may decrease or eliminate their shared reality with that individual.

Although I believe that this interpretation is reasonable, it is important to note that the alumni status of the audience may have rendered them an ambiguous ingroup, or even an outgroup (i.e., participants may define their ingroup in terms of current, not former, university students; McConnell, 2011). If this is the case, then I cannot assume that the default is that participants would exhibit a recall bias with this audience, and the results would therefore lend stronger support to the idea that the instrumentality manipulated enhanced shared reality with IOs.

One limitation of Study 1 was that the exclusion rate was relatively high, based on participant suspicion about whether they were really going to interact with another individual. This might be due to the online nature of the study arousing suspicion as most saying-is-believing studies have been conducted in person (e.g., Echterhoff et al., 2005; Echterhoff et al., 2008). Therefore, while the pattern of results suggests that the motive to share reality is sensitive to an instrumentality manipulation, this evidence should be treated as preliminary. To provide further evidence that people are motivated to perceive shared reality with IOs relative to NIOs, I employed an alternative experimental paradigm in Study 2.

Study 2

Study 1 found initial evidence that people are motivated to experience greater shared reality with IOs relative to NIOs. To do this, Study 1 manipulated whether people were interacting with a novel interaction partner designed to be an IO or an NIO and examined a classic shared reality memory measure as the dependent measure. As a complementary approach, Study 2 manipulated the importance of people's goals and examined how this manipulation affected reported shared reality with existing IOs vs. NIOs. If people are motivated to experience greater shared reality with IOs (relative to NIOs), then heightened goal importance should lead to perceptions of more shared reality with IOs (relative to NIOs).

Previous work by Fitzsimons and Shah (2008) has already found that people shift their tendency to feel closer to IOs relative to NIOs when goal importance is salient. Specifically, participants reported decreased closeness with NIOs, rather than increased closeness with IOs, after being reminded of an achievement goal for which the IOs were relevant. To see if this pattern extends to shared reality, Study 2 manipulated goal importance to examine how this influenced participants' shared reality with IOs relative to NIOs. Like the Fitzsimons and Shah (2008) findings, and in line with the findings in Study 1, I speculated that people in the goal importance condition might distance themselves from NIOs. Another possibility is that people will also increase their shared reality with the IOs in the goal importance condition. For instance, prior work has shown that goal importance can lead to increased positive evaluations of instrumental objects (Ferguson & Bargh, 2004; Moore et al., 2011). For example, when academic goals were salient, people increased their positive evaluations of instrumental objects such as the library and school (Ferguson, 2008). The design of the study allowed me to examine both possibilities. Although in Study 1 I did not find that the instrumentality manipulation

affected people's explicit reports of shared reality with a novel interaction partner, I suspected that in the context of pre-existing relationships with instrumental and non-instrumental others, it might be possible to see movement even on explicit measures.

Further, in this study I began to more intentionally explore multiple ways that people might share reality with instrumental others, including three forms of shared reality that will also be assessed in subsequent studies. First, I used the recently validated generalized shared reality scale to capture people's overall sense of seeing the world in a similar way to another individual (Rossignac-Milon et al., 2021). Given that people could experience a shared reality about particular targets even without the sense of shared reality about the world at large, I also included two shared reality measures about more specific targets. Specifically, I included a measure that captures people's tendency to agree about things directly relevant to goal pursuit (goal-relevant shared reality) as well as a measure tapping into people's alignment on the moral worldviews that underlie their actions (ideological shared reality).

As I discuss in more detail in Study 3, all three forms of shared reality with instrumental others could support goal success. Thus, in this and subsequent studies, I present results for each measure individually as well as a composite variable that incorporates all three measures (generalized, goal-relevant, and ideological shared reality). Combining both general perceptions and shared reality about crucial targets (goal-relevant tactics, ideological commitments), this composite measure reflects the multi-faceted experience of sharing reality with an IO during goal pursuit.

Methods

Participants

A total of 320 undergraduate students (68% Women, 27% Men; 5% did not indicate;

M_{age}= 19.75 years, SD_{age} = 2.31; 39.7% Asian, 32.8% White, 3.8% Black, 7.0% Other) at a large Canadian university completed the online study in return for course credit. A priori G*Power calculations suggested a sample size of 176 participants to achieve 80% power for a 2 (Importance; High, Low) X 2 (Instrumentality; Instrumental, Non-Instrumental) between-within interaction with a small to moderate effect size (η_p^2 = .02). The stop rule was to collect data until the end of the semester, yielding a total of 320 participants and 96% power to detect a small to moderate effect.

Procedure and materials

All participants first nominated people in their lives who, for their health and fitness goals, served as instrumental and non-instrumental others (i.e., participants nominated one health and fitness IO and one NIO). After participants nominated their IO and NIO, they underwent the goal importance manipulation. After the manipulation, participants were asked to report on the nature and quality of their relationship with their nominated health and fitness IO and NIO. They did this by rating how much shared reality, closeness, liking, and epistemic trust they had with each nominee. Unless otherwise stated, all items were rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Instrumental Other Nominations. The nomination procedure was adapted from that used by Fitzsimons and Shah (2008). Participants were first prompted to nominate an instrumental other (IO) and a non-instrumental other (NIO) for the health and fitness domain. Participants were encouraged to *"please only include individuals with whom you have a positive relationship with and please nominate pairs of people who you spend equally as much time with*".

Consistent with wording used by Fitzsimons and Shah (2008), a person who was instrumental was defined as *"[someone whose] presence in your life makes it more likely that you will achieve your goal".* Participants were therefore told that "*the essence of instrumentality is that the person's presence in your life makes it more likely that you will achieve your goal. To say someone is not instrumental for a specific goal doesn't imply anything negative about this person or your relationship".* When nominating IOs, participants were instructed to *"give the first name of a person who is/was instrumental for you in achieving success in [goal domain] (That is, this person makes it more likely that you'll succeed at this goal)*". This was in contrast to instructions for NIOs where participants were asked to "*give the first name of a person who is/was NOT instrumental for you in achieving success in [goal domain]. This doesn't mean that this person actively seeks to hinder your goal, only that they are not instrumental (That is, this person does NOT make it more likely that you'll succeed at this goal)*". For each nominated person, participants reported that individual's name, age, gender, average hours spent with them per week, and the length of their relationship. They also reported whether this person pursues the same goal as them (e.g., nominated person also pursues health and fitness; Yes or No) well as whether that person makes it more likely that the participant would achieve their goals in that domain (1 = *strongly disagree*, 7 = *strongly agree*), which acted both as a manipulation check and as a way to capture degree of instrumentality.

Goal importance manipulation. Participants were randomly assigned to either the goal importance condition or the control condition. In the goal importance condition, participants read the following passage:

> "*Recent research has found that staying healthy and fit is key for avoiding sickness, better productivity, better mental health, and greater academic achievement (Ayerman, 2018; Forbes & Austin, 2017). As more and more people become sedentary because of the rise of electronics and social media, maintaining a healthy life style will not only*

improve people's life outcomes but it will also give them an advantage relative to other people who are losing ground because of their lack of healthy behaviour.

The risk factors for adult chronic diseases, like hypertension and type 2 diabetes, are increasingly seen in undergraduate populations across Canada and the United states, often a result of unhealthy eating habits and increased weight gain (WHO, 2017). Dietary and exercise habits established in early adulthood often carry into adulthood, so establishing good health and exercise habits at a young age will people stay healthy throughout their life."

Then participants were asked to "*Please spend 3-5 minutes describing why your health and fitness goals are important to you. Please be as detailed and vivid as possible in your description*."

Participants in the control condition were only asked to describe why their health and fitness goals are important to them and did not read the above passage. Thus, in both conditions participants were asked to write about the importance of health and fitness; the only difference was whether they were exposed to the preamble suggesting the benefits and importance of such goals. Therefore, this was a relatively conservative manipulation in which the salience of the goal was held constant across conditions, with the goal importance manipulation simply elevating the value and importance of the goal. Indeed, a pilot study (N = 76) found that the goal importance condition led participants to report significantly higher levels of desire (M = 5.16, SD = 1.19; e.g., "Achieving my health and fitness goals are a top priority for me") towards health and fitness goals relative to the control condition (M = 4.39, SD = 1.13), $t(74) = 2.88$, $p = .005$.

Shared Reality.

Generalized Shared Reality. Participants completed a measure of generalized shared reality developed by Rossignac-Milon et al. (2021). This scale was designed to capture the subjective experience of sharing a common set of feelings, beliefs or concerns (i.e., inner states) with another person about the world in general. It has 8 items (e.g., *"We often feel like we have created our own reality," "We often anticipate what the other is about to say"*; $.91 < \alpha\text{'s} < .96$).

Participants completed this scale for each of the nominated individuals. In addition to the chronic version of the generalized shared reality scale, I also measured the interaction-specific version of the generalized shared reality scale, in which participants rate the extent to which they felt a general sense of shared reality during their most recent interactions with their partner (as developed by Rossignac-Milon et al., 2021; e.g., *During our most recent interactions, we thought of things at the exact same time,"* .91 < α's < .93).

Goal-relevant shared reality. Participants filled out measures to capture goal-relevant shared reality that started with the stem *"[name] and I tend to have the same thoughts and feelings about:"*, ending in the following items*: "what type of diet works best," "the right type of exercise routine needed to get the best results," "How often one needs to exercise," "Attitudes towards supplements," "The importance of health/fitness relative to other goals"*; 91 < α's < .93).

Ideological shared reality. Participants completed a scale assessing their agreement with the nominated other about ideological issues in general, as well as with regards to particular political or religious issues (19 items; e.g., *[[Name] and I] "have similar political views," "have similar religious views"; [[Name] and I are in agreement about…] "Trump's presidency," "free-speech," "trans rights", "God", "afterlife"*); .93 < α's < .95)[3].

All measures of shared reality were also averaged to create a measure of composite shared reality.

Closeness, liking, and epistemic trust. Following Fitzsimons and Shah (2008), participants filled out a modified two-item version of the Subjective Closeness Inventory (SCI):

[3] Three exploratory items were removed from the ideological SR measure because of significant conceptual overlap with Generalized Shared Reality scale (e.g., [Name] and I], *"Typically interpret and think about current world events in similar ways,").* Results with the inclusion of these items remain the same.

"Relative to your other relationships, how close are you and [Name]?," "Relative to what you know about other people's relationships, how close are you and [Name]?" (1 = *far below average*; 7 = *far above average*; Berscheid et al., 1989; 95 < α's < .98). Similar items were used to measure how much participants liked the nominated individual (2 items; *"Relative to your other relationships, how much do you like [Name]?," "Relative to what you know about other people's relationships, , how much do you like [Name]?"* .93 < α's < .99).

In addition, I included a third relationship variable, epistemic trust. Epistemic trust taps into the degree to which people feel like they can rely on another person's judgment, a variable that has been associated with the experience of shared reality (e.g., people are more likely to share perceptions of target referents if they trust others judgment; see Echterhoff, Higgins, et al., 2009). Participants therefore reported how much they epistemically trusted the nominated individual (3 items; *"Relative to your other relationships, how much do you trust [Name]?," "[Name] is someone whose judgement I generally trust" "Relative to my other relationships, I tend rely on [Name]'s judgement"*; from Echterhoff et al., 2008; .87 < α's < .93).

Results

Perceived instrumentality (manipulation check)

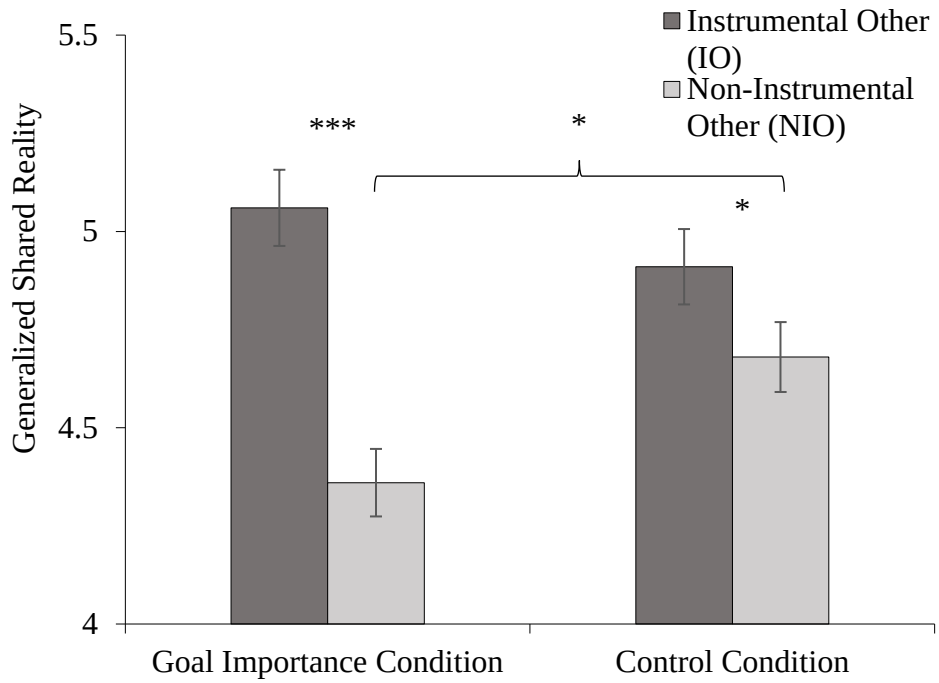
To check that IOs were perceived as more instrumental for participants' health and fitness goals compared to NIOs, I conducted a manipulation check. Collapsed across all participants, IOs (M = 5.85, SD = 0.85) were indeed rated as more instrumental than NIOs (M = 3.16, SD = 1.16), t(318) = 34.07, $p < .001$, d = 1.90.

Shared reality

When looking at chronic generalized shared reality, a mixed ANOVA revealed no main effect of goal importance condition, $F(1, 305) = 0.75$, $p = .389$, $\eta_p^2 = .00$, but a main effect of

instrumentality, $F(1, 305) = 35.04$, $p < .001$, $\eta_p^2 = .10$. As predicted, a significant instrumentality x goal importance interaction emerged for chronic generalized shared reality (Rossignac-Milon et al., 2021), $F(1, 305) = 8.67$, $p = .003$, $\eta_p^2 = .03$. As seen in Figure 2, the relative difference between IOs and NIOs was greater in the goal importance condition relative to the control condition. An analysis of simple effects suggested that this difference was due to participants distancing themselves from goal-irrelevant NIOs in the goal importance condition. Participants in the goal importance condition reported significantly lower levels of generalized shared reality with NIOs ($M = 4.36$, $SD = 1.20$) compared to those in the control condition, ($M = 4.68$, $SD = 1.11$, $p = .014$, $d = .28$; see Figure 2). There were no differences across condition for IO shared reality, $p = .236$. No significant interaction effects emerged for goal-relevant shared reality, $F(1, 304) = 0.80$, $p = .372$, $\eta_p^2 = .003$, ideological shared reality, $F(1, 306) = 0.71$, $p = .399$, $\eta_p^2 = .002$, composite shared reality, $F(1, 306) = 1.72$, $p = .191$, $\eta_p^2 = .01$, and interaction-specific generalized shared reality, $F(1, 307) = 2.59$, $p = .109$, $\eta_p^2 = .01$.

Figure 2.



Note. Study 2 results. Degree of chronic generalized shared reality as a function of condition (goal importance condition vs. control condition) and instrumentality (instrumental other vs. non-instrumental other). Error bars represent ± one standard error of the mean. Within each condition, IO generalized shared reality was significantly higher than NIO generalized shared reality, replicating previous studies. * indicates $p < .05$; *** indicates $p < .001$.

Discussion

Study 2 provides further causal evidence that perceptions of shared reality with IOs relative to NIOs can shift as a function of motivational concerns. When the importance of health goals was made particularly salient, participants reported lower chronic generalized shared reality with NIOs in the goal importance condition relative to the control condition. Specifically, participants distanced themselves from NIOs in the goal importance condition, while maintaining the same level of generalized shared reality with IOs across both the goal importance and control conditions. This same pattern was found for closeness (replicating Fitzsimons & Shah, 2008), liking, and epistemic trust. It is also reflected in Study 1 where the saying-is-believing effect was not found for NIOs (instead of IOs simply being higher in the saying-is-believing effects relative to NIOs). It is important to point out that even in the control condition, participants were asked to

reflect on the importance of health and fitness goals. Thus, while the pattern of results suggests that increases in goal importance are more likely tied to decreased shared reality with NIOs rather than increased shared reality with IOs, this design does not permit a comparison against a condition in which the focal goal was not salient (or even devalued). It is possible that under such conditions, I would observe both decreased shared reality with NIOs and increased shared reality with IOs in a goal importance condition.

While a significant instrumentality x goal importance interaction was observed for chronic generalized shared reality, liking, closeness, and epistemic trust, the same interaction with goal-relevant, ideological, composite, and interaction-specific generalized shared reality was not significant. This might be because more concrete targets are less prone to memory biases (as seen in other motivationally self-serving assessments; Dunning et al., 1989). While people can subjectively shift how much generalized shared reality they experience with someone (i.e., chronic generalized shared reality), it might be harder to shift perceptions on more concrete targets, such as how much they agree on the types of workouts that are best (goal-relevant shared reality), whether they agree about abortion (ideological shared reality), or how precisely connected they were in their most recent concrete interaction (interaction-specific generalized shared reality).

This dynamic speaks to a larger point about motivated perceptions of shared reality with IOs vs. NIOs. It is likely that these motivated perceptions are at least somewhat tethered to reality. People can have strong motivations to perceive themselves as sharing reality with someone, but if the evidence does not support this perception, the experience of shared reality can only go so far. The idea that motivated perceptions are somewhat conditioned by the constraints of reality is not a new one in psychology. Previous researchers have pointed out that

positive illusions about the self are helpful for mental health (Taylor & Brown, 1988), but only up to a point, lest grandeur take over and cause personal and interpersonal problems (Baumeister, 1989). Similarly, people are motivated to believe political facts that conform with their partisan lens (Van Bavel & Pereira, 2018), but will cede ground and modify their beliefs if presented with strong evidence to the contrary (Guess & Coppock, 2020; Tappin et al., 2023; Wood & Porter, 2019; Xu & Petty, 2022). Therefore, I do expect that people's perceptions of shared reality with IOs should be somewhat tied to reality, especially if shared reality is to be related to real-world outcomes, such as goal success. I discuss this idea further when investigating potential mechanisms in Studies 4 and 5.

Study 3

Studies 1 and 2 provided initial evidence addressing a key question of this dissertation: are people motivated to experience and perceive greater shared reality with IOs (relative to NIOs)? Study 3 builds on these studies to further examine whether people indeed report experiencing greater shared reality with IOs (relative to NIOs) in their lives. In addition, Study 3 also begins to explore the second key question of this work about whether this tendency is related to goal success. To do this, Studies 3a-3c had participants nominate an instrumental other (IO) and a non-instrumental other (NIO) in one or several goal domains (e.g., Study 3a had three goal domains: academic, health and fitness, and social goals). Participants then reported on their goal success in those domains. Both studies 3b and 3c were close replications of Study 3a, but Study 3b included only a single goal domain (academic goals) whereas Study 3c included two goals (academic goals, health and fitness goals).

Studies 3a-3c had three primary aims. First, the studies aimed to replicate earlier findings regarding instrumentality, specifically that participants would report higher liking and closeness for IOs versus NIOs (Fitzsimons & Shah, 2008; Orehek, Forest, & Wingrove, 2018). The second aim of Study 3 was to build on Studies 1 and 2 by testing whether people indeed report experiencing greater share reality with IOs relative to NIOs. The third aim of Study 3 was to begin to explore whether those who experience shared reality with IOs tend to succeed at their goals. In line with my theorizing, I predicted that shared reality with IOs would be associated with goal success, even after controlling for IO closeness, liking, and epistemic trust. While Studies 3a and 3b examined whether IO shared reality was related to goal success at a single time point, Study 3c also tested whether IO shared reality measured at Time 1 was related to goal success at Time 2.

As in Study 2, I used three measures to capture multiple ways shared reality about the world at large with an IO might be linked to goal success: the validated generalized shared reality scale (Rossignac-Milon et al., 2021), a goal-relevant shared reality measure, and an ideological shared reality measure. Having a measure that captures goal-relevant shared reality assesses whether participants and IOs share reality about goal-relevant tactics, which could be important for goal success. In addition, a measure that captures ideological shared reality assesses whether participants and their IOs are on the same page about foundational moral commitments—commitments that shape what goals people value and effortfully pursue (Gai & Bhattacharjee, 2022; McCullough & Carter, 2013). Measuring shared ideological reality is important since people are highly attentive to moral beliefs in relationship contexts (Launay & Dunbar, 2015; Nicolas et al., 2022).

I propose that IO shared reality's link to goal success may be best captured by a composite variable that incorporates all three measures of shared reality (generalized, goal-relevant, and ideological shared reality). Combining both general perceptions and shared reality about crucial targets (goal-relevant tactics, ideological commitments), this composite measure reflects the multi-faceted experience of sharing reality with an IO during goal pursuit. However, I also conducted separate analyses with each of these measures to compare their effects. For instance, goal-relevant shared reality could be particularly important in supporting goal success, or the validated generalized shared reality scale may be sufficient.

Study 3a

Method

Participants. A total of 236 undergraduate students (74% Women; 26% Men; M_{age}= 19.46 years, SD_{age} = 2.1; 40.8% White, 34.2% Asian, 5.8% Black, 5.0% Other) at a large

Canadian university completed the online study in return for course credit. I calculated the minimum sample size based on the typical small to moderate effect sizes observed in psychological studies (Schäfer & Schwarz, 2019). A priori G*Power calculations (Faul et al., 2014) suggested a sample size of at least 90 participants to achieve 80% power for a two-tailed repeated measures design to detect a small to moderate effect (d = 0.3) size. The a priori stop rule was to collect data from as many participants as possible over the course of a semester. This approach yielded a total of 236 participants, with 99% power to detect an effect.

Procedure and materials. Using the same Study 2 materials, all participants first nominated instrumental and non-instrumental others for three goal domains (health and fitness, academic, social). To obscure the purpose of the study and remain consistent with Fitzsimons and Shah (2008), participants were also asked to list names of other close same-gender friends *"Please provide a list of names for all close same-gender friends whom you have not yet mentioned*". However, they did not complete any additional measures regarding these individuals.

Participants were also asked to list the names of their current top five goals to be sure that the chosen goal domains were accurately tracking active goals that participants had. 94% of participants cited academic goals in their top 5 goals, 80% cited a health and fitness goal, and 63% cited social goals. 70% cited academic goals as their most important goal.[4] Participants then filled out, in a randomized order, a battery of measures (described below) regarding each of these 6 people they nominated, also in randomized order. All measures were averaged across all

[4] Participants also rated how difficult it was to nominate the six instrumental and non-instrumental others (1 = *very difficult*, 7 = *very easy*). The average rating was 3.64 (*SD*= 1.62), indicating that participants found it to be between "somewhat difficult" and "neutral" to come up with six individuals.

three IOs and NIOs to create an average score for each instrumental relationship (e.g., score for IO generalized shared reality was created by averaging across all three IO nominations).

Participants then filled out personality questionnaires that were not the focus of the current project; full details about these measures are in Appendix A. As in Study 2, participants proceeded to answer the same measures used in Study 2 with the following changes.[5]

Goal-relevant shared reality. In addition to the health and fitness measure used in Study 2, participants filled out measures that captured the addition of the other two goal domains: both academic success (*"the best study tactics", "the number of hours needed to put towards studying to achieve academic success", "the importance of academic success relative to other goals"*; 86 < α's < .91) as well as the social goal domain (*"how best to meet new people"; "What are the best activities to do with friends," "What the people we know are really like," "What constitutes a good friend/partner." "The importance of having a successful social life relative to other goals"*; α's = .92).

Ideological shared reality. Participants completed a smaller version of the scale used in Study 2, now excluding 6 of the religious items (13 items; .93 < α's < .95)[6].

Finally, participants reported perceived goal success in each of the three goal domains.

Goal success. Participants reported how successful they were and how much progress they made in the three goal domains ([I have been successful in pursuing my] [I have made progress towards achieving my] *"academic goals," "health and fitness goals," "social goals"*;

[5] I included exploratory measures to assess perceived similarities, including involuntary similarities (e.g., "[Name] and I come from a similar background") and voluntary similarities (e.g., "[Name] and I tend to wear similar types of cloths"). I also included a measure of fitness interdependence (Ayers, et al., 2022), and inclusion of other in self (Aron, Aron, & Smollan, 1992; only in Study 3b). Results comparing these measures between IOs and NIOs are available in Appendix B.

[6] Three exploratory items were removed from the ideological SR measure because of significant conceptual overlap with Generalized Shared Reality scale (e.g., [Name] and I], *"Typically interpret and think about current world events in similar ways,").* Results with the inclusion of these items remain the same.

items first averaged within goal domain, then across goal domains; 9 items total; 1 = *strongly disagree* to 7 = *strongly agree*; α = .78).

Results

Table 1 presents correlations between the main IO variables. None of the NIO shared reality measures were correlated with goal success (*p*s > .171; full correlations of NIO variables are available in Appendix B).

Table 1.
Correlations for primary IO variables for Study 3a.

Variable	1	2	3	4	5	6
1. IO Generalized Shared Reality						
2. IO Goal-Relevant Shared Reality	.46*** [.35, .56]					
3. IO Ideological Shared Reality	.56*** [.47, .65]	.56*** [.47, .64]				
4. IO Closeness	.40*** [.29, .51]	.30*** [.18, .41]	.38*** [.27, .49]			
5. IO Liking	.43*** [.31, .53]	.39*** [.28, .50]	.47*** [.36, .57]	.53*** [.43, .62]		
6. IO Epistemic Trust	.48*** [.37, .57]	.49*** [.38, .58]	.47*** [.36, .56]	.47*** [.36, .56]	.70*** [.63, .76]	
7. Goal Success	.21** [.08, .33]	.20** [.07, .32]	.18** [.05, .30]	.11 [-.02, .23]	.08 [-.05, .21]	.16* [.03, .28]

Note. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Relationship evaluations. Replicating previous work, participants rated IOs versus NIOs significantly higher in closeness, $t(229) = 11.88$, $p < .001$, $d = 0.79$ and liking, $t(229) = 11.86$, $p < .001$, $d = 0.78$. Participants also reported greater epistemic trust in IOs versus NIOs, $t(229) = 13.68$, $p < .001$, $d = 0.90$ (see Table 2 for descriptives).

Shared reality. Consistent with my hypotheses, participants reported experiencing greater shared reality with IOs (*vs.* NIOs) for each of the three measures of shared reality: generalized shared reality, $t(229) = 11.87$, $p < .001$, $d = 0.78$, goal-relevant, $t(229) = 16.82$, $p < .001$, $d = 1.11$, and ideological, $t(229) = 8.49$, $p < .001$, $d = 0.55$ (see Table 2).

Table 2.
Study 3 within participant comparisons between IO and NIO ratings of shared reality and other relationship evaluations.

	Study 3a			Study 3b			Study 3c		
	Instrumental Other (IO) *M* (*SD*)	Non-Instrumental Other (NIO) *M* (*SD*)	*d*	Instrumental Other (IO) *M* (*SD*)	Non-Instrumental Other (NIO) *M* (*SD*)	*d*	Instrumental Other (IO) *M* (*SD*)	Non-Instrumental Other (NIO) *M* (*SD*)	*d*
Generalized shared reality	5.18 (0.86)	4.23 (1.08)	0.78***	5.11 (1.06)	4.36 (1.23)	0.48***	4.98 (1.01)	4.47 (0.98)	0.44***
Goal-relevant shared reality	5.47 (0.80)	4.16 (1.06)	1.11***	5.13 (1.16)	3.98 (1.46)	0.63***	5.30 (0.93)	4.11 (1.13)	0.86***
Ideological shared reality	5.51 (0.81)	5.02 (0.97)	0.55***	5.37 (1.02)	5.17 (1.04)	0.18*	5.27 (0.87)	5.04 (0.90)	0.28***
Closeness	5.80 (0.90)	4.70 (1.24)	0.79***	6.02 (1.08)	5.19 (1.48)	0.49***	5.67 (1.02)	5.12 (1.18)	0.39***
Liking	6.26 (0.68)	5.29 (1.23)	0.78***	6.49 (0.77)	5.56 (1.49)	0.59***	6.21 (0.85)	5.29 (1.05)	0.51***
Epistemic Trust	5.95 (0.78)	4.70 (1.20)	0.90***	6.12 (0.83)	4.91 (1.39)	0.76***	5.83 (0.91)	4.98 (1.08)	0.69***

Note. * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Goal success. To test my prediction that shared reality with IOs (*vs.* NIOs) is related to goal success, I conducted a series of multiple regression models with each measure of shared reality (generalized, goal-relevant, ideological, and the composite).

Both IO generalized and goal-relevant shared reality were significantly related to goal success and remained so when controlling for their NIO shared reality counterparts as well as IO closeness, liking, and epistemic trust, (see Table 4). No other measure was significant when either IO generalized or goal-relevant shared reality were in the model.

In contrast to the first two shared reality measures, IO ideological shared reality was not related to goal success in the multiple regression models tested (see Table 4; although see Table 1 for evidence of a significant correlational relationship).

Finally, I collapsed across all three forms of shared reality ($\alpha = .77$) to create an IO shared reality composite. This composite was also significantly related to goal success when controlling for NIO composite shared reality and IO closeness, liking, and epistemic trust. Overall, three of the four measures of IO shared reality (generalized, goal-relevant, and composite) were robustly linked to goal success.

Study 3b

Methods

Participants. To replicate results from Study 3a, a total of 204 undergraduate students (63% Women; 35% Male; 1% Non-binary; M_{age}= 20.81 years, SD_{age} = 1.98; 55.5% Asian, 25.1% White, 2.8% Black, 2.8% Other) completed the online study. All participants completed the same within-subject design in which they nominated instrumental and non-instrumental others for the academic goal domain and answered questions about their relationship with each nominated

person. As with Study 3a, the stop rule was to collect data until the end of the semester, which yielded a total of 204 participants, providing 99% power to detect an effect.

Procedure and materials. The procedure for Study 3b was identical to that of Study 3a, with the exceptions explained below. Notably, Study 3b only focused on the academic goal domain in this study, limiting nominations to two people in total, one IO and one NIO.

Shared reality. The goal-relevant and generalized shared reality measures remained identical. The ideological shared reality measure was changed back to the one used in Study 2, introducing some religious measures (6 items; [[name] and I are in agreement about…], e.g., *"The soul," "God," "The afterlife"*; α's = .94).

Goal success. Since Study 3b only focused on one goal domain (academic goals), I expanded the goal success scale, including 6 items overall (4 additional items: *"I have already succeeded in achieving many academic goals I have set for myself", "I'm well on my way towards achieving my ultimate academic goals.", "I have the ability to reach my academic goals," "I feel capable of achieving my academic goals"*). An overall composite score for goal success was calculated by averaging all the items (α = .85).

Results

Table 3 presents correlations between the main IO variables. None of the NIO shared reality measures correlated with goal success (*p*s > .318; full correlations of NIO variables are available in Appendix B).

Relationship evaluations. Replicating previous work and Study 3a, participants rated IOs versus NIOs significantly higher in closeness, $t(200) = 6.93$, $p < .001$, $d = 0.49$, and liking, $t(200) = 8.41$, $p < .001$, $d = 0.59$. Participants also reported greater epistemic trust in IOs versus NIOs, $t(200) = 10.84$, $p < .001$, $d = 0.76$ (see Table 2 for descriptives).

Shared reality. Study 3b replicated Study 3a, again finding that participants reported experiencing greater shared reality with IOs (*vs.* NIOs) for each of the three measures of shared reality: generalized, $t(200) = 6.87$, $p < .001$, $d = 0.48$, goal-relevant, $t(200) = 8.87$, $p < .001$, $d = 0.63$, and ideological shared reality, $t(198) = 2.54$, $p = .012$, $d = 0.18$ (Table 2).

Goal success. Replicating Study 3a, IO generalized shared reality was significantly related to goal success and remained so when controlling for NIO generalized shared reality (see Table 4). However, unlike Study 3a, IO generalized shared reality was not significantly related to goal success in the model that included IO closeness, liking, and epistemic trust.

Unlike in Study 3a, IO goal-relevant shared reality was not significantly related to goal success when controlling for NIO goal-relevant shared reality and IO closeness, liking, and epistemic trust.

Replicating Study 3a, IO ideological shared reality was not related to goal success. IO ideological shared reality was also nonsignificantly related to goal success when controlling for NIO shared reality ($\beta = .14$, $p = .083$) and when controlling for IO closeness, liking and epistemic trust. (Table 4).

The IO shared reality composite was nonsignificantly related to goal success when controlling for NIO shared reality ($\beta = .13$, $p = .071$) and when controlling for IO closeness, liking and epistemic trust. (Table 4). Overall, the results from Study 3b were more uneven compared to Study 3a. To gain more confidence in the possible association between IO shared reality and goal success, I conducted Study 3c, a multiple timepoint study, to see how IO shared reality relates to goal success over time.

Table 3.
Correlations for main IO variables for Study 3b.

Variable	1	2	3	4	5	6
1. IO Generalized Shared Reality						
2. IO Goal-Relevant Shared Reality	.21** [.07, .34]					
3. IO Ideological Shared Reality	.50*** [.39, .60]	.13 [-.01, .26]				
4. IO Closeness	.51*** [.40, .61]	.10 [-.04, .23]	.40*** [.28, .51]			
5. IO Liking	.45*** [.33, .55]	.23** [.10, .36]	.46*** [.34, .56]	.62*** [.53, .70]		
6. IO Epistemic Trust	.48*** [.36, .58]	.15* [.01, .28]	.38*** [.26, .49]	.60*** [.51, .69]	.57*** [.47, .66]	
7. Goal Success	.15* [.01, .28]	.01 [-.13, .14]	.13 [-.01, .27]	.19** [.06, .32]	.11 [-.03, .24]	.22** [.09, .35]

Note. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Table 4.

Regression Analyses for Predictors of Goal Success in Studies 3 and 4

	IO Generalized Shared Reality		IO Goal-Relevant Shared Reality		IO Ideological Shared Reality		IO Composite Shared Reality	
Outcome	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust
Study 3								
Goal Success (Study 3a)	.20 [.07,.33]**¥	.18 [.02,.34]*¥	.20 [.07,.33]**¥	.17 [.02,.32]*¥	.12 [-.03,.27]¥	.07 [-.07,.22]¥	.21 [.08,.35]**¥	.20 [.03,.35]*¥
Goal Success (Study 3b)	.15 [.01,.29]*¥	.03 [-.14,.20]¥	-.01 [-.14,.14]¥	-.04 [-.18,.10]	.14 [-.02,.28]†¥	.07 [-.09,.23]¥	.13 [-.01,.27]†¥	.02 [-.14,.19]
Short-Term Goal Success (Study 3c)	.44 [.24,.66]***¥	.36 [.12,.63]**¥	.10 [-.12,.34]	.09 [-.16,.37]	.28 [.03,.70]*¥	.17 [-.09,.54]¥	.33 [.14,.60]**¥	.32 [.06,.64]*¥
Time 2 Goal Success (Study 3c)	.14 [-.03,.30]†¥	.14 [-.06,.34]¥	.05 [-.12,.23]¥	.10 [-.09,.30]¥	.27 [.09,.50]**¥	.27 [.10,.50]**¥	.17 [.01,.36]*¥	.25 [.06,.50]*¥
Study 4								
Goal Success	.26 [.12,.39]***	.22 [.05,.38]*¥	.36 [.23,.48]***	.30 [.15,.44]***¥	.19 [.04,.33]**¥	.13 [-.01,.27]†¥	.34 [.21,.47]***	.32 [.16,.48]***¥

Note. For analyses with multiple predictors, ¥ indicates that there were no other significant predictors in the model. Each cell contains the standardized beta coefficient and 95% CI. † indicates $p < .10$, * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Study 3c

Methods

Participants. Due to participant pool constraints on a two-session study and to guard against attrition, I needed to oversample for Time 1 in order to get an adequate number of participants for Time 2[7]. A priori G*Power calculations (Faul et al., 2014) suggested a sample size of 84 participants to achieve 80% power for a regression analysis that included three variables (Two Time 1 variables and one Time 1 mirror variable to the Time 2 dependent variable) to detect a small to moderate effect size ($f^2 = 0.12$). For Time 1, a total of 267 undergraduate students (71% Women; 26% Men; 1% Non-binary; M_{age}= 19.24 years, SD_{age} = 2.13; 34.7% White, 41.3% Asian, 4.0% Black, 5.5% Other) completed the online study. Since the minimum amount of time between Time 1 and Time 2 was three weeks, I decided to close Time 1 signups three weeks before the end of the semester. I anticipated between 80-150 participants completing Time 2, with the final number being 88 participants (73% Women; 22% Men; 2% Non-binary; M_{age}= 19.54 years, SD = 2.95; 39.8% Asian, 36.4% White, 4.5% Black, 4.5% Other). No significant differences were found between people who did and did not finish Time 2 for any Time 1 shared reality (all *p*s > .358), instrumentality (all *p*s > .238) or goal success variables (all *p*s > .215).

Procedure and materials. Study 3c was conducted over two time points. Like Studies 3a and 3b, participants nominated individuals at Time 1, this time in two goal domains (academic goals and health goals), totaling four individuals, two (one IO and one NIO) in each goal

[7] It was a requirement that participants be awarded credit separately for Time 1 and Time 2 sessions. This created an obstacle for Time 2 retention rates, because many participants had already received their maximum credits by the time they were eligible for the Time 2 session. Participants also needed to respond to an email to participate in Time 2 because embedded data from Time 1 (names of nominated others, self-entered short-term goals) needed to be transferred through a unique link.

domain[8]. Participants then filled out the battery of questions about each individual that were used in Study 3b. At Time 2, participants filled out the same measures as Time 1 for each nominated individual and reported their goal success in each goal domain.

Short-term goal success. In addition to filling out the goal success measures (same as in Study 3b) in the two goal domains at Time 1 and Time 2, participants also nominated two short-term goals within each domain that they wished *"to achieve in the upcoming weeks (3-4)"* at Time 1. At Time 2, participants reported on their progress regarding these four self-nominated goals, using similar items used to measure domain general goal success (4 items for each nominated goal; e.g., *"I have been successful in pursuing [nominated goal]"*). An overall score of short-term goal success was calculated by averaging all 8 items across the two short-term goals ($\alpha = .95$).

Results

Results from Time 1 replicated previous patterns found in Studies 3a and 3b (see Table 2).

Goal success. First, I tested whether IO generalized shared reality at Time 1 was related to goal success at Time 2, evaluating both success on short-term goals as well as the overall goal success measure. Looking first at short-term success, IO generalized shared reality, but not NIO generalized shared reality was significantly related to short-term goal success. This relationship held when controlling for IO closeness, liking, and epistemic trust. Looking next at overall goal success, IO generalized shared reality was nonsignificantly related to Time 2 goal success (when controlling for goal success at Time 1; $\beta = .14$, $p = .096$). This relationship was also not

[8] A replication of the analyses conducted in Study 3a and 3b are available for Study 3c at Time 1 in Table 2.

significant when controlling for IO closeness, liking, and epistemic trust (see Table 4 for statistics).

Next, I tested to see whether IO goal-relevant shared reality was related to short-term and Time 2 overall goal success. IO goal-relevant shared reality was not significantly related to any goal success measures at Time 2 for any of the models tested, replicating results in Study 3b.

IO ideological shared reality, but not NIO ideological shared reality, was significantly related to short-term goal success (see Table 4), although the relationship that did not hold when controlling for IO closeness, liking, and epistemic trust. However, in contrast to both IO generalized and goal-relevant shared reality, IO ideological shared reality was significantly related to Time 2 goal success in all models tested (i.e., when controlling for Time 1 goal success, NIO ideological shared reality as well as IO closeness, liking, and epistemic trust). This result stands in stark contrast to the findings from Study 3a and 3b where IO ideological shared reality was not reliably related to goal success.

IO composite shared reality, but not the NIO composite, was significantly related to both short-term goal success and Time 2 overall goal success (when controlling for goal success at Time 1; see Table 4). These relationships were maintained when controlling for IO liking, closeness, and epistemic trust. Therefore, unlike all three individual shared reality measures, IO composite shared reality was significant across all the models tested.

Finally, I tested whether Time 1 goal success was related to IO composite shared reality at Time 2. When controlling for Time 1 IO composite shared reality, Time 1 goal success was

not significantly related to Time 2 IO composite shared reality, β = .07, p = 326. Therefore, shared reality appeared to influence goal success over time, but not vice versa.[9]

Domain specific goal success. Next, I examined whether goal domain specific shared reality was related to goal success within that domain at Time 2. For example, did shared reality with the nominated academic IO, but not the health and fitness IO, relate to *academic* goal success? A composite measure of Time 1 shared reality with the academic IO was significantly related to short-term academic goal success, even when controlling for people's shared reality with the health and fitness IO (See Table 5). Academic IO shared reality was nonsignificantly related to Time 2 goal success (β = .16, p = .064); there was no significant relationship when controlling for shared reality with the health and fitness IO.

The results were less clear when looking at what was related to health and fitness goal success. A composite measure of Time 1 shared reality with the health and fitness IO was either nonsignificantly (β = .18, p = .059) or significantly related to both health and fitness success variables (See Table 5). However, there was no significant relationship when controlling for people's shared reality with the academic IO. Instead, shared reality with the academic IO was more strongly related to health and fitness goals.

[9] The same pattern emerged for liking and closeness. The more participants shared reality with instrumental others at Time 1, the more they tended to like (β = .27, p = .005; 95% CI [.11, .57]) and feel closer to (β = .15, p = .024; 95% CI [.01, .33]) them at Time 2, even when controlling for how much they liked and felt close to them at Time 1. Vice versa was not true: neither Time 1 liking nor closeness was significantly related to Time 2 shared reality with instrumental others (all ps > .824). Moreover, these effects do not seem to be driven by asymmetric correlations between variables across timepoints (IO composite shared reality, r = .79; goal success , r = .70; liking, r = .60, closeness, r = .83),

Table 5

Regression Analyses for Time 1 Predictors of Time 2 Goal Specific Goal Success in Study 3c

	Health and Fitness IO Composite Shared Reality (CSR)		Academic IO Composite Shared Reality (CSR)	
Outcome	Sole Predictor	Adjusting for Academic IO CSR	Sole Predictor	Adjusting for Health and Fitness IO CSR
Health and Fitness Goal Success (Time 2)	.16 [-.04,.28]†	.09 [-.15,.41]	.20 [.04,.63]*	.17 [-.12,.24]†
Health and Fitness Short-Term Goal Success	.23 [.02,.67]*	.06 [-.23,.43]	.43 [.42,1.13]***	.41 [.35,1.11]***
Academic Goal Success (Time 2)	.08 [-.10,.29]	.02 [-.18,.24]	.16 [-.01,.44]†	.15 [-.05,.45]
Academic Short-Term Goal Success	.12 [-.14,.48]	-.01 [-.33,.32]	.32 [.18,.87]**	.32 [.15,.91]**

Note. All analyses with a Time 2 Goal Success variable control for Time 1 Goal Success. VIF for all analyses did not exceed 1.3. Each cell contains the standardized beta coefficient and 95% CI. † indicates p. <.10, * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Discussion

Studies 3a, 3b, and 3c all replicated previous work on instrumentality (Fitzsimons & Shah, 2008; Orehek, Forest, & Wingrove, 2018): Participants reported higher levels of closeness and liking towards IOs versus NIOs. This pattern was also observed with epistemic trust, a theoretically important variable linked to shared reality (Echterhoff & Higgins, 2017). Importantly, across Studies 3a, 3b, and 3c, participants reported experiencing greater shared reality with IOs relative to NIOs, a relationship that was observed across all three shared reality domains (generalized, goal-relevant, ideological). This result suggests that participants not only shared reality with instrumental others about goal-relevant targets, but also about the world in general and even about other specific targets such as political and religious beliefs.

Across all three Study 3 samples (3a, 3b, 3c), IO composite shared reality was most consistently related to goal success, even when controlling for its NIO counterpart as well as IO liking, closeness, and epistemic trust. In other words, the more participants experienced composite shared reality with their IOs, the more they reported goal success. While Studies 3a and 3b found initial evidence for the link between IO shared reality and goal success, Study 3c provided some evidence that IO shared reality is related to goal success over time. The more

participants shared reality with their IOs at Time 1, the more successful they were at achieving their goals at Time 2 (I discuss nuances in these results below). However, the opposite was not true. Participants who reported being more successful in their goals at Time 1 did not report increased shared reality with their IOs at Time 2. These findings suggest that shared reality with IOs leads to goal success but not vice versa.

Curiously, the shared reality measure that would seem to be most directly related to goal success, IO goal-relevant shared reality, was only weakly linked to goal success. IO goal-relevant shared reality was not related to goal success in Studies 3b and 3c but was related to goal success in Study 3a. One possibility is that this arose because of a methodological artifact in the way in which I assessed goal-relevant shared reality in these studies. For each goal, I asked a limited set of questions assessing shared reality about specific goal domain targets (e.g., do you agree about what type of diet works best?). Although these targets were selected to be broadly relevant within each goal domain, they may not have captured idiosyncratic differences in the targets most relevant for a given individual's goal pursuit (e.g., a particular diet may be less central to one's shared reality with an IO than a particular exercise course). Thus, this measure of goal-relevant shared reality may not have fully captured the most pertinent goal-relevant targets and may be underestimating the association between goal-relevant shared reality and goal success. I addressed the limitation of this measure in Studies 4 and 5.

Study 3c also explored whether shared reality with IOs in a specific goal domain was related to goal success in that same domain over time. For the academic goal domain, only academic IO shared reality was related to success in academic goals over time—this relationship held when controlling for health and fitness IO shared reality. However, while shared reality with health and fitness IOs was related to health and fitness goal success over time on its own, this

relationship disappeared when shared reality with academic IOs was included in the model, which itself was related to health and fitness goal success over time.

One reason for this result could be the paramount importance of academic goals over health and fitness goals for the undergraduate sample. Participants rated academic IOs (M = 6.07, SD = 0.91) as significantly more instrumental than health and fitness IOs (M = 5.78, SD = 0.90, p < .001), and reported that their academic goals (M = 6.46, SD = 0.85) were more important to them than their health and fitness goals (M = 5.63, SD = 1.05, p < .001). Therefore, given the focus on academic goals, it could be that success in health and fitness was primarily determined by whether academic goals were first achieved (a common goal conflict strategy; Kung & Scholer, 2020; Orehek & Vazeou-Nieuwenhuis, 2013). Time and effort would be spent at the gym or focusing on food consumption only if successful assignments and test grades were achieved.

If that were the case, participants' success in both goal domains could be contingent on a successful relationship with the academic IO who would be facilitating paramount academic goals. That would then explain why academic IO shared reality was more predictive of health and fitness goal success. Indeed, when controlling for the degree to which participants were successful in their academic goals (Time 2 academic success) in a regression model, Time 1 IO health and fitness, β = .22, p = .035, but not Time 1 IO academic shared reality, β = .18, p = .094, was significantly related to Time 2 health and fitness goals. The case for this interpretation is further strengthened by the fact that participants did not make much progress on their health and fitness goals. Participants reported less success on their Time 2 health and fitness goals (M = 4.44, SD = 1.25; measured on a 7-point scale with 4 being a "Neutral" state of progress) relative to their Time 2 academic goals (M = 5.24, SD = 1.04, p < .001), a pattern that was replicated for

the short term goals participants set for themselves (health and fitness $M = 4.28$, $SD = 1.36$; academic $M = 4.75$, $SD = 1.26$, $p = .001$). Therefore, those who progressed on their academic goals might feel like they are closer to addressing their health and fitness goals relative to those who progressed on neither. Although speculative, this dynamic could make shared reality with academic IOs the key determinant of perceived progress on both goals for these kinds of individuals for whom making academic progress is a priority.

Overall, results from Study 3 suggest that people experience greater shared reality with IOs relative to NIOs and that the more they do this, the more they tend to be successful at their goals.

Study 4

Studies 3a-c found evidence that shared reality with IOs is related to goal success. But how exactly might shared reality with IOs make goal success more likely? In Study 3, I aimed to explore possible mechanisms linking IO shared reality and goal success. As recommended by Fiedler et al. (2018), I included multiple theoretically-informed mediator candidates in an initial pilot study (Study S1; see Appendix C). This bottom-up approach helps to ensure that emergent mechanisms are robust to direct statistical comparisons to other plausible mechanism candidates. Overall, I identified seven mechanisms as most promising (full study details, including the systematic process used to identify the seven possible mechanisms to further test, are available in Appendix C).

These potential mechanisms fall into three types. First, experiencing shared reality with others can make the world feel more objective and meaningful (Echterhoff, Higgins, et al., 2009; Hardin & Higgins, 1996). Indeed, "shared realities with others are attractive because they allow individuals to experience a more valid and reliable view of the world" (Echterhoff, Higgins, et al., 2009, p. 500). Recent research confirmed that dyads who created a greater sense of shared reality felt more certain of their perceptions (Rossignac-Milon et al., 2021). In the case of pursuing a goal, becoming immersed in a strong shared reality with an IO might make a goal feel more objectively important, attainable, and worth pursuing. For example, experiencing shared reality with an instrumental other who supports one's academic goals might make one value academic success more, believe that one can truly succeed in one's academic goals, and see academic pursuit as something truly worthy of investment. Therefore, the stronger people's shared reality with IOs, the more they might see their goal as truly important (goal importance), achievable (self-efficacy) and deserving of more effort (goal effort)—three possible mechanisms

that might make goal success itself more likely (Abele & Spurk, 2009; Bell & Kozlowski, 2002; Nurmi et al., 2002; Patall et al., 2008; Plante et al., 2013; Zajacova et al., 2005). This type of mechanisms may support goal success by directly affecting the individual's perceptions of and engagement in goal pursuit,

In contrast, the next two types of mechanisms may support goal success via relational dynamics with the IO. One way this might happen is through direct support. When people experience shared reality with an instrumental other, that IO might be more likely to provide effective support for goal pursuit. Shared reality with a close partner is associated with greater perceptions of support from that partner (Enestrom & Lydon, 2021; Rossignac-Milon et al., 2021) and with perceiving that a partner responded constructively to one's disclosures of stressful events (Bar-Shachar & Bar-Kalifa, 2021). Therefore, experiencing a greater sense of shared reality with an IO may increase goal success by making it more likely for the IO to be perceived as providing effective support.

The third possible mechanism type explores how shared reality might facilitate communication and coordination with the IO to achieve the goal. A large part of mental and social life is devoted to better anticipating what other people are thinking and how they will act (Clark, 2013; Theriault et al., 2021). In close relationships, developing a strong shared reality has been theorized to facilitate effective coordination of goal-systems (Rossignac-Milon & Higgins, 2018), in which partners shape each other's goal pursuit and more effectively pursue joint goals (Fitzsimons et al., 2015). Indeed, shared reality between close partners is associated with more active participation in a joint decision and greater satisfaction with the joint decision (Rossignac-Milon et al., 2021). This enhanced coordination should facilitate learning from the IO,

communicating with the IO, and coordinating with the IO—all of which could make goal success more likely (FeldmanHall & Shenhav, 2019; Finkel et al., 2006; Török et al., 2019).

There were two other important methodological changes in Study 4. First, I modified the goal success measure that was used in Study 3 to remove items with overlapping content with self-efficacy. I noticed that two of the six items in the goal success measure used in Study 3 likely also tapped perceptions of self-efficacy (e.g., *"I have the ability to reach my academic goals"*). Since increased self-efficacy is one of the mechanisms I wanted to explore in this study, I took those two items out to make sure the goal success dependent variable was distinct from potential mediators.

Second, I revised the goal-relevant shared reality measure to include a broader set of items. As mentioned in the Study 3 discussion section, the goal-relevant shared reality measure used in Studies 3a-c was quite specific. For instance, the items asked whether people agreed on *"the number of hours needed to put towards studying to achieve success"* or *"the right type of exercise routine needed to get the best results."* These specific items might miss important ways in which people do or do not experience shared reality about goal pursuit more broadly. For some people, agreeing on the number of hours needed to study might be very important, but for others, agreeing on some other goal-relevant tactic might be more critical. Thus, it is possible that this narrow measure contributed to the weaker relationship between goal-relevant shared reality and goal success. To address this concern, I revised the goal-relevant shared reality measure using more broad and abstract items (e.g., "*[name]and I* agree on *the best tactics to use to achieve my career goals"*). Moreover, for the mediational analyses, I ran separate mediations with this updated IO goal-relevant scale as well as the other three shared reality measures. This allowed me to test whether certain mechanisms apply to one type of shared reality but not the

other, something that could be obscured by focusing solely on one shared reality measure. For example, it is possible that agreeing on what tasks need to be done (goal-relevant shared reality) does not translate into people finding it easy to divide up those tasks (ease of coordination with IO), something that might instead be enhanced when merging minds with an IO (generalized shared reality). While the focus of pre-registered predictions was on three shared reality measures (generalized, goal-relevant, and composite shared reality), I also ran the same mediational analyses for the IO ideological shared reality measure for full transparency.

Finally, in contrast to Study 3, Study 4 used an MTurk sample, which allowed me to examine the extent to which the prior results are generalizable to older populations focused on others goal domains (specifically career goals). My analyses were pre-registered on OSF (https://osf.io/udcey/?view_only=bf4a61dc7aca4fe3b9afe6dc34241b5e).

Method

Participants

A total of 205 MTurk workers completed the study online in return for $3.00 USD (41% Women, 58% Men 1% Non-binary; M_{age}= 37.12 years, SD_{age} = 10.9; 74.1% White, 10.7% Black, 3.9% Hispanic, 4.4% Other). Pre-registered a priori G*Power calculations (Faul et al., 2014) suggested a sample size of at least 114 participants to achieve 80% power for a linear multiple regression (4 variables) with a partial $R^2 = 0.066$, which was the effect size of IO composite shared reality on self-reported goal success in my initial pilot study (details available in Appendix C). To maximize power, I aimed to collect data from 200 participants, with a total of 205 completing the survey through MTurk.

Procedure and materials

Since participants were from a non-student Mturk participant pool, I adapted my materials from Study 3b to be focused on career goals instead of academic goals. As such, all participants were asked to nominate one IO and one NIO for their career goal domain. Participants then went on to fill out the same battery of questions regarding each nominated individual that were used in Study 3b, with the exception of the goal-relevant shared reality and goal success measures, which were altered.

Goal-relevant shared reality. In contrast to the specificity of the items used in Study 3, the measure of goal-relevant shared reality used 3 more abstract items: *"[name] and I tend to have the same thoughts and feelings about…: "The best tactics to use to achieve my career goals", "The amount of effort needed to achieve my career goals.", "The proper way to achieve my career goals.* ($86 < \alpha\text{'s} < .91$).

Goal success. Two of the six items in the goal success measure used in Study 3 were removed (*"I have the ability to reach my academic goals," "I feel capable of achieving my academic goals")* due to their potential overlap with self-efficacy (a potential mediator), leaving 4 total items ($\alpha = .87$*)*.

Candidate shared reality and goal success mechanisms. Participants also filled out the following measures, all of which served as candidate mechanisms between shared reality and goal success.

Goal importance. To measure goal importance, participants answered 3 items starting with the stem "*Being around [name]…*", "*allows me to see why achieving my career goals really matter", "makes me feel like my career goals are very important", "reminds me of why my career goals are worthwhile"* ($\alpha = .89$*).*

Goal effort. To measure goal effort, participants filled out the goal effort scale (Ryan, 1982) with regards to their career goals: 5 items, e.g., *"I will put a lot of effort into this goal.", "I will try very hard on this activity"* (α = .82*).*

IO goal support. Participants answered 7 items designed to measure how much IOs provided direct goal support to the participant: e.g., *"When I'm struggling with my career goals, [name] supports me", "I can count on [name] when career-related things go wrong."* (α = .91*).*

Self-efficacy. I measured self-efficacy for career goals using the Generalized Self-Efficacy scale (Schwarzer & Jerusalem, 1995), adapted for people's career goals: 8 items, e.g., *"I will be able to achieve my career goals", "When facing difficult tasks for my career goals, I am certain that I will accomplish them"* (α = .94*).*

Ease of Learning from IO. Participants completed 3 items: *"[name] helps me understand exactly what to do in order to pursue my career goals", "I learn things from [name]that will help me achieve my career goals", "[name] teaches me a great deal about topics related to my career goals"* (α = .89*).*

Ease of Communicating with IO. Participants completed 4 items, adapted from (Finley et al., 2013): e.g.,*" Difficult problems with [name]are usually solved through face-to-face discussion.", "Both [name]and I are willing to change how we do things in response to feedback from each other."* (α = .83*).*

Ease of Coordinating with IO. To measure ease of coordinating with IO, participants completed 5 items: e.g., *"I find it easy to work with [name]", "Both [name]and I know how to best work with each other", "[name]and I know how to divide tasks between us."* (α = .89*).*

Results

In line with my pre-registered predictions, and replicating results from Study 3, I found that IO generalized, goal-relevant, and composite shared reality variables were significantly related to goal success, including when controlling for their NIO counterparts as well as IO closeness, liking, and epistemic trust (See Table 4; IO ideological shared reality was also related to goal success when controlling for its NIO counterpart, but not when controlling for IO closeness, liking, and epistemic trust).

Next, I examined if any of the potential mediators statistically mediated the effect of IO shared reality on goal success (see Table 6 for correlations between all key variables). As pre-registered, all mediators were independently tested to see if they successfully mediated the effects of each of the IO shared reality measures on goal success.

For IO generalized shared reality, six of the seven tested mediators successfully mediated the effect on goal success, with IO goal support being the only exception (see Table 7). Notably, however, only when entering in self-efficacy as a mediator did the direct relationship between IO generalized shared reality and goal success cease to be significant. I then entered the six successful mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). The effect of IO generalized shared reality was mediated (c' = 0.10, p = .117; c = 0.35, p < .001), with self-efficacy being the only mediator positively mediating the effect individually: (ab = .25; 95% CI [0.10, 0.43]).

For IO goal-relevant shared reality, five of the seven tested mediators mediated the effect on goal success (see Table 7). I entered those five mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). Replicating the results for IO generalized shared reality, I found the effect to be mediated (c' = 0.16, p = .076; c = 0.51, p < .001) with self-efficacy again

emerging as the only successful individual mediator in the full model (*ab* = .47; 95% CI [0.30, 0.65]).

Table 6.
Correlations for Study 4 variables.

Variable	1	2	3	4	5	6	7	8	9
1. IO Generalized Shared Reality									
2. IO Goal-Relevant Shared Reality	.35*** [.22, .46]								
3. Goal Importance	.47*** [.35, .57]	.58*** [.48, .67]							
4. Goal Effort	.19** [.05, .32]	.43*** [.31, .54]	.48*** [.36, .58]						
5. IO Goal Support	.43*** [.31, .54]	.53*** [.42, .62]	.75*** [.68, .81]	.50*** [.38, .59]					
6. Self-Efficacy	.27*** [.14, .40]	.40*** [.27, .51]	.43*** [.31, .54]	.54*** [.43, .63]	.35*** [.22, .46]				
7. Ease of Learning from IO	.37*** [.25, .48]	.57*** [.47, .66]	.67*** [.59, .74]	.32*** [.19, .44]	.64*** [.55, .71]	.41*** [.29, .52]			
8. Ease of Communication with IO	.40*** [.28, .51]	.57*** [.47, .66]	.65*** [.56, .72]	.45*** [.34, .56]	.71*** [.63, .77]	.46*** [.35, .57]	.55*** [.45, .64]		
9. Ease of Coordination with IO	.39*** [.27, .51]	.58*** [.48, .67]	.66*** [.57, .73]	.43*** [.30, .53]	.70*** [.62, .76]	.42*** [.30, .53]	.58*** [.48, .67]	.71*** [.63, .77]	
10. Goal Success	.28*** [.15, .40]	.35*** [.23, .47]	.34*** [.21, .46]	.31*** [.18, .43]	.21*** [.08, .34]	.75*** [.68, .80]	.35*** [.22, .47]	.31*** [.18, .43]	.34*** [.21, .46]

Note. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Table 7

Mediational Analyses for potential mechanisms between IO shared reality (generalized and goal-relevant) and goal success in Studies 4 and 5c.

Mediator	Study 4				Study 5c							
	Self-reported Goal Success								GPA			
	IO Generalized Shared Reality		IO Goal-Relevant Shared Reality		IO Generalized Shared Reality		IO Goal-Relevant Shared Reality		IO Generalized Shared Reality		IO Goal-Relevant Shared Reality	
	ab path	c` path	ab path	c` path	ab path	c` path	ab path	c` path	ab path	c` path	ab path	c` path
1. Goal Importance	.14 [.06, .24]	.18 [.01, .35]*	.17 [.04, .37]	.34 [.11, .57]***	.12 [.04, .22]	.05 [-.12, .21]	.13 [.05, .25]	.12 [-.05, .29]	-.02 [-.08, .04]	.12 [-.06, .29]	-.03 [-.11, .04]	.18 [.00, .36]*
2. Goal Effort	.06 [.01, .13]	.26 [.11, .42]***	.12 [.02, .24]	.40 [.19, .60]***	.02 [-.01, .07]	.14 [-.02, .30]	.05 [.01, .13]	.20 [.04, .37]*	.04 [-.01, .10]	.07 [-.09, .23]	.08 [.02, .18]	.06 [-.10, .23]
3. IO Goal Support	.06 [-.03, .15]	.27 [.09, .44]**	.03 [-.08, .16]	.49 [.26, .71]***	.17 [.07, .29]	-.01 [-.19, .18]	.13 [.03, .23]	.12 [-.06, .30]	.16 [.04, .28]	-.05 [-.24, .13]	.13 [.04, .23]	.02 [-.16, .20]
4. Self-efficacy	.23 [.09, .39]	.09 [-.02, .20]	.42 [.27, .58]	.09 [-.06, .24]	.23 [.14, .34]	-.07 [-.23, .10]	.24 [.13, .36]	.01 [-.16, .19]	.14 [.03, .24]	-.03 [-.21, .15]	.14 [.02, .26]	.01 [-.18, .20]
5. Ease of Learning from IO	.12 [.05, .22]	.20 [.04, .36]*	.19 [.04, .30]	.33 [.10, .56]**	.09 [.02, .17]	.07 [-.10, .24]	.09 [.01, .19]	.16 [-.02, .33]	.06 [-.01, .14]	.04 [-.13, .22]	.06 [-.02, .15]	.08 [-.10, .26]
6. Ease of Communication with IO	.11 [.02, .22]	.21 [.04, .38]*	.14 [.00, .30]	.38 [.14, .61]**	.11 [.01, .22]	.06 [-.13, .24]	.08 [.00, .17]	.17 [-.00, .35]	.05 [-.06, .16]	.05 [-.13, .24]	.03 [-.05, .13]	.11 [-.07, .29]
7. Ease of Coordination with IO	.12 [.02, .22]	.23 [.07, .40]**	.14 [-.01, .32]	.42 [.19, .65]***	.14 [.04, .23]	.03 [-.16, .21]	.09 [.01, .19]	.19 [.01, .19]*	.11 [.01, .20]	-.01 [.21, .18]	.09 [.00, .20]	.07 [-.11, .26]

Note. * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

For IO ideological shared reality, six of the seven tested mediators successfully mediated the effect of IO ideological shared reality on goal success, with goal effort being the only exception (see Table 8). I then entered the six successful mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). The effect of IO ideological shared reality was mediated (*c'* = 0.00, *p* = .946; *c* = 0.18, *p* = .024), with self-efficacy again being the only mediator positively mediating the effect individually: (*ab* = .16; 95% CI [0.15, 0.32]).

Table 8

Mediational Analyses for potential mechanisms between IO ideological shared reality and goal success in Studies 4 and 5c

	Study 4		Study 5c			
	Self-reported Goal Success				GPA	
	ab path	c` path	ab path	c` path	ab path	c` path
1. Goal Importance	.13 [.06, .22]	.09 [-.07, .25]	.09 [.03, .18]	.01 [-.15, .17]	-.02 [-.08, .02]	.28 [.12, .45]**
2. Goal Effort	.03 [-.02, .10]	.18 [.03, .33]*	.04 [.00, .10]	.06 [-.10, .23]	.05 [.00, .12]	.21 [.06, .37]**
3. IO Goal Support	.06 [.00, .13]	.16 [-.01, .32]	.21 [.10, .36]	-.10 [-.29, .08]	.10 [-.02, .22]	.16 [-.03, .35]
4. Self-efficacy	.18 [.04, .34]	.03 [-.08, .14]	.25 [.14, .37]	-.14 [-.31, .02]	.09 [-.01, .20]	.17 [-.01, .35]
5. Ease of Learning from IO	.11 [.04, .21]	.10 [-.06, .26]	.15 [.06, .27]	-.05 [-.23, .14]	.04 [-.06, .14]	.23 [.04, .41]*
6. Ease of Communication with IO	.09 [.02, .17]	.12 [-.04, .28]	.10 [.03, .18]	.00 [-.17, .18]	.01 [-.07, .09]	.25 [.08, .43]**
7. Ease of Coordination with IO	.08 [.02, .16]	.11 [-.05, .26]	.15 [.05, .25]	-.06 [-.24, .13]	.06 [-.02, .15]	.21 [.02, .39]*

Note. † indicates $p < .10$, * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

For IO composite shared reality, five of the seven tested mediators successfully mediated the effect of IO composite shared reality on goal success, with goal support and ease of communication with IO being the two exceptions (see Table 9). I then entered the five successful mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). The effect of IO composite shared reality was mediated (*c'* = 0.13, *p* = .219; *c* = 0.62, *p* < .001), with self-

efficacy again being the only mediator positively mediating the effect individually: (*ab* = .50; 95% CI [0.29, 0.74]).

Table 9
Mediational Analyses for potential mechanisms between IO composite shared reality and goal success in Studies 4 and 5c

	Study 4		Study 5c			
	Self-reported Goal Success				GPA	
	ab path	c` path	ab path	c` path	ab path	c` path
1. Goal Importance	.20 [.04, .39]	.39 [.12, .65]**	.14 [.06, .26]	.09 [-.08, .26]	-.06 [-.15, .02]	.27 [.09, .45]**
2. Goal Effort	.11 [.03, .22]	.47 [.26, .70]***	.05 [.00, .12]	.19 [.02, .35]*	.07 [.02, .16]	.14 [-.02, .31]
3. IO Goal Support	.03 [-.11, .19]	.56 [.30, .81]***	.20 [.07, .34]	.03 [-.18, .24]	.16 [.00, .29]	.06 [-.15, .27]
4. Self-efficacy	.46 [.26, .66]	.12 [-.04, .29]	.33 [.22, .45]	-.10 [-.29, .09]	.14 [-.02, .31]	.07 [-.14, .28]
5. Ease of Learning from IO	.20 [.07, .36]	.38 [.13, .63]**	.12 [.02, .24]	.11 [-.08, .30]	.05 [-.06, .17]	.16 [-.03, .35]
6. Ease of Communication with IO	.16 [-.00, .32]	.43 [.18, .68]**	.10 [-.01, .22]	.13 [-.06, .32]	.01 [-.11, .14]	.21 [.01, .40]*
7. Ease of Coordination with IO	.17 [.00, .37]	.45 [.20, .71]***	.15 [-.00, .27]	.10 [-.10, .30]	.09 [-.04, .23]	.14 [-.04, .23]

Note. † indicates $p < .10$, * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Discussion

Study 4 replicated findings from Study 3, with IO shared reality being consistently and significantly related to goal success when controlling for NIO shared reality as well as IO liking, closeness, and epistemic trust. These results replicated the patterns from Study 3 using a different sample (Mturk) and a different goal domain (career success).

For the mediational analyses, most of the tested mediators mediated the effects of IO shared reality on individual goal success (with the exception of IO goal support). However, when included in a simultaneous mediation, self-efficacy was the most consistent successful mediator for IO shared reality's effect on goal success across all shared reality measures. These initial results are consistent with the idea that shared reality with IOs may contribute to goal success by

making people feel more efficacious in their goal pursuit. Unlike some of the other mechanisms that capture relationship dynamics (e.g., ease of learning from the IO), a sense of self-efficacy has more to do with an individual's perceptions. This suggests that even perceptions of shared reality that are not fully shared by the IO—perceptions that are too optimistic, for example—could still be beneficial for goal success insofar as those perceptions translate into an increased sense of self-efficacy. This finding coincides with those from Study 1 and 2 where people were motivated to remember and perceive more shared reality with IOs relative to NIOs. As noted in the Study 2 discussion, these perceptions are still likely to be somewhat grounded in reality, perhaps optimally tuned to afford motivational efficacy when needed (Baumeister, 1989). A significant limitation in this study, however, is that self-efficacy was highly correlated with goal success, $r = .75$ (see Table 6). As a result, it is possible that the successful mediational analyses are an artifact of the two constructs being highly related. I addressed this and other concerns in Study 5.

Study 5

Studies 3 and 4 provided consistent evidence that shared reality with IOs is related to goal success, supporting the idea that those who experience shared reality with instrumental others tend to succeed at their goals. In addition, Study 4 provided initial evidence for possible mechanisms (e.g., self-efficacy). However, thus far, my measures of goal success have all been based on self-report. While self-reported goal success typically correlates with objective measures of success (e.g., Cassidy & Eachus, 2000; Tangney et al., 2004), I cannot rule out the possibility that shared reality with an IO is primarily linked with people's *perceptions* of success instead of objective goal success. To address this limitation, Study 5 explored whether IO shared reality is related to students' academic GPA, an important and objective measure of goal success.

Study 5 used two approaches to explore the possible link between IO shared reality and GPA: one retrospective (5a and 5b) and one prospective (5c). Due to constraints from the registrar's office at the university where I was collecting data[10], I was limited in the sample size available for a prospective GPA study—one where I could measure IO shared reality during a semester and then obtain the GPA results at the end of that semester. Therefore, I also employed a variation on this methodology to increase the sample size. Studies 5a and 5b adapted the methodology from Study 3b and asked participants to report the extent to which they had experienced shared reality with instrumental and noninstrumental others in the previous semester. They were then asked to upload their unofficial transcript from that same semester, which included the semester GPA calculation from the registrar's office. Study 5a was an initial pilot study of this paradigm, and Study 5b was a pre-registered replication of this approach. For Study 5c—the pre-registered prospective study—I was able to collect data from participants

[10] Due to the labor involved, my university registrar's office agreed to provide GPA data for a maximum of 150 students for the prospective study (Study 5c).

during a semester and then obtain their end-of-term GPA afterwards. To maximize power (Cooper & Patall, 2009; Curran & Hussong, 2009), I also merged the data from all three studies to conduct an exploratory mega-analysis (with N = 387).

Study 5c also included mechanism measures from Study 4 to explore whether the mechanisms that linked IO shared reality to self-reported goal success would also mediate the effects on GPA. Moreover, Study 5c also addressed a methodological concern with the measurement of one of these potential mechanisms: self-efficacy. In Study 4, I used a standard self-efficacy measure (Schwarzer & Jerusalem, 1995). While this measure mediated the effect of IO shared reality on goal success, the measure itself was highly correlated with the measure of goal success, r = .75. Thus, there could be concerns that the mediator shared too much variance with the measure of goal success. Therefore, in Study 5 I used a slightly different measure of self-efficacy (from the initial mechanism pilot study, see materials below for details) that had a more modest correlation with goal success, r = .53 (see Appendix C for details of the pilot study, Study S1).

My pre-registered predictions for both Studies 5b (https://osf.io/8yswv/?view_only=96c70abd03d242038b3c7d0b07b10659) and 5c (https://osf.io/puwr5/?view_only=236752ef77c84849a84294dcc71efa00) were that IO generalized and composite shared reality would be significantly related to a) self-reported goal success and b) academic GPA. I did not have any a priori predictions for IO goal-relevant shared reality given the mixed findings in the previous studies. Moreover, Study 5c also pre-registered analyses to explore the possible mechanisms linking IO shared reality and GPA. Consistent with Study 4, there were no specific predictions for IO ideological shared reality on its own.

Method

Study 5a: Participants and Procedure

Participants. A total of 99 undergraduate students at a large Canadian university completed the online study in return for course credit. For this pilot study, I aimed to collect data from approximately 100 participants within a relatively short time frame in order to establish whether this retrospective approach would replicate the core findings from earlier studies (i.e., greater shared reality for instrumental *vs.* noninstrumental others) and to learn what percentage of participants would upload their transcripts.[11] Out of 99 participants, 49 either did not upload their unofficial transcript (41 participants) or did not have a Fall 2021 term GPA (8 participants), leaving a total of 50 viable participants (82% Women, 16% Men, 2% Non-binary; M_{age}= 19.82 years, SD_{age} = 2.5; 44.0% Asian, 38.0% White, 10.0% Black, 4.0% Other).

Procedure and materials. Using adapted instructions from Study 3b, all participants first nominated instrumental and non-instrumental others for their academic goals, indicating individuals who played those roles in the Fall 2021 semester. Participants then went on to fill out the same battery of questions regarding each nominated individual that were used in Study 3b.

In addition, I adapted the self-reported goal success measure used in Study 3, with items now asking about the Fall 2021 semester; "*I was successful in pursuing my academic goals during the Fall 2021 semester*"; "*During the Fall 2021 semester, I made progress towards achieving my academic goals*"; "*I succeeded in achieving many academic goals I set for myself during the Fall 2021 semester*"; "*I'm well on my way towards achieving my ultimate academic goals because of my progress during the Fall 2021 semester*"; α = 92). Participants were also

[11] Due to requirements from the ethics board, I could not require participants to upload their transcripts for them to receive credit for the study. As a result, I expected a good proportion of participants not to do this extra work. This issue was resolved in Study 5c since I was able to recruit participants who approved, up front, for me to receive their post-semester transcripts. The collapsed results across all Study 5 samples gave the most robust evidence and support for my hypothesis, helping to bolster confidence in the general findings.

asked to upload their unofficial transcripts so that researchers could access their Fall 2021 term GPA.

Study 5b: Participants and Procedure

Participants. A total of 291 undergraduate students at a large Canadian university completed the online study in return for course credit. A pre-registered a priori G*Power calculation suggested a sample size of at least 150 participants to achieve 80% power for a linear multiple regression (4 variables) with a partial $R^2 = 0.066$, which was the effect size of IO shared reality on self-reported goal success in the previous studies[12]. My stop rule was to stop collecting data if I had full data (i.e., including uploaded transcripts) for at least 150 participants by the end of the semester. At the end of the semester, out of the 291 participants who participated, 98 either did not upload their unofficial transcript (73 participants) or did not have a Fall 2021 term GPA (25 participants), leaving a total of 193 viable participants (72% Women, 26% Men, 1% Non-binary; M_{age}= 20.06 years, SD_{age} = 2.9; 47.2% Asian, 31.6% White, 5.2% Black, 7.3% Other). This met the pre-registered criteria, so I proceeded with the analysis.

Procedure and materials. Procedure and materials were identical to those used in Study 5a.

Study 5c: Participants and Procedure

Participants. A total of 153 undergraduate students at a large Canadian university completed the online study in return for course credit. A pre-registered a priori G*Power calculation suggested a sample size of at least 150 participants to achieve 80% power for a linear multiple regression (4 predictors) with a partial $R^2 = 0.066$. I limited the sample size to approximately 150 due to the university registrar office's constraint that they would not provide

[12] The effect size of IO generalized shared reality on GPA in the Study 5a was partial R^2 =.09. However, since the sample size was small, I decided to use the more conservative estimate from my previous results.

GPA data for more than 150 students. Out of the 153 participants who participated, 9 did not have a Winter 2022 term GPA, leaving a total of 144 viable participants (69% Women, 29% Men, 1% Non-binary; M_{age}= 20.02 years, SD_{age} = 2.1; 39.6% Asian, 32.6% White, 6.9% Black, 6.3% Other).

Procedure and materials. I used the same procedure and materials as in Study 3b. In addition, participants also filled out potential mechanism measures as in Study 3, now adapted for academic goals. As noted in the study introduction, the only change was to the self-efficacy measure.

Self-efficacy. I replaced the self-efficacy measure used in Study 4 in an attempt to reduce potential construct overlap with the self-reported goal success measure. In order to capture the boost in self-efficacy specifically derived from one's relationship with the IO, I added the stem "*Being around [name] makes me feel like…*", before four items adapted from an established self-efficacy measure (Schwarzer & Jerusalem, 1995): "*I will be able to achieve my academic goals", "I will be able to successfully overcome many challenges in pursuit of my academic goals", "I can succeed at my academic goals", "Even when things are tough when pursuing my academic goals, I can perform quite well.",* α = .92.

Results

I first explored the correlations between the IO shared reality measures, self-reported goal success, and GPA (see Table 10 for Study 5 correlations using the full collapsed sample). Each of the IO shared reality variables were significantly correlated with self-reported goal success (replicating my earlier studies) and with GPA. That is, the more a person experienced shared reality with their IO, the higher their self-reported goal success and GPA.

In addition, self-reported goal success was significantly correlated with GPA, $r = .35$, $p < .001$. This correlation suggests that the self-reported goal success measure used in Studies 3-4 is indeed related to one metric of participants' objective success.

Self-Reported Goal Success

For Study 5a, none of the IO shared reality measures was related to self-reported goal success in the regression models (see Table 11). Since the sample size for this pilot study was quite modest ($N = 50$), these results might be due to lack of adequate power.

Indeed, consistent with my pre-registered predictions, Study 5b found that the IO shared reality measures were related to self-reported goal success when controlling for their NIO counterparts as well as IO liking, closeness, and epistemic trust. For Study 5c, the IO shared reality measures were significantly related to self-reported goal success in the model controlling for their NIO counterparts, but not when controlling for IO liking, closeness, and epistemic trust. The only exception was IO ideological shared reality, which was not significantly related to self-reported goal success in any model.

Finally, for the full collapsed Study 5 sample, I found that all IO shared reality measures were related to self-reported goal success when controlling for their NIO counterparts as well as IO liking, closeness, and epistemic trust. This pattern replicated the one found in Study 5b.

GPA

For Study 5a, IO generalized shared reality ($\beta = .28$, $p = .054$) and composite shared reality ($\beta = .28$, $p = .050$) were nonsignificantly related to GPA when controlling for their NIO counterparts (see Table 11), with IO composite shared reality also being nonsignificantly related to GPA when controlling for IO liking, closeness, and epistemic trust, $\beta = .32$, $p = .055$. In

addition, neither IO goal-relevant or ideological shared reality were significantly related to goal success in any of the tested models (*p*s >.162).

For Study 5b, I did not find evidence for my pre-registered predictions, with none of the IO shared reality measures being significantly related to GPA in any models (neither did any of the other included measures).

In line with my pre-registered prediction, Study 5c found that the more composite shared reality participants reported with their IOs during the semester, the higher their GPAs were at the end of that same semester. This effect held when controlling for NIO shared reality. IO composite shared reality was also nonsignificantly related to GPA when controlling for IO liking, closeness, and epistemic trust, $\beta = .17$, $p = .093$.

IO ideological shared reality was also significantly related to higher GPA scores in all tested models (see Table 11). In contrast, neither IO generalized or goal-relevant shared reality were significant in any of the models tested. Importantly, IO liking, closeness and epistemic trust were not significantly related to GPA in any of the models tested, replicating the self-reported goal success results.

When analyzing the full Study 5 sample, I found that all IO shared reality variables were related to GPA when controlling for their NIO counterparts. However, only IO ideological and composite shared reality were significantly related to GPA when controlling for IO liking, closeness, and epistemic trust. Therefore, the results found with the additional power afforded by the collapsed Study 5 sample provide some evidence that IO shared reality was related to GPA.

Table 10.

Correlations for main IO and NIO variables for the combined Study 5 sample, total N = 387.

	1	2	3	4	5	6	7	8	9
1. IO Generalized Shared Reality									
2. NIO Generalized Shared Reality	.06 [-.04, .16]								
3. IO Goal-Relevant Shared Reality	.38*** [.29, .46]	.10* [.00, .20]							
4. NIO Goal-Relevant Shared Reality	-.06 [-.16, .04]	.36*** [.27, .44]	.04 [-.06, .14]						
5. IO Ideological Shared Reality	.53*** [.45, .59]	.03 [-.07, .13]	.32*** [.22, .40]	-.00 [-.10, .10]					
6. NIO Ideological Shared Reality	.10* [.00, .20]	.48*** [.40, .56]	.13* [.03, .23]	.28*** [.18, .36]	.28*** [.19, .37]				
7. IO Composite Shared Reality	.81*** [.78, .84]	.09 [-.01, .18]	.76*** [.72, .80]	-.01 [-.11, .09]	.75*** [.71, .79]	.21*** [.11, .31]			
8. NIO Composite Shared Reality	.03 [-.07, .13]	.80*** [.77, .84]	.11* [.01, .21]	.76*** [.71, .80]	.11* [.02, .21]	.72*** [.67, .76]	.11* [.01, .21]		
9. Self-Reported Goal Success	.21*** [.11, .30]	.04 [-.06, .14]	.23*** [.13, .32]	.06 [-.04, .16]	.19*** [.09, .28]	.15** [.06, .25]	.27*** [.18, .36]	.11* [.01, .20]	
10. GPA	.12* [.02, .22]	.02 [-.08, .12]	.11* [.01, .21]	-.02 [-.12, .08]	.19*** [.09, .29]	.10* [.00, .20]	.18*** [.08, .27]	.04 [-.06, .14]	.35*** [.26, .43]

Note. Total $N = 287$. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Table 11

Regression Analyses for Predictors of Self-reported Goal Success and GPA in Study 5

	IO Generalized Shared Reality		IO Goal-Relevant Shared Reality		IO Ideological Shared Reality		IO Composite Shared Reality	
Outcome	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust	Adjusting for NIO counterpart	Adjusting for IO closeness, liking, and trust
Self-reported Goal Success								
Study 5a	.22 [-.08,.55]¥	.25 [-.13,.67]¥	.17 [-.15,.59]¥	.13 [-.21,.55]¥	.09 [-.26,.48]¥	.12 [-.26,.57]¥	.21 [-.10,.62]¥	.22 [-.13,.69]¥
Study 5b	.22 [.09,.38]**¥	.24 [.04,.46]*	.22 [.09,.39]**¥	.17 [.03,.34]*¥	.21 [.07,.36]**¥	.20 [.04,.37]*¥	.29 [.15,.44]***¥	.31 [.13,.50]**¥
Study 5c	.16 [.00,.33]*¥	.05 [-.15,.24]¥	.25 [.08,.41]**¥	.18 [-.00,.36]†¥	.11 [-.06,.25]¥	.02 [-.14,.17] ¥	.23 [.07,.40]**¥	.14 [-.19,.33] ¥
Study 5 – Full Sample	.21 [.11,.31]**¥	.17 [.04,.29]*	.22 [.13,.32]***¥	.18 [.07,.28]**¥	.16 [.05,.26]*	.13 [.02,.24]*	.26 [.17,.36]***¥	.25 [.12,.37]***¥
GPA								
Study 5a	.28 [-.01,.56]†¥	.35 [-.02,.72]†¥	.20 [-.09,.49]¥	.21 [-.09,.51]¥	.16 [-.16,.55]¥	.15 [-.22,.58]¥	.28 [-.00,.56]†¥	.32 [-.01,.64]†¥
Study 5b	.09 [-.05,.23]¥	.03 [-.18,.24]¥	.05 [-.09,.20]¥	-.00 [-.15,.17]¥	.11 [-.04,.25]¥	.10 [-.06,.26]¥	.11 [-.03,.26]¥	.07 [-.12,.26]¥
Study 5c	.10 [-.06,.27]¥	.01 [-.19,.21]¥	.14 [-.02,.31]†¥	.10 [-.09,.28]¥	.25 [.08,.41]**¥	.23 [.05,.40]*¥	.21 [.05,.38]*¥	.17 [-.03,.37]†¥
Study 5 – Full Sample	.12 [.02,.22]*¥	.07 [-.07,.20]¥	.11 [.01,.21]*¥	.07 [-.04,.17]¥	.18 [.08,.28]***¥	.17 [.06,.28]**¥	.17 [.08,.27]**¥	.15 [.02,.27]*¥

Note. For analyses with multiple predictors, ¥ indicates that there were no other significant predictors in the model. Each cell contains the standardized beta coefficient and 95% CI. † indicates $p < .10$, * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Study 5c mediational analyses

As in Study 4, and in line with my pre-registered analysis plan, I ran separate mediational analyses for all mediators with both IO generalized, goal-relevant, and composite shared reality as independent variables.

When looking at IO generalized shared reality, six of the seven tested mediators successfully mediated the effect on self-reported goal success while three of those six also did the same for GPA (see Table 7). The three consistent mediators across both dependent variables were self-efficacy, ease of coordination with IO, and IO support of academic goal. For self-reported goal success, I entered the six successful mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). Overall, the effect of IO generalized shared reality was mediated (*c'* = -0.09, *p* = .360; *c* = 0.17, *p* = .059), but only one mediator positively mediated the effect individually: self-efficacy (*ab* = .24; 95% CI [0.09, 0.34]). Importantly, in contrast to Study 4, self-efficacy had a much more moderate correlation with self-reported goal success in this study, *r* = .46, thus helping to assuage concerns of construct overlap. For GPA, I entered the three successful mediators into a simultaneous mediation and found that only the total mediational effect was significant (total *ab* = .20; 95% CI [0.07, 0.34]; *c'* = -0.10, *p* = .336; *c* = 0.10, *p* = .252), with no successful individual mediators.

When looking at IO goal-relevant shared reality, all tested mediators successfully mediated the effect on self-reported goal success while four of those seven also did the same for GPA (see Table 7). When entering all mediators in a simultaneous mediation, only self-efficacy emerged as a successful mediator for both self-reported goal success (*ab* = .22; 95% CI [0.08, 0.41]; *c'* = 0.02, *p* = .831; *c* = 0.29, *p* < .001) and GPA (total *ab* = .07; 95% CI [0.01, 0.16]; *c'* = -0.03, *p* = .732; *c* = 0.16, *p* = .065).

When examining IO ideological shared reality, all seven tested mediators successfully mediated the effect of IO ideological shared reality on self-reported goal success (see Table 8). I entered all the mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017), and self-efficacy again emerged as the only successful individual mediator (*ab* = .18; 95% CI [0.06, 0.32] ; *c* = 0.09, *p* = .296). For GPA, only goal effort successfully mediated the effect of IO ideological shared reality on GPA (see Table 8), a departure from the mediational findings thus far, which have found self-efficacy to be the most consistent mediator.

When looking at IO composite shared reality, five of the seven tested mediators successfully mediated the effect of IO composite shared reality on self-reported goal success, with ease of communication and coordination with IO being the two exceptions (see Table 9). I then entered the five successful mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). The effect of IO composite shared reality was mediated (*c'* = -0.12, *p* = .263; *c* = 0.23, *p* = .005), with self-efficacy again being the only mediator positively mediating the effect individually: (*ab* = .27; 95% CI [0.11, 0.46]). For GPA, the results differed. Specifically, only goal effort and IO goal support successfully mediated the effect of IO composite shared reality on GPA (see Table 9). When both measures were entered into a simultaneous mediation, the effect of IO composite shared reality was mediated (*c'* = 0.05, *p* = .666; *c* = 0.21, *p* = .010), with goal effort emerging as the only mediator positively mediating the effect individually: (*ab* = .06; 95% CI [0.01, 0.14]). Since both IO generalized and goal-relevant shared reality's effects on GPA were mediated by self-efficacy, the mediational findings for IO composite shared reality seem to be driven by IO ideological shared reality. I discuss this finding more in the study discussion.

Overall, the results find that self-efficacy generally mediated the effect of IO shared reality for both self-reported goal success and GPA (for GPA, IO ideological and composite shared reality were the only exception to this general rule). Therefore, this suggests that shared reality with IOs might make people feel more efficacious about achieving their goals, thus increasing the likelihood of success.

Discussion

Study 5 replicated my previous findings, with IO shared reality being consistently and significantly related to self-reported goal success when controlling for NIO shared reality as well as for IO liking, closeness, and epistemic trust.

When looking at each individual sample within Study 5 (5a, 5b, 5c), I found some associations between IO shared reality and GPA in Studies 5a and 5c, but none of the models tested in Study 5b were significant. The strongest evidence came from Study 5c, where IO composite shared reality was significantly related to goal success even when controlling for its NIO counterpart.

Notably, the combined Study 5 sample allowed me to test my hypotheses most powerfully, an approach that is increasingly recommended in the literature (Fabrigar & Wegener, 2016; Goh et al., 2016; McShane & Böckenholt, 2017). Here, when looking at the combined Study 5 sample, I found consistent evidence that IO shared reality was related to participants' academic GPA, lending greater support for the effect. All measures of IO shared reality were significantly related to GPA when controlling for their NIO counterparts. Moreover, both ideological and composite shared reality were also significantly related to goal success when controlling for IO liking, closeness, and epistemic trust. This was not the case for IO goal-relevant and generalized shared reality (a similar pattern was also found in Study 5c for NIO

counterpart models). Therefore, IO ideological shared reality seems to be driving the strong effects of IO composite shared reality on GPA. This pattern is similar to what I found in Study 3c when IO ideological shared reality seemed to drive IO composite shared reality's effect on Time 2 goal success. However, for self-reported goal-success, IO ideological shared reality was the least consistent predictor among all the individual shared reality measures. Even so, IO composite shared reality remained the most consistent predictor, presumably drawing on IO generalized and goal-relevant shared reality's effects on self-reported success. Therefore, it could be that all types of shared reality are important and work in combination, supporting the claim that IO composite shared reality best captures the multi-faceted nature of shared reality with others and thus is most likely to be linked to goal success. Overall, results from Studies 3-5 find consistent evidence that those who experience shared reality with IOs tend to succeed at their goals, both on self-reported and objective measures (i.e., GPA) of goal success.

While significant, the effect of IO shared reality on GPA is noticeably smaller compared to those found for self-reported goal success across Studies 3-4. One reason for this could be that academic success means different things to different people, and GPA does not capture all the ways that people can be successful. Participants nominated IOs who supported their academic goals, which likely includes a high GPA for many, but could also encompass a range of other metrics such as acquiring internship opportunities (which could take time away from studying), developing transferable skills for the job market, passing required courses, or taking more difficult courses to enhance learning (which means people take important but more difficult courses where they are less likely to earn high marks). Participants could also be nominating IOs who are helping them with only one particular class or a certain assignment that is salient at the time of the study. Thus, GPA represents a conservative metric of academic success. Moreover,

despite IO shared reality having small effects in Study 4, neither IO liking, closeness, or epistemic trust predicted GPA in any of the models tested. Therefore, IO shared reality seems to consistently come out as being a *relatively* stronger predictor of GPA and self-reported academic success,

Finally, in contrast to Studies 3-4, these measures were taken while students had reduced contact due to COVID-19 restrictions, making it possible that the typical dynamics between students and their IOs were muted during this time. Therefore, I believe that finding an effect of IO shared reality on cumulative GPA was a stringent test of this hypothesis, making the small effect meaningful. To further test the importance of IO shared reality, future work should look to measure other objective markers of goal success that are directly tied to the salient outcomes that are most relevant for participants' academic goals.

Replicating findings from Study 4, Study 5c also found consistent evidence for self-efficacy being a strong mediator. Self-efficacy generally mediated the relationships between the IO shared reality measures and goal success measures (self-reported goal success, GPA). Moreover, when entered into a simultaneous mediation with other individually successful mediators, self-efficacy was the only mediator that remained significant. The mediational results for IO ideological shared reality are largely consistent with the results for IO generalized, goal-relevant, and composite shared reality, with one exception: the GPA mediational analyses in Study 5c. Specifically, instead of self-efficacy emerging as a successful mediator, only goal effort did (this result highlights the benefits of testing mechanisms for each shared reality measure separately)—therefore replicating the results found for IO composite shared reality. Therefore, it is possible that ideological shared reality functions through a distinct mechanism compared to the other two shared reality variables. Having strong shared ideological

commitments with an IO might cause one to perceive some goals as morally important (e.g., seeing career success as a way to serve God or change society), thus leading to increased effort in pursuit of one's goals (Celniker et al., 2022). Indeed, a serial mediation through increased goal importance and effort (IO ideological shared reality leading to goal importance and then goal effort, ultimately increasing GPA) was successful (*ab* = .02; 95% CI [0.00, 0.05]). Alternatively, this result could simply be noise, given that this was the only analysis in which it emerged. Future work will need to further test whether IO ideological shared reality has a distinct mechanistic connection to goal success.

Study 6

Studies 1-5 found consistent evidence for the two primary predictions of this work: (1) people are motivated to perceive, and indeed experience, greater shared reality with IOs (relative to NIOs; Studies 1-3) and (2) people who experience greater shared reality with instrumental others tend to succeed at their goals (Studies 3-5). However, thus far, these studies have used paradigms where participants are thinking about a select number of individual relationships for 1-3 goal domains. Yet, in their day to day lives, people are often interacting with larger networks of people (Christakis & Fowler, 2009). It is possible that, when nominating someone with a specific goal in mind, as participants did in Studies 2-5, people are inclined to think of relationships that end up inflating the statistical associations between instrumentality, shared reality, and goal success. Thus, to complement the empirical approaches used in earlier studies, I wanted to examine the associations between instrumentality, shared reality, and goal success when people are given the opportunity to nominate and consider all people in their social network.

To explore this question, I employed a paradigm used by Orehek, Forest, and Wingrove (2018) to examine the relationship between instrumentality and closeness at a network level (building on previous studies finding this link at the individual level, e.g., Fitzsimons & Shah, 2008; Shea & Fitzsimons, 2016). Specifically, Orehek et al. (2018) found a significant link between instrumentality and closeness both at a between-person network level (people who had more instrumental networks felt closer to those networks) and also at a within-person relationship level (people felt closer to those who were more instrumental within their networks). My aim in Study 6 was to explore whether these effects also extend to shared reality. If instrumentality is related to shared reality at a network level, this would provide more evidence

that people experience greater shared reality with IOs, further addressing my dissertation's first primary prediction. Moreover, I also included a measure of self-reported goal success, something that was absent in Orehek, Forest, and Wingrove (2018)'s initial paper. I did this in order to examine whether people who have more shared reality at the level of their social networks are also more likely to achieve goal success, a network-level test of my dissertation's second primary prediction.

My analyses for Study 6 were pre-registered (https://osf.io/srdy7/?view_only=5b700d4fd95c437eb95da362993546ef).

Method

Participants

A total of 353 undergraduate students (83% Women, 13% Men, 1% Non-binary; M_{age}= 20.60 years, SD_{age} = 4.6; 36.3% White, 35.7% Asian, 3.1% Black, 6.2% Other) at a large Canadian university completed the online study in return for course credit. A pre-registered a priori power calculation according to Arend and Schäfer (2019)'s MLM power simulations, a sample size of 200 should be sufficient to achieve 80% power to detect a small effect size for a cross-level interaction (based on Orehek, Forest, and Wingrove (2018), participants nominate an average of 17 people). However, based on the sample sizes used in Orehek, Forest, and Wingrove (2018)'s study, which is the paradigm used here, I aimed for a sample size of 350 individuals, ultimately attaining 353 participants before the end of the semester. This met my pre-registered criteria, so I proceeded with the analysis.

Procedure and materials

Using adapted instructions from Orehek, Forest, and Wingrove (2018)'s paradigm by asking participants to nominate up to 30 people with whom they have had some sort of contact

within the last month. Participants then filled out personality questionnaires that were not the focus of the current project; full details about these measures are in Appendix A. Participants then went on to fill out a battery of questions regarding each nominated individual[13].

Perceived instrumentality scale. Participants were asked to rate how helpful or harmful each nominated individual (from *extremely harmful* –5 to *extremely helpful* +5) was for a given list of nine goals identified by Orehek, Forest, and Wingrove (2018) to be most present in people's lives (e.g., academic goals, career goals). Following Orehek, Forest, and Wingrove (2018), I created a composite score of network instrumentality by averaging across all items (.90. < α's < .95).

Shared reality, closeness, liking, and epistemic trust. Participants completed the same measures of shared reality, closeness, liking, and epistemic trust used in Study 5.

Finally, participants reported perceived goal success in each of the nine goal domains from the perceived instrumentality scale.

Goal success. Participants reported how successful they were and how much progress they made in nine goal domains using stem items used in previous studies ([I have been successful in pursuing my] [I have made progress towards achieving my]; 18 items total, e.g., *"academic goals," "career goals"*; *"financial goals,"*; α = .93).

Results

To test my hypotheses, I ran multi-level models that included perceived network instrumentality (between-person, grand-mean-centered) and perceived partner instrumentality (within-person, person-mean-centered) as predictors of closeness and shared reality.

Closeness

[13] Additional measures of similarity and ideological certainty were also rated for each nominated individual. However, these measures are not the focus of the current study.

First, I aimed to replicate Orehek, Forest, and Wingrove (2018)'s closeness results. There was a significant relationship between instrumentality and closeness both at the between-person level: parameter estimate = .45 (SE = .04), $t(412.29) = 11.40$, $p < .001$, 95% CI = [.24, .34]; and within-person level: parameter estimate = .57 (SE = .03), $t(212.77) = 21.72$, $p < .001$, 95% CI = [.40, .48][14]. Therefore, replicating Orehek, Forest, and Wingrove (2018)'s result, I also found that people who saw their networks as more instrumental tended to feel greater closeness in their relationships (between-person effect), and the more a particular individual in their network was instrumental, the closer they felt to them (within-person effect).

Unlike Orehek, Forest, and Wingrove (2018), when looking at the cross-level interaction, I did not find a significant effect for closeness: parameter estimate = -.03 (SE = .02), $t(189.04) = -1.26$, $p = .209$, 95% CI = [-.06, .01]. This result suggests that the relationship between a nominated person's instrumentality and closeness did not differ as a function of one's level of network instrumentality.

Shared Reality

The results across all three measures of shared reality were the same, so I will present the collapsed results using composite shared reality. Like closeness, I found a significant relationship between instrumentality and composite shared reality both at the between-person: parameter estimate = .33 (SE = .03), $t(378.96) = 11.07$, $p < .001$, 95% CI = [.27, .38]; and within-person level: parameter estimate = .39 (SE = .02), $t(216.25) = 21.40$, $p < .001$, 95% CI = [.40, .48]. Moreover, like closeness, I did not find a significant cross-level interaction for shared reality: parameter estimate = -.02 (SE = .02), $t(196.37) = -1.48$, $p = .139$, 95% CI = [-.07, .01].

Goal success

[14] These results replicated for both liking and epistemic trust, all *p*s <.001. .

Is network shared reality related to goal success? Indeed, replicating and extending the previous studies, network instrumentality was significantly related to goal success on its own, $\beta = .50$, $p < .001$, , 95% CI = [.39, .57], and when entered in a simultaneous regression with network closeness, liking, and epistemic trust, $\beta = .43$, $p < .001$, 95% CI = [.29, .54]. Neither network closeness, liking, and epistemic trust were significantly related to goal success in that model, all *p*s >.176. One limitation of this analysis is that the network measure for shared reality collapses across all network members, regardless of whether they are instrumental or not. Therefore, to see if network instrumentality is related to network shared reality's effects on goal success, I then conducted a mediational analysis. Specifically, I tested to see if there was a mediational path linking network instrumentality to goal success through network shared reality (but not network liking, closeness, and epistemic trust). Indeed, I found that the effect of network instrumentality on goal success was mediated ($c' = 0.14$, $p = .010$; $c = 0.31$, $p < .001$), with network shared reality being the only measure mediating the effect individually ($ab = .17$; 95% CI [0.11, 0.23]), in contrast to network liking ($ab = -.07$; 95% CI [-0.16, 0.02]), closeness ($ab = .05$; 95% CI [-0.03, 0.14]), and epistemic trust ($ab = .03$; 95% CI [-0.06, 0.10]).

Discussion

Study 6 replicated and extended my previous findings. Specifically, I found that people who have social networks that consist of highly instrumental others also see themselves as having more shared reality with those in their networks. Moreover, people reported more shared reality with those in their network who were more instrumental for their goals compared to those who were less. Therefore, the relationship between instrumentality and shared reality seems to be robust when exploring people's relationships in the broader context of their social networks. This

provides further evidence that people experience greater shared reality with IOs (relative to NIOs).

In addition, I also found that network shared reality (but not closeness, liking, nor epistemic trust) was related to goal success. Moreover, network shared reality (but not closeness, liking, nor epistemic trust) mediated the effect of network instrumentality on goal success. Interestingly, the effect of network shared reality on goal success, $\beta = .43$, seems to be stronger than those of individual IO shared reality (largest effect across Studies 3-5 was $\beta = .32$) when controlling for liking, closeness, and epistemic trust. This might indicate that sharing a reality with an IO for a specific goal has some benefits, but having a network that is generally higher in shared reality has additive, reciprocal effects on overall goal success. Sharing a reality with your study buddy could lead you to be able to understand and internalize course content faster. Having finished your study session faster, you might now have time to schedule a workout session with your exercise partner that evening. Sharing reality with your exercise partner could in turn lead you to have a more effective workout, which could have cognitively beneficial effects (Mandolesi et al., 2018). As a result, the next morning, you could be more alert to engage with your study buddy before the exam later that day. Here, sharing a reality with one person helps to improve goal success not only in that domain, but also in another goal domain through a positive spill-over effect. Overall, these findings provide convergent evidence pointing to the importance of shared reality with IOs for goal success.

General Discussion

My dissertation explored two primary predictions: (1) whether people are motivated to perceive, and indeed experience, greater shared reality with IOs (relative to NIOs) and (2) whether those who experience shared reality with instrumental others succeed at their goals. Addressing the first prediction, I found that participants displayed greater shared reality with IOs relative to NIOs on both an implicit memory measure (Study 1) and self-report measures (Study 3, 6). Further, when experimentally induced to feel like a goal was particularly important (vs. less important), participants reported decreased perceptions of shared reality with a NIO (Study 2). For the self -report measures used, people's tendency to experience greater shared reality with IOs relative to NIOs applied to how they saw the world generally (generalized shared reality), how they viewed their goals (goal-relevant shared reality), and even how they perceived political and religious truths (ideological shared reality). Moreover, this pattern was found both at an individual (Study 3-5) and social network level (Study 6).

Addressing the second prediction, I found that participants who experienced greater shared reality with their IOs reported greater goal success (Studies 3-6) and were more likely to have higher GPAs (Study 5), a pattern that generally held when accounting for their shared reality with NIOs and their liking, closeness, and trust for their IOs. Finally, I identified self-efficacy as a central mechanism underlying this effect (Study 4, 5c). Taken together, this work suggests that people are motivated to perceive, and indeed experience, greater share reality with instrumental others compared to non-instrumental others, and that shared reality is related to both self-report and objective goal success. These results contribute to several distinct literatures.

Advancing our Understanding of Shared Reality

The current studies provide new insights into when and why people experience shared

reality with others. Past work has revealed that people do not create a shared reality with just anybody. For instance, people create a shared reality with ingroup over outgroup members (Echterhoff et al., 2005; Echterhoff, Lang, et al., 2009), and with those they trust over those they do not (Echterhoff et al., 2005; Echterhoff et al., 2017). To explain these effects, shared reality researchers have pointed to people's motivated desire to connect with trusted ingroup members (Echterhoff, Higgins, et al., 2009). However, the results from the current studies offer an additional explanation. For example, in Study 1, participants only shared reality with instrumental (vs. non-instrumental) university alumni, even though all university alumni could arguably be considered ingroup members. Therefore, people might be motivated to perceive shared reality with ingroup members and those they trust because they assume that these others could be instrumental for their goals. Indeed, past work finds that people stop paying attention to traditional ingroup markers, like those of race, when they were in a situation where more reliable markers of instrumentality are salient (Pietraszewski, 2013; Pietraszewski et al., 2014; Rhodes & Chalik, 2013). In other words, people may be more likely to see others as ingroup members when they think those members are potentially instrumental, something that might extend to shared reality.

If people create a shared reality with instrumental others to improve their chances at goal success, people might also be especially motivated to guard against any threats to that shared reality. For example, if someone's successful goal pursuit at work depends on sharing a specific view of the world with key work colleagues, they might be particularly resistant to anything that calls that reality into question; any threat to that shared reality is also a threat to their goals. This possibility is consistent with past work finding that people defend shared realities when their sense of shared reality is threatened (Rossignac-Milon et al., 2021), especially when such beliefs

have practical implications for their goals (Campbell & Kay, 2014; Jonas et al., 2014). Indeed, when people are asked to think about a close (likely instrumental) other in their life, they spontaneously think about, and look to defend, the worldview they share with them (Przybylinski & Andersen, 2015). This relation between goal pursuit and shared reality may also shed new light on when and why people sometimes become more extreme in their views. If instrumentality promotes shared reality, support for even totally unrelated goals may become a gateway for the adoption of new beliefs.

Contribution to Understanding the Interpersonal Influences on Goal Success

Past work on instrumentality has emphasized the role of closeness and liking in successful regulation: People like and feel closer to instrumental others (Orehek, Forest, & Wingrove, 2018; vanDellen et al., 2015), an association that is linked to goal success (Fitzsimons & Shah, 2008). I replicated these patterns in my studies such that participants reported liking and feeling closer to instrumental others relative to non-instrumental others. However, shared reality (vs. closeness and liking) was more consistently related to goal success initially and over time for both self-report and GPA measures This finding highlights the importance of examining shared reality in understanding the dynamics of social self-regulation. Indeed, there is some suggestion that liking and closeness may often emerge from a foundation of shared reality (Koudenburg et al., 2017; Launay & Dunbar, 2015; Rossignac-Milon et al., 2021). Rossignac-Milon et al. (2021) found that strangers who were able to spontaneously create a shared reality liked and felt closer to each other, an effect that, notably, could not be reduced to other forms of perceived similarity (e.g., personality, characteristics) . Likewise, in Study 3c, shared reality was related to increased liking and closeness over time, but not vice versa (See Footnote 9). Therefore, shared reality might facilitate a sense of social connection, helping to account for why people tend to like and

feel close to instrumental others.

While shared reality facilitates a sense of connection to others, it also critically supports people's epistemic needs (Higgins, 2019). Shared reality with others is a critical way for people to relate to other minds and jointly determine what is real in the world (Echterhoff, Higgins, et al., 2009, p. 50). Indeed, my studies consistently found that IO shared reality was related to goal success (both self-reported and GPA) when controlling for IO liking and closeness. These findings suggest that the effect of shared reality on goal success is not explained by liking or closeness per se. While liking and closeness might play a role when people attempt to relate to both instrumental people and non-social objects (Ferguson, 2008; Fitzsimons & Shah, 2008; Moore et al., 2011), the experience of shared reality may play a unique role when relating to IOs and their minds.

Another finding across my studies was that IO composite shared reality, a measure incorporating all forms of shared reality was most consistently related to goal success. Among the individual shared reality measures, IO generalized and goal-relevant shared reality were most consistently related to self-reported goal success in snapshot correlational studies (Studies 3a-b, 4, 5a-b). In contrast, IO ideological shared reality was most consistently related to GPA scores and self-reported success over time (Study 3c, 5c). Nevertheless, IO composite shared reality was the most consistent predictor across all studies. Therefore, capturing the cumulative effects of all forms of shared reality could be important when examining the relationship between shared reality and goal success. In line with this idea, past work has documented a possible way that different forms of shared reality could feed into each other. For example, sharing the same political beliefs as someone else has been found to enhance epistemic agreement in wholly unrelated domains, like categorizing geometric shapes (Marks et al., 2019). The implication of

this “epistemic spillover” effect is that your colleagues’ opinions about how to best tackle a work project may become more convincing if you happen to have voted for the same political party. This suggests that all three forms of shared reality could reify and reinforce each other, making a composite measure of shared reality best suited for capturing the complexity of the construct.

When looking at how IO shared reality might connect to goal success, self-efficacy emerged as a particularly robust mediator. For Study 4 and 5c, self-efficacy generally mediated the relation between IO shared reality and self-reported goal success. This finding aligns with the idea that shared reality’s epistemic ability to make subjective experiences feel more objective and valid might have motivational benefits (see Echterhoff, Higgins, et al., 2009; Hardin & Higgins, 1996). However, there are still several open questions about the mechanisms connecting shared reality and goal success. While self-efficacy was the most consistent mediator between IO shared reality and goal success, there were other potential mediators that could still prove to be important for understanding the underlying effect. For example, there was some evidence suggesting that people's reported ease of coordinating with IO was also a mediator between IO generalized shared reality and goal success. Therefore, future work should look to explore the causal relationship between shared reality and several of my proposed mechanisms. The mechanistic evidence provided in this paper is correlational and is therefore compatible with other statistical relationships between the variables (Fiedler et al., 2018). Future work might look to experimentally manipulate people’s sense of shared reality and see if that causally induces heightened feels of efficacy or capacity to coordinate with an IO.

Limitations and Future Directions

The evidence in this dissertation for my second primary question, whether those who experience shared reality with instrumental others tend to succeed at their goals, has been

correlational. Therefore, to be able to make a causal claim about the relationship between IO shared reality and goal pursuit, future work should look to experimentally manipulate shared reality to explore whether heightened IO shared reality leads to greater goal success. Moreover, there could also be important boundary conditions for the potential effect of shared reality on goal success. Shared reality, in some contexts, might harm goal pursuit if it supports group-think or limits diversity of thought. If people are less likely to disagree when they experience shared reality, this could stifle goal progress when the means of goal pursuit are not as clear (e.g., working to start a company that caters to a new market). On the other hand, it is also possible that a strong shared reality helps people feel comfortable enough to air disagreements, augmenting rather than stifling diverse perspectives. In Study 4 and 5c, I found that people who had a strong shared reality with their IOs tended to also report being easily able to communicate their differences (e.g., *"Both [name]and I are willing to change how we do things in response to feedback from each other"*). Future work should explore when a shared reality with IOs might have a negative impact on goal success.

My studies relied on North American samples (Henrich et al., 2010), and so caution must be taken in generalizing these patterns to other cultural contexts. There is some reason to believe that people might experience shared reality with instrumental others more in relationally mobile cultures such as North America. Relationally mobile cultures offer many opportunities for individuals to find and change relational partners (Schug et al., 2009). Past work finds that people in relationally mobile cultures, like the United States, tend to be more similar to their friends: "Because Americans have more opportunities to select their own interaction partners, they are more likely to select and be selected by similar others" (Schug et al., 2009, p. 100; see also Heine et al., 2009). Thus, it is possible that the role of shared reality in relating to

instrumental others may be stronger in relationally mobile cultures, which would be an interesting direction for future work.

Conclusion

When trying to understand why some people are successful, it can be tempting to chalk it up to personal strengths. Some people just have "it". The current work adds to a growing body of literature highlighting that the "it" is often an "us"; that is, success in goal pursuit is rarely a solo endeavor. Specifically, I found that people tended to experience greater shared reality with instrumental others, and this tendency was associated with reaching one's goals. These studies highlight the importance of relating to the minds of instrumental others as well as the dynamic way people's goal pursuit is shaped by the extent to which they perceive a shared world with others.

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Appendix A – Additional Measures

Additional personality measures were included in Studies 3 and 6 that were not the focus of the current dissertation (see Table A for details on what measures were included in each study).

Table A.
Personality and filler measures included in Study 3 and 6.

	Study 3a	Study 3b	Study 3c	Study 6
Regulatory Focus Questionnaire (Higgins et al., 2001)	✓			
Regulatory Mode Questionnaire (Kruglanski et al., 2000)	✓			
Self-Efficacy (Schwarzer & Jerusalem, 1995)	✓			
Self-Control (Tangney, Baumeister, & Boone, 2004)	✓			
Satisfaction with Life (Diener, Emmons, Larsen, & Griffin, 1985)	✓	✓	✓	✓
Agreeableness (John & Srivastava, 1999)	✓	✓	✓	✓
Extraversion (John & Srivastava, 1999)				✓
Need for Cognitive Closure (Webster & Kruglanski, 1994)				✓
Relational Mobility (Yuki et al., 2007)				✓
List Cities/Countries			✓	
Clothing/Vegetable/Furniture Anagram			✓	

Note. These measures were completed after nominating IOs and NIOs, but before they reported on their relationships with these individuals (shared reality, closeness, etc.).

Appendix B – Additional Study 3 Analyses

Table B1.
Correlations among key NIO variables for Study 3a.

Variable	1	2	3	4	5	6
1. NIO Generalized Shared Reality						
2. NIO Goal-Relevant Shared Reality	.52*** [.42, .61]					
3. NIO Ideological Shared Reality	.54*** [.45, .63]	.55*** [.45, .63]				
4. NIO Closeness	.68*** [.60, .74]	.43*** [.32, .53]	.45*** [.34, .55]			
5. NIO Liking	.62*** [.53, .69]	.46*** [.35, .55]	.51*** [.41, .60]	.79*** [.73, .83]		
6. NIO Epistemic Trust	.72*** [.66, .78]	.54*** [.44, .63]	.52*** [.42, .61]	.77*** [.71, .82]	.80*** [.75, .84]	
7. Goal Success	.08 [-.05, .21]	.02 [-.11, .15]	.10 [-.03, .23]	-.00 [-.13, .13]	-.03 [-.16, .10]	.08 [-.05, .21]

Note. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates p < .05; ** indicates p < .01; *** indicates *p* < .001.

Table B2.
Correlations among key NIO variables for Study 3b.

Variable	1	2	3	4	5	6
1. NIO Generalized Shared Reality						
2. NIO Goal-Relevant Shared Reality	.22** [.09, .35]					
3. NIO Ideological Shared Reality	.35*** [.22, .47]	.24** [.10, .37]				
4. NIO Closeness	.65*** [.56, .73]	.08 [-.06, .22]	.46*** [.35, .57]			
5. NIO Liking	.47*** [.36, .57]	.21** [.08, .34]	.50*** [.38, .59]	.71*** [.64, .78]		
6. NIO Trust	.64*** [.55, .72]	.24** [.10, .37]	.47*** [.36, .58]	.76*** [.69, .81]	.73*** [.66, .79]	
7. Goal Success	-.04 [-.18, .10]	.00 [-.14, .14]	.07 [-.07, .21]	-.11 [-.24, .03]	-.06 [-.20, .08]	-.08 [-.22, .06]

Note. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates p < .05; ** indicates p < .01; *** indicates *p* < .001

Similarities, fitness interdependence, and inclusion of other in the self

Studies 3a and 3b had additional measures that I included in some exploratory, auxiliary models: measures of involuntary (e.g., *"Come from a similar background"*) and voluntary (e.g., *"Tend to wear similar types of clothes"*) similarities between IOs and NIOs, a measure of fitness interdependence, and a measure of shared identity (Study 3b only). Fitness interdependence is a measure of how intertwined people's self-regulatory fates are: the more intertwined, the more one person's success is equivalent to the other person's success (Ayers et. al., 2022). Inclusion of Other in Self is a measure of the degree to which people view another person as part of who they are, as part of their identity (Aron, Aron, & Smollan, 1992).

Study 3a materials

Similarity. Participants were asked to rate how similar they were to each nominated individual, in voluntary and involuntary ways. I included two items to capture involuntary similarities ([[Name] and I] *"Are very similar in height," "Come from a similar background"*; $.26 < \alpha\text{'s} < .45$) and 4 items to capture voluntary similarities (e.g., *"Tend to wear similar types of clothes," "Tend to speak with a similar vocabulary"*; $.72 < \alpha\text{'s} < .80$).

Fitness interdependence. For each nominated individual, participants also completed the Fitness Interdependence Scale (Ayers et. al., 2022; 5 items, e.g.; *"I feel that [Name]'s gain is my gain"*; $.82 < \alpha\text{'s} < .91$ across individuals).

Study 3a additional results

Similarity. Participants reported higher voluntary, $t(229) = 8.74$, $p < .001$, $d = 0.57$, and involuntary, $t(229) = 4.41$, $p < .001$, $d = 0.31$, similarities with IOs as opposed to NIOs (see Table 12 for means).

Fitness interdependence. Participants reported higher fitness interdependence, $t(229) =$

13.10, $p < .001$, $d = 0.87$, with IOs as opposed to NIOs.

Table B3.
Study 3a and 3b means of IO and NIO others for similarity, fitness interdependence, and inclusion of other in self.

	Study 3a			Study 3b		
	Instrumental Other (IO) *M* (*SD*)	Non-Instrumental Other (NIO) *M* (*SD*)	*d*	Instrumental Other (IO) *M* (*SD*)	Non-Instrumental Other (NIO) *M* (*SD*)	*d*
Involuntary Similarity	4.56 (1.06)	4.18 (1.06)	0.31***	4.34 (1.76)	4.35 (1.65)	0.01
Voluntary Similarity	4.81 (0.90)	4.19 (1.03)	0.57***	4.47 (1.13)	4.25 (1.23)	0.14*
Fitness Interdependence	5.49 (0.75)	4.64 (1.01)	0.87***	5.61 (0.92)	4.72 (1.10)	0.71***
Inclusion of Other in Self				4.55 (1.65)	3.21 (1.56)	0.61***

Note. * indicates $p < .05$; ** indicates $p < .01$; *** indicates $p < .001$.

Study 3b materials

All materials remained the same with the following exceptions. The involuntary similarities scale was changed to improve upon the lower reliability ratings in Study 3a. One item also asked about height similarities, something that might be subject to memory biases if there aren't clear differences in height. Therefore, I shifted focus on immutable common origins for involuntary similarities (4 items ([[Name] and I] *"Were born in the same area," "Have a similar religious (or non-religious) upbringing," "Come from a similar ethnic background," "Are from the same region"*), which resulting in a much-improved scale reliability, .73 < α's < .79.

Inclusion of Other in Self. I also added an Inclusion of Other in Self measure, in which participants are asked to select one in a series of increasingly overlapping circles representing themselves and the nominated individual, ranging from non-overlapping (1) to nearly completely overlapping (7) (Aron, Aron, & Smollan, 1992).

Study 3b additional results

Similarity. Participants reported higher voluntary similarities, $t(200) = 1.98$, $p = .049$, $d = 0.14$, with IOs as opposed to NIOs. In contrast to Study 3a however, there were no significant differences between IOs and NIOs when it came to the newly created involuntary similarities scale, $t(200) = -0.09$, $p = .930$ (see Table B3 for means).

Fitness interdependence. Participants, again, also reported higher fitness interdependence, $t(200) = 10.13$, $p < .001$, $d = 0.71$, with IOs as opposed to NIOs.

Inclusion of other in self. Participants higher levels of shared identity with IOs relative to NIOs, $t(200) = 8.69$, $p < .001$, $d = 0.61$.

Appendix C – Mechanism Pilot Study

Study S1

Prior to conducting Study 4, I ran a pilot study to test a suite of theoretically plausible mechanisms linking IO shared reality and goal success, as recommended by Fiedler et al (2018).

Method

Participants. A total of 213 MTurk workers completed the study online in return for $3.00 USD (42% Women, 58% Men; M_{age}= 38.30 years, SD_{age} = 9.7; 64.8% White, 5.8% Hispanic, 12.7% Black, 7.0% Other). A priori G*Power calculations (Faul et al., 2014) suggested a sample size of at least 97 participants to achieve 80% power for a linear multiple regression (4 predictors) with a partial $R^2 = 0.077$, which was the effect size of IO composite shared reality on self-reported goal success in Study 3c. To maximize power, I aimed to collect data for 200 participants, with a total of 213 completing the survey through MTurk.

Procedure and materials. As with Study 4, I adapted my materials from Study 3b to be focused on career goals instead of academic goals. As such, all participants were asked to nominate one IO and one NIO for their career goal domain. Participants then went on to fill out the same battery of questions regarding each nominated individual that were used in Study 4.

Mechanism candidates.

IO's closeness, liking, and epistemic trust. One possibility is sharing reality with IOs increasing their closeness, liking, and trust towards participant, thus improving the relationship and therefore chances of goal success. To test this, I used the same closeness, liking, and trust measures used in the previous studies, but changed the wording such that participants were asked how the IO feels towards them (instead of vice versa). For example, the closeness items were *"Relative to their other relationships, how close would [Name] feel to you?," "Relative to what*

you know about other people's relationships, how close would [Name] say you are?" (.79 < α's < .93*).*

Efficacy alongside IO. Sharing reality makes things in the world feel more real and meaningful (Cornwell et al., 2017; Echterhoff et al., 2009). As a result, it could be that when people share a reality with IOs, the paths to attaining their goals might start to feel more real, vivid, and therefore attainable—ultimately boosting people's sense of efficacy. To test whether efficacy alongside IOs is a potential mediator, I adapted the self-efficacy scale (Schwarzer & Jerusalem, 1995). Starting with the stem "*Being around [name] makes me feel like…*", participants answered 4 items: "*I will be able to achieve my career goals", "I will be able to successfully overcome many challenges in pursuit of my career goals", "I can succeed at my career goals", "Even when things are tough when pursuing my career goals, I can perform quite well."* (α = .91).

Goal importance. Similar to the logic in the case of efficacy, sharing a reality with IOs might make the goal feel more real and important, thus providing an important mechanism enroute to goal success. Starting with the stem "*Being around [name]…*", participants answered 3 items: "*allows me to see why achieving my career goals really matter", "makes me feel like my career goals are very important", "reminds me of why my career goals are worthwhile"* (α = .89*).*

Ease of learning, communicating, and coordinating with IO. Merging minds with another person through shared reality might make communication with them feel much more effortless (Rossignac-Milon et al., 2021). As a result, the more people share a reality with their IO, the easier it might be to learn from the IO, to communicate with the IO, and to coordinate alongside the IO—all of which could make goal success more likely. Therefore, I looked to test

whether ease of learning, communicating, and coordinating with one's IO might serve as important mediators between IO shared reality and goal success.

To measure ease of learning from the IO, participants completed 3 items: *"[name] helps me understand exactly what to do in order to pursue my career goals", "I learn things from [name]that will help me achieve my career goals", "[name] teaches me a great deal about topics related to my career goals"* (α = .89*)*.

To measure ease of communicating with IO, participants completed 4 items, adapted from (Finley et al., 2013): e.g.,*" Difficult problems with [name]are usually solved through face-to-face discussion.", "Both [name]and I are willing to change how we do things in response to feedback from each other."* (α = .83).

To measure ease of coordinating with IO, participants completed 5 items: e.g., *"I find it easy to work with [name]", "Both [name]and I know how to best work with each other", "[name]and I know how to divide tasks between us."* (α = .89).

Goal support. Sharing reality with someone helps to cement connection and investment (Rossignac-Milon et al., 2021). Therefore, it could be that sharing reality with an IO increases goal success by making it more likely for the IO to be invested in providing support.

To test this possibility, I first measured how much IOs provided direct goal support to the participant: 7 items, e.g., *"When I'm struggling with my career goals, [name] supports me", "I can count on [name] when career-related things go wrong."* (α = .91).

Additionally, I also measured the IOs general tendency to provide support using 7 items adapted from the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988), e.g., *"[name] really tries to help me", "[name] is around when I'm in need", "[name]is a real source of comfort to me"* (α = .92).

Self-efficacy. In addition to measuring how efficacious people felt alongside their IO, I also looked to measure self-efficacy using the Generalized Self-Efficacy scale (Schwarzer & Jerusalem, 1995), adapted for people's career goals: 8 items, e.g., *"I will be able to achieve my career goals", "When facing difficult tasks for my career goals, I am certain that I will accomplish them"* (α = .94).

Goal commitment. Having established a strong shared reality with an IO, people might feel more committed towards their goal, thus increasing goal success. To test this possibility, participants filled out the goal commitment scale (Klein et al., 2001) with regards to their career goals: 9 items, e.g., *"I am strongly committed to pursuing this goal", "It wouldn't take much to make me abandon this goal (reverse scored)"* (α = .95).

Goal effort. In addition to being more committed, people might also look to expend more effort towards their goals if they have a strong shared reality with an IO. To test this possibility, participants filled out the goal effort scale (Ryan, 1982) with regards to their career goals: 5 items, e.g., *"I will put a lot of effort into this goal.", "I will try very hard on this activity"* (α = .82).

Intrinsic motivation. The more people share a reality with IOs the more they might be intrinsically motivated to pursue things that enhance and sustain that reality. Therefore, it's possible that people might become more intrinsically motivated to pursue a goal if one's shared reality is built on striving for goal success. To test this possibility, participants filled out a measure of motivational orientation (adapted from Dyrberg & Holmegaard, 2019): 4 items, e.g., [I will actively pursue my career goal…] *"Because it is important to my personal growth", "Because others might think badly of me if I didn't (reverse scored)"* (α = .56).

Self-regulatory mindsets. Another possibility is that sharing reality with an IO shifts people's mindsets in ways that improve their chances of goal success.

For example, having a strong shared reality with an IO might build resilience, making individuals more likely to interpret failure as an opportunity rather than an endpoint. To test this possibility, participants filled out the Failure Mindset scale (Haimovitz & Dweck, 2016): 6 items, e.g., *"The effects of failure are positive and should be utilized", "Experiencing failure enhances my performance and productivity"* (α = .79).

In a similar vein, having a strong shared reality with an IO might also encourage people to discuss and become aware of important strategic shifts for goal pursuit. To test this possibility, participants filled out the Strategic-Use Mindset Scale (Chen et al., 2020): 8 items, e.g., *"I thought about the specific steps I had to take to achieve my goal.", "I noticed when I was not making much progress towards my goal and reassessed whether I was using the best approach"* (α = .88).

Self-control. While initially conceptualized as mostly an individual capability, recent work suggests that self-control is influenced by one's values, group norms, and moral worldviews (Doebel & Munakata, 2018; Gelfand & Harrington, 2015; Mooijman et al., 2018). Therefore, it's possible that sharing a reality with an IO who influences one's values, norms perceptions, or moral worldviews can have an impact on goal success.

First, I wanted to test whether people were more likely to moralize self-control failures for their career goals. To do this, participants were asked to indicate how "immoral you believe the following actions are for you", with a total of 4 items: *"Putting off important career work", "Procrastinating on career assignments", "Socializing before an important career deadlines", "Forgetting to study for a career evaluation"* (adapted from Mooijman et al., 2018; α = .93).

Second, I adapted the Self-Control scale (Tangney et al., 2004) to specifically focus on people's career goals: 11 items, e.g., *"I have a hard time breaking bad career habits (reverse scored)", "I am good at resisting temptations that go against my career goals"* ($\alpha = .92$).

Results

First, I tested to see whether IO shared reality was again significantly related to goal success, replicating my previous findings. As shown in Table C, all IO shared reality variables were significantly related to goal success, including when controlling for their NIO counterparts as well as IO closeness, liking, and epistemic trust.

Next, I looked to see what mediators, if any, statistically mediated the effect of IO shared reality on goal success. To do this, I ran separate mediational analyses using all mediators with both IO generalized shared reality and IO goal-relevant shared reality as independent variables. I did this because it is possible that there are distinct mechanisms linking each shared reality measure to goal success.

When looking at IO generalized shared reality, 13 of the 18 tested mediators successfully mediated the effect on goal success (see Table C). Notably, only 4 of those mediators fully mediated the effect of IO generalized shared reality on goal success: efficacy alongside IO, ease of communicating with IO, IO support of career goal, and self-efficacy. I then entered the 10 successful mediators with the largest *ab* paths into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). Overall, the effect of IO generalized shared reality was mediated ($c' = 0.08$, $p = .180$; $c = 0.32$, $p < .001$), but only three mediators positively mediated the effect individually: ease of learning from the IO ($ab = .06$; 95% CI [0.01, 0.13]), ease of communicating with the IO ($ab = .09$; 95% CI [0.02, 0.18]), and self-efficacy ($ab = .24$; 95% CI [0.13, 0.36]).

Table C

Study S1 mediational analyses between IO shared reality and goal success.

Meditator	Study S1			
	IO Generalized Shared Reality		IO Goal-Relevant Shared Reality	
	ab path	c` path	ab path	c` path
1. IO's Trust	.12 [.02, .21]	.20 [.03, .36]*	.07 [-.02, .17]	.55 [.36, .73]***
2. IO's Closeness	.07 [-.10, .18]	.25 [.07, .42]**	.02 [-.06, .12]	.59 [.42, .77]***
3. IO's Liking	.06 [-.03, .13]	.26 [.09, .42]**	.02 [-.06, .11]	.59 [.42, .77]***
4. Efficacy alongside IO	.20 [.11, .29]	.12 [-.02, .26]	.30 [.15, .47]	.32 [.13, .50]***
5. Goal Importance	.16 [.08, .24]	.15 [.01, .30]*	.22 [.08, .40]	.39 [.21, .58]***
6. Ease of Learning from IO	.16 [.09, .23]	.15 [.02, .29]*	.29 [.15, .45]	.32 [.14, .51]***
7. Ease of Communicating with IO	.18 [.11, .27]	.13 [-.02, .28]	.20 [.10, .58]	.41 [.24, .58]***
8. Ease of Coordination with IO	.11 [.03, .17]	.20 [.05, .36]**	.13 [.02, .26]	.48 [.30, .66]***
9. IO Supports Goal	.16 [.08, .23]	.15 [-.00, .30]	.17 [.04, .31]	.44 [.26, .63]***
10. General IO Support	.13 [.02, .20]	.18 [.02, .34]*	.10 [-.01, .22]	.52 [.34, .70]***
11. Self-Efficacy	.26 [.14, .37]	.05 [-.06, .17]	.38 [.24, .56]	.23 [.09, .36]**
12. Goal Commitment	.03 [-.01, .08]	.28 [.14, .43]***	.07 [.02, .14]	.54 [.38, .70]***
13. Goal Effort	.04 [.00, .09]	.28 [.13, .43]***	.06 [.01, .12]	.56 [.39, .72]***
14. Intrinsic Motivation	.00 [-.03, .03]	.31 [.16, .46]***	.01 [-.05, .06]	.61 [.44, .77]***
15. Positive Failure Mindset	.03 [-.01, .08]	.29 [.14, .44]***	.03 [-.00, .08]	.58 [.42, .74]***
16. Strategic Use Mindset	.04 [.00, .09]	.28 [.13, .43]***	.02 [-.06, .10]	.60 [.42, .77]***
17. Self Control Moralization	.04 [.01, .09]	.27 [.12, .43]***	.02 [-.01, .06]	.59 [.44, .75]***
18. Self Control for Career Goals	.11 [.04, .19]	.21 [.07, .35]**	.16 [.08, .27]	.45 [.29, .61]***

Note. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

I then explored how these patterns compared to IO goal-relevant shared reality. As shown in Table C, 10 of the 18 tested mediated the effect on goal success. Next, I entered the 10 successful mediators into a simultaneous mediation using PROCESS model 4 (Hayes, 2017). Overall, the effect of IO goal-relevant shared reality was mediated (c' = 0.17, p = .022; c = 0.61, $p < .001$). Moreover, replicating the results from the IO generalized shared reality mediation, the

same three mediators were the only ones to emerge as positive mediators for the effect of generalized shared reality on goal success: ease of learning from the IO (*ab* = .14; 95% CI [0.04, 0.27]), ease of communicating with the IO (*ab* = .09; 95% CI [0.01, 0.20]), and self-efficacy (*ab* = .44; 95% CI [0.27, 0.63]).

Discussion

Despite using an older Mturk sample and focusing on career goal success, Study S1 replicated my previous findings: IO shared reality was consistently related to goal success when controlling for other key variables.

For the mediational analyses, the results across the two IO shared reality measures were remarkably similar. When entered into a simultaneous mediation with other successful mediators, only three mediators continued to mediate the effects of both IO shared reality measures on goal success: ease of learning from the IO, ease of negotiation with IO, and self-efficacy. To explore the reliability of these findings, I next ran a pre-registered replication of Study S1 with a shortened list of mediators (i.e., Study 4 in the main manuscript). Since the results across the two mediators were largely similar, I picked 7 mediators that successfully mediated the effect of both IO generalized and goal-relevant shared reality on goal success: goal importance, goal effort, ease of learning from the IO, ease of communicating with IO, ease of coordination with IO, IO support of goal, and self-efficacy. There were only two other measures that met this criterion. I excluded efficacy alongside IO, keeping the self-efficacy measure instead because both used similarly worded items, but only self-efficacy continued to mediate the effect in a simultaneous mediation. I also excluded self-control for career goals because the hypothesized link between shared reality and self-control moralization did not emerge, making the proposed mechanism much less plausible.