Improving Investigative Interviews: Facilitating Disclosure of Information through Implicit Means

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IMPROVING INVESTIGATIVE INTERVIEWS: FACILITATING DISCLOSURE OF INFORMATION THROUGH IMPLICIT MEANS

by

Evan Crawford Dawson

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the Degree of Doctor of Philosophy, The City University of New York

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Abstract

IMPROVING INVESTIGATIVE INTERVIEWS: FACILITATING DISCLOSURE OF INFORMATION THROUGH IMPLICIT MEANS

by

Evan Crawford Dawson

Advisor: Professor Maria Hartwig

Investigative interviews are essential to intelligence collection. However, eliciting information from subjects is challenging when they are not motivated to cooperate. Psychological research has examined social influence tactics that may influence an interviewee’s forthcomingness, however, there has been no focus on implicit methods despite their prominence in the basic social cognitive literature. Research on implicit cognition has found that activating mental concepts can lead people to behave in ways that are semantically related to or metaphorically consistent with the activated concept. In the present research, I sought to examine the concept of disclosure and test the effects of its activation on interviewees’ behavior. In a pilot study, I tested the effects of priming attachment security on the accessibility of disclosure-related concepts and found that disclosure entails concepts of communication, trust, and openness. Subsequently, I tested whether activating disclosure concepts by priming attachment security would influence people’s forthcomingness with information about a mock terrorism conspiracy. In a laboratory experiment, participants delivered a flash drive to a confederate who exposed them to details of a mock eco terrorism conspiracy, which they were subsequently interviewed about. Prior to being interviewed, half of the participants were primed; the other half were not. Results showed that primed participants disclosed more information than those who were not...
primed. Using the mock conspiracy and interviewing paradigm, I then tested the effects of activating disclosure concepts through an interview setting consistent with concepts of openness. Results converged: concepts of disclosure and openness overlap and can be contextually activated to promote information disclosure. The findings highlight the need for further research on basic nonconscious processes in investigative interviews, as such influences can affect the outcome of the interview. The operation of nonconscious influences in such contexts has implications for practitioners, who may be able to utilize priming to facilitate disclosure.
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Chapter 1: Introduction and Overview

Interviewing is a central component of information-gathering in criminal and intelligence investigations. Investigative interviews can be distinguished into two basic types: interrogations and information-gathering interviews (e.g., Moston & Engelberg, 1993). Interrogation involves an accusatorial, direct questioning approach towards eliciting a confession about an event that investigators believe the interviewee has central information about. It is a guilt-presumptive and confession-oriented questioning process; the use of such an approach is defended with assurances that reliable pre-interrogation veracity assessment protocols ensure that only deceptive subjects are interrogated (Inbau, Reid, Buckley, & Jane, 2004). Decades of systematic research on people’s generally poor performance at discerning truths from lies (Bond & DePaulo, 2006) casts considerable doubt on the assumption that only deceptive individuals end up in interrogation rooms. In fact, there is a growing scientific consensus that manipulative, confirmatory interrogation methods aimed at developing themes towards eliciting a confession (e.g., Reid Technique, see Inbau et al.) have led to misinformation and false confessions by innocent people (Kassin et al., 2010).

Following claims of police-induced confessions, concern over the reliability of information gained using interrogative methods has compelled law enforcement interviewing reform practices (e.g., Police and Criminal Evidence Act, 1984, see Home Office, 2003), including a shift from accusatorial questioning toward information-gathering approaches. Contrary to interrogations, where the goal of eliciting a confession often entails confirmatory questioning (e.g., use of close-ended questions), the goal of information-gathering approaches is to obtain as much reliable information as possible through a rapport-based, open-ended, and non-acusatorial questioning process. Scientific research supports that compared to accusatorial
approaches, information-gathering approaches lead interviewees to provide more details about events and result in a lower likelihood of false confessions (Meissner et al., 2014).

Most research on investigative interviewing is grounded in psychological principles of communication, social influence, decision making, and memory, and it is applied to law enforcement interviewing contexts. As such, research paradigms typically cast participants in the role of criminal suspect, witness, or victim. Paralleling the manner in which wrongful criminal convictions led to scrutiny and interviewing reforms in the UK, exposure of torturous Bush era interrogation techniques employed in intelligence operations has evinced the need for scientifically sound and ethically defensible methods of intelligence interviewing (Costanzo & Gerrity, 2009). While much of the existing research on criminal investigation is applicable to intelligence settings, there are inherent differences in intelligence operations that necessitate the creation and use of empirical methods that more directly apply to the central aims of intelligence collection (for a review, see Hartwig, Meissner, & Semel, 2014).

Human intelligence refers to the collection of information from human sources, primarily through interviewing (FBI, 2015). Similar to information-gathering approaches to criminal interviews, the nature of intelligence interviewing makes rapport building and truth seeking approaches more important than eliciting a confession to a past event. In such contexts, basic principles of communication and factors that influence disclosure are pertinent. Contemporary research in social cognition has emphasized the influence of nonconscious processes in social perception and behavior (Bargh, 1997). The central premise within models of implicit cognition is that most processes of and influences on cognition are unavailable to consciousness, and we therefore lack insight to factors influencing our perceptions and behavior (Greenwald & Banaji, 1995). One theory within the implicit cognition framework is embodied cognition, which posits
that cognition is primarily influenced by our physical environment (e.g., Wilson, 2002). More, the conceptual and physical influences are metaphoric in nature (Landau, Meier, & Keefer, 2010). Grounded in well-supported theoretical frameworks that show some similar effects in different cultures (Gibbs, Lima & Francozo, 2004; Mikulincer & Shaver, 2001), the present research offers a novel approach to studying psychological influence in intelligence investigations. Drawing from social and cognitive theories of implicit cognition, priming, metaphoric transfer, and disclosure, I set out to examine whether disclosure of information about a mock terrorism conspiracy can be facilitated nonconsciously through priming and the physical setting of the interview.

In Chapter 2, I review the relevant applied literature on investigative interviewing, highlighting emerging research questions and methodologies in this field. In Chapters 3-4, I review the theory and research within frameworks of implicit cognition, priming, and conceptual metaphors that informed my research design and hypotheses. The remaining chapters detail the methods, results, and discussions of six experimental studies (four main studies and two pilot studies); the research questions of each main study are introduced in Chapters 5, 10, 15, and 19. Chapter 23 concludes with a summary and synthesis of the findings, with discussion of implications and future directions for the scientific and practitioner communities.
Chapter 2: Investigative Interviewing

Interviews are an essential component of investigations into crimes and conspiracies. Even with advances in forensic sciences, for better or worse, the strength and credibility of an investigation rests largely on information provided by witnesses, victims, and suspects. Interviewing is necessary to gain information and contextualize evidence. Considering the high, sometimes life-or-death stakes of criminal and intelligence investigations, the consequences of ineffective or improper interviewing can be profound. Ineffective interviewing can lead to wrongful accusations and false confessions, the ramifications of which ripple from ruined lives to massive societal costs in terms of wasted resources and fractured relationships between citizens and government (e.g., Shulhofer, Tyler, & Huq, 2011). In the 1980s, several miscarriages of justice led to police interviewing reforms in the UK, including the banning of presenting false evidence, the mandatory recording of interviews, and the replacement of a confession-focused accusatorial interviewing approach with an evidence-based, information-gathering model (Home Office, 2003). Scientific evidence supports that information-gathering approaches (e.g., PEACE model, see Bull & Soukara, 2010; Clarke & Milne, 2001) are more effective at eliciting information and reducing false confessions than accusatorial approaches (Meissner et al., 2014).

A large body of psychological research has examined social influences and cognitive processes relevant to investigative interviews. Taken together, the body of literature on investigative interviewing explores three broad, related questions. The first question is: how do different interviewing and interrogation techniques influence (true and false) admissions? In addition to dispositional factors (e.g., suggestibility, see Gudjonsson & Clark, 1986), this research examines situational factors that contribute to false confessions. Research in this area
has shown that psychologically manipulative techniques (e.g., minimization and maximization, see Kassin & McNall, 1991; Russano, Meissner, Narchet, & Kassin, 2005) and the confirmatory processes of interrogation (Kassin, Goldstein, & Savitsky, 2003; Kassin & Gudjonsson, 2004) can lead people to falsely incriminate themselves and/or others. Illumination of factors that place people at risk during interrogation raises another question: how do people become suspects in interrogation? In most cases, suspicion is based on the presence of physical evidence or an impression that one may be involved, but how investigators interpret and use such information is another significant concern. Complementing the research on confessions and interrogative techniques is that on deception detection, which examines how (and how accurately) people discern between truths and lies. Shedding light on people’s reliably chance-level accuracy at detecting lies from truths, research on veracity assessment also aims at improving people’s accuracy. Finally, examining effective interviewing of cooperative subjects, research on investigative interviewing has also addressed the question, how can we enhance the memory of cooperative interviewees? Below I will review these three main areas of research in investigative interviewing, and conclude with emerging questions and contexts for this field.

Confessions

Confession to one’s involvement in a crime is arguably the most potent form of evidence—it can be more influential than exculpatory DNA (Kassin, 2012). In criminal interrogations, investigators typically pursue a confession to a singular past event. Research on confessions has identified psychological differences between guilty and innocent people that influence investigators’ perceptions of culpability and their interrogative approach. A central finding of this literature is that innocence itself puts innocent people at risk (Kassin, 2005). Based on trust in the transparency of one’s innocence, the instinct to be cooperative makes
innocent people more likely to waive their Miranda rights (Kassin & Norwick, 2004), and leads them to talk (but often deny) more, increasing the chances for expression of verbal and demeanor cues that can amplify investigators’ biases toward suspicion of guilt (Meissner & Kassin, 2002). Indeed, an expectation that an interviewee is guilty makes interviewers more likely to use aggressive, accusatory, close-ended questioning techniques; this approach is even more likely to be used when the interviewee is actually innocent (Hill, Memon, & McGeorge, 2008; Kassin et al., 2003).

Processes of behavioral confirmation begin with a notion or belief—but what are investigators’ beliefs based on? Research shows that people’s perceptions of witnesses are influenced by stereotypic demeanor cues to credibility and veracity. For example, like laypeople, investigators are more likely to judge rape victims as less credible and more deceptive when they do not express stereotypic emotional cues (Ask & Landström, 2010; Bollingmo, Wessel, Eilertsen, & Magnussen, 2007; Shuller, McKimmie, Masser, & Klijpenstein, 2010). The finding that investigators can be biased by stereotypic beliefs about how truthful witnesses behave necessitates a deeper examination of the association between demeanor and deception. Skepticism of witnesses’ credibility based on demeanor cues implies that similar expectations may contribute to the misjudgment of innocent people. Considering the high-stakes outcomes of interrogations, pre-interrogation protocols ought to include safeguards against accusatory questioning of truthful persons. Interrogation manuals assert that such a safeguard exists in the form of a diagnostic pre-interrogation interview (Inbau et al., 2004). The pre-interrogation interview involves evaluation of responses to behavior-provoking questions. Investigators are trained to believe that they can reliably and accurately discern deceptive from truthful responses, hence, they proceed with interrogative approaches with confidence and certainty about their
 subjects’ veracity. Closer examination of pre-interrogation interviews and judgments of veracity begins to answer the question, how do people become suspects in the first place?

**Deception Detection**

Deception detection refers to one’s accuracy at discerning a truth from a lie. Four findings consistently emerge from decades of research on deception. First, across cultures, people have similar misconceptions about truthful and deceptive behavior (Global Deception Research Team, 2006). Second, people perform poorly on deception judgment tasks, being accurate about 54% of the time (Bond & DePaulo, 2006). Third, there is negligible variation in accuracy within individuals or between groups (e.g., professionals versus laypeople, see Bond & DePaulo, 2006, see also Bond & DePaulo, 2008). Finally, poor accuracy results from the weakness of most cues to deception (Hartwig & Bond, 2011). Of relevance to investigators’ suspicions and decisions to interrogate, the basic literature on deception does not support that pre-interrogation interviews are valid screening procedures, or that interviewers can accurately assess veracity during interrogation; hundreds of case studies of known wrongful convictions demonstrate that innocent people can easily become suspects. Building on the findings from the basic literature on deception, researchers have examined which differences reliably emerge between liars and truth tellers, and how such differences may be elicited to improve perceivers’ accuracy. To examine the differences in deceptive and truthful subjects’ behavior, it is necessary to understand the psychology of innocence and guilt and how each influence suspects’ strategies and behavior.

Research on counter-interrogation strategies shows that the main and often sole strategy of innocent subjects is to be as cooperative and informative as possible. Believing that their
innocence is transparent (Granhag & Hartwig, 2008), they are more likely than guilty subjects to dismiss their Miranda rights as unnecessary (Kassin & Norwick, 2004), are less likely to prepare their statements, and are more likely to offer verbally forthcoming statements (Strömwall, Hartwig, & Granhag, 2006). Contrarily, to avoid incrimination, guilty suspects must first anticipate the investigator’s knowledge and questions, then provide and manage a realistic account that omits or neutralizes incriminating details. Because their task is more cognitively taxing, guilty suspects typically offer shorter, less detailed, repetitive statements.

Understanding of the psychological processes underlying suspects’ strategies can inform techniques that enhance deception detection accuracy. Two lines of applied research borne from this work are the Strategic Use of Evidence (SUE; Hartwig, Granhag, Strömwall, & Vrij, 2005), and cognitive load interviewing techniques (e.g., Vrij, Granhag, Mann, & Leal, 2011). Anticipating suspects’ strategies, in simple terms, the SUE technique involves using a series of systematic questions in order to elicit statements from suspects while they are in a state of uncertainty about the evidence against them. Over ten years of research on the SUE technique shows that it leads to significant verbal differences between liars and truth tellers (Hartwig, Granhag, & Luke, 2014). Similarly, exploiting liars’ strategy to anticipate and account for available information, cognitive load interviewing techniques amplify the demands of providing a statement via manipulations that interfere with one’s ability to adhere to his or her initial account. For example, instructing people to recall their experience of an event in reverse order engenders more diagnostic cues to deceit, increasing observers’ accuracy as liars appear to be thinking harder and more nervous than truth tellers (Vrij, Mann, Fisher, Leal, Milne, & Bull, 2008). Research shows that cognitive load techniques make lying more difficult, resulting in
statement inconsistencies as well as more diagnostic cues to deception such as appearing to have to think harder (Gran Hag, Vrij, & Verschuere, 2014).

**Cognitive Interviewing**

In addition to suspects, witnesses and victims of crime are central sources of information in investigations. When interviewing a cooperative witness or victim, the goal of an interviewer is to elicit as much accurate information as possible. In such interviewing contexts, details are generally assumed to be truthful; the concern is of their accuracy. Research on memory has long shown that episodic memory is by nature reconstructive, and that processes after encoding and at retrieval influence memory (e.g., Loftus, 2005). Of relevance to investigative interviewing, interviewers need not only be cautious about planting misinformation, but to effectively gain reliable information, they must also be aware of factors that enhance memory. The Cognitive Interview (CI; Fisher & Geiselman, 1992) is an interviewing protocol based on principles of memory and communication that aims to facilitate recall in cooperative subjects. It involves techniques to improve memory such as the use of open-ended questions and context reinstatement, as well as those that facilitate communication like active listening (Fisher, Milne, & Bull, 2011; Memon & Higham, 1999). Compared to other approaches, the CI consistently results in increased details for an event (Memon, Meissner, & Fraser, 2010), making it the leading interview protocol for witnesses and victims. Its central limitation is that it requires the cooperation of the interviewee.

**Emerging Questions in Intelligence Interviewing**

Research on confessions and deception has improved our understanding of how people become suspects, what happens when they become suspects, and how to question people
effectively to determine whether or not their statements are suspect. When the investigative interview subject is a cooperative witness (with whom truthfulness can be assumed), the CI is effective at enhancing the amount and accuracy of elicited information. Importantly, veracity assessment and memory enhancement techniques require disclosure from an interviewee, limiting their utility in interviewing subjects who may not be cooperative. Thus, a fundamental question for the field of investigative interviewing is, how can an investigator get someone to be cooperative?

In recent years after 9/11, high-profile cases have again spurred discourse and research on interviewing practices. Exposés of state-sponsored torture and abuse by American intelligence officers against detainees around the world (e.g., American Civil Liberties Union, 2012; Hersh, 2004) have compelled the need for effective, ethically defensible interviewing methods in intelligence gathering contexts specifically. Inquiry into so-called “enhanced interrogation techniques” has found that methods used on suspects and detainees included psychologically manipulative and physically abusive techniques; unsurprisingly, such techniques were ineffective at eliciting actionable information (see U.S. Senate Select Committee on Intelligence, 2014). Research on interrogative stress—for example, accusatory questioning and the use of stress positions, sleep deprivation, and isolation has shown that such practices drastically reduce the reliability and accuracy of information gained (e.g., Morgan, Southwick, Steffian, Hazlett, & Loftus, 2013). Complementing efforts by European governments to employ scientifically based and human rights compliant interviewing procedures, the U.S. Government has supported initiatives for research into and utilization of scientifically supported intelligence interviewing techniques (Brandon, 2011). While the knowledge gained from systematic research on interrogation, confessions, deception, and memory is relevant to intelligence interviews (e.g.,
Loftus, 2011), there are important differences in the experiences of interviewees, the goals of an interviewer, and the nature of intelligence collection that require expansion of the research and new methods and application (Evans, Meissner, Brandon, Russano, & Kleinman, 2010; Vrij & Granhag, 2014).

Many functions of interviewing in law enforcement and intelligence contexts are comparable—discerning between lies and truths, enhancing and assessing the accuracy of information, and interviewing people of varying cooperativeness are important to police and intelligence practitioners alike. Towards many goals, research on criminal interrogation is applicable to intelligence contexts. Intelligence collection is inherently open-ended, however, and its challenges are different (for a review, see Hartwig et al., 2014). Criminal investigations typically concern a past, isolated event and involve a single or a few interviews between people from the same or similar cultures. By contrast, intelligence investigations typically involve past and future events, occur over long periods of time, and involve repeated interviewing of people in vast networks across countries and cultures. These aspects of intelligence collection make information-gathering goals less precise, compelling the need for methods of facilitating cooperation that are appropriate and effective in investigations with these challenges. Research on information-gathering approaches has focused on criminal interviews for a single past event (Meissner, Redlich, Bhatt, & Brandon, 2012), but the basic tenets of such approaches (e.g., use of rapport building, open-ended questioning) are relevant to intelligence interviewing. Because the information goals may be less precise, a source’s value and cooperativeness uncertain, and cross-cultural factors can interfere with understanding and communication, intelligence interviewers’ first aim is often to merely engage a source in conversation.
Several factors influence sources’ willingness to provide information in intelligence interviews. First, sources’ complicity and loyalties likely influence their decisions to disclose. They may fear incrimination, detention, or retaliation from their affiliates, or they may be loyal to family, friends, or the cause regardless of their involvement. Distrust or dislike of the interviewer or his or her government may also make a source uncooperative. This may be particularly problematic for interviewers who operate in hostile regions (Wike, 2011) and who are more likely to be automatically perceived as cold (e.g., Whites, Britons, see Cuddy, Fiske, & Glick, 2007). Many factors can reduce a sources’ willingness to comply with requests for information, and social influence tactics such as incentives or promises may be counterproductive by leading to unreliable information (e.g., Kassin & McNall, 1991; Swanner & Beike, 2010). More, the explicit, potentially transparent nature of such tactics can increase an interviewee’s suspicion of their sincerity and lead to backfire effects that damage one’s impression and reduce liking (Gordon, 1996).

Research shows that insinuations or explicit threats, promises, and incentive offers to encourage cooperation are risky and can contribute to misinformation (Kassin, 1997; Swanner, Beike, & Cole, 2009). The literature on investigative interviewing is based on well-established social and cognitive psychological principles (e.g., Kassin & Gudjonsson, 2004; Vrij, Hope, & Fisher, 2014), but none of this research is grounded in theories of implicit cognition despite their prominence in social cognition. Several lines of research within this basic literature show that influences outside of one’s awareness affect social perceptions, decision-making, and behavior; given their ubiquity, it is likely that nonconscious processes also operate in intelligence interviews. Examination of how they may affect one’s perceptions of an interviewer and willingness to disclose information can lead to the creation of scientifically based, effective, and
ethical techniques towards facilitating disclosure. Research on implicit cognition, priming, and conceptual representations supports that mental concepts can be activated to enhance the likelihood that a person will think and behave in accordance with the activated concept (Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellott, 2002). Review of implicit processes and common psychological concepts such as attachments and disclosure offers novel approaches to testing methods of influence in investigative interviews and intelligence collection.
Chapter 3: Implicit Cognition and Priming

In the past decades, social psychologists have emphasized the influence of implicit processes on social behavior (Hassin, Uleman, & Bargh, 2006; Meier, Schnall, Schwarz, & Bargh, 2012). Implicit cognition broadly refers to the operation of social and cognitive processes outside of one's conscious awareness (Greenwald & Banaji, 1995). A considerable body of evidence supports that social perceptions and behavior are affected by past experiences and contextual influences that people generally lack insight to. Due to the overwhelming amount of information to attend to, process, and remember, most cognitive processes cannot be fully conscious and therefore operate outside of conscious awareness. Hence, most of the information from our environments and social interactions is processed automatically and implicitly, unless it demands sustained attention and deliberate consideration. Our relatively unconscious processes do not indicate that information is less attended to or less influential, but instead that we are less aware of their influence because they are less available to consciousness (Bargh & Morsella, 2008).

Conceptual Priming

Research on implicit cognition shows that much of human cognition operates outside of our awareness, and that processes like cooperation and goal pursuit can be influenced nonconsciously through priming (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Fitzsimons & Bargh, 2003). Priming involves a nonconscious process of memory whereby implicit influences enhance people's ability to recall or recognize something that they have been previously exposed to (Tulving & Schacter, 1990). It is implicit and ubiquitous, and can involve modality-specific perceptual content (e.g., visual, auditory, haptic) or non-specific or multimodal
conceptual content (e.g., social concepts like norms and stereotypes). Perceptual priming relies on the similarity of features and presentation mode at exposure and testing, whereas conceptual priming occurs by elaborating on the meaning of the item and semantic processes that entail associated concepts (Blaxton, 1989). The focus of the current research is on conceptual priming.

Conceptual priming involves the activation of semantic concepts that are related to the target concept. For example, the concept of aggression could be primed by exposing people to aggression-related words like gun, shoot, hurt, etc. Semantic memory is broadly described as a familiarity-based, largely implicit processing system that entails general knowledge (Tulving, 1972). Moreover, semantic memory is necessary for language because it is the system through which words and symbols, and their meanings and rules are organized (Tulving). Research supports that separate but interconnected lexical and semantic systems hold representations of word forms and their associated concepts, and that conceptual priming is based on association strength and feature overlap among them (Hutchison, 2003). In line with this, research shows that lexical tasks like sentence unscrambling can prime social concepts (e.g., Studies 1 and 2, Bargh, Chen, & Burrows, 1996), and conceptual primes can influence performance on lexical tasks like word fragment completions (e.g., Study 1, Arndt, Greenberg, & Cook, 2002). Researchers have found that when primed, various components of the concept or representation may be activated, including affect (Wyer, Calvini, Nash, & Miles, 2010), motivations and goals (Fitzsimons & Bargh, 2003), interaction scripts (Cesario, Plaks, & Higgins, 2006), and social/relational self-concepts (Bartz & Lydon, 2004); irrespective of the priming method (i.e., lexical or other), outcomes are semantically consistent with the primed concept.

Availability and Accessibility of Concepts
The availability of social knowledge structures refers to the extent to which a concept is present in memory for potential influence on information processing (Higgins & King, 1981). Accessibility refers to the ease with which a concept is used to process information. People have myriad mental models in stored memory from personal experience, learning, stories, media, etc., and these working models influence perception, attention, expectations and information processing. Priming affects information processing by increasing the accessibility of concepts. Hence, the more available a concept is, the more easily it may be made accessible and in turn, the more it may affect cognition and behavior. For example, research has shown that while social concepts like stereotypes and behavioral norms are readily available, their accessibility can be enhanced through subliminal primes. For example, priming people with African American faces leads to faster object detection for (criminal) stereotype-consistent items such as a gun, and slower object detection for stereotype-inconsistent items such as a book (Eberhardt, Goff, Purdie, & Davies, 2004). Of particular relevance for the current context, commonly available concepts that can be made more accessible through priming are attachment styles.

According to Bowlby (1982), humans are born with an innate, psychobiological attachment system that motivates people to seek protection and comfort when they feel insecure or threatened. The attachment system is affected by early experiences with caregivers and interpersonal experiences throughout life, shaping one’s internal representations of oneself and others. Research on attachment-relevant knowledge in social cognition has examined the availability and accessibility of attachment, or relational styles in interactions with new people. Anderson and Chen (2002) propose that our sense of self is linked to our relationships with significant people in our lives, and that our mental representations of others are activated when we encounter new people. These representations guide our expectations, perceptions and
behaviors and lead to a nonconscious transference of associated feelings and motivations onto new people. For example, if one has just interacted with a significant person whom one cares for and trusts, a constellation of associated goals (e.g., to help or please), memories (e.g., of positive experiences), feelings (e.g., of happiness, closeness), expectations (e.g., of friendliness, warmth), and behaviors (e.g., conversations, gestures) is activated. The thoughts, feelings, and behaviors associated with this activated relationship can then spill over onto new people, leading one to behave towards a new person in the way one would towards the person just thought about or interacted with. Drawing from social cognitive theories of availability and accessibility of social knowledge, researchers have tested the effects of activating attachment styles on a wide range of social outcomes. In general, this research has shown that attachment styles can be contextually activated, affecting one's self-concept, perceptions of others, and behavior in an attachment-consistent manner (Mikulincer & Shaver, 2005).

The premise that the self is socially embedded is consistent with the fact that most human cognition and affect occurs in relation to others—we are hardwired to impute motives, intentions, and culpability to others’ actions, and without social context, most of what we think and feel is meaningless (Ramachandran, 2010). Indeed, Baumeister and Leary (1995) contend that the need for secure attachments with others is a fundamental human motivation. Consistent with this reasoning, the effects of priming secure attachments are prosocial (Mikulincer & Shaver, 2005). For example, priming a secure attachment base by asking people to visualize significant people in their lives increases their tendency to view themselves as kind, warm, and cooperative (Bartz & Lydon, 2004). Secure attachments involve a complementarity between support seeking and providing, and both the support seeker and provider have the same goal—to foster security to both reduce one's need for support and increase one's ability to support. Secure
attachments are therefore characterized by compassion, empathy, and altruism. Indeed, activating secure attachment bases has beneficial outcomes including reduction of intergroup biases (Mikulincer & Shaver, 2001), enhanced compassion to others' suffering (Mikulincer et al., 2001) and volunteering to take the place of a distressed person (Mikulincer, Shaver, Gillath, & Nitzberg, 2005).

Concepts of Disclosure

Self-disclosure refers to the communication of personal information to another and it has been studied extensively in relationships and therapeutic contexts (Cozby, 1973). According to social penetration theory, people gradually become close to each other through increasingly intimate and mutual self-disclosure (Altman & Taylor, 1987). Building on social exchange theory (Thibaut & Kelley, 1959), social penetration theory emphasizes the importance of mutual exchange (i.e., disclosure reciprocity) and people’s comparisons of past, present, and forecasted rewards and costs when deciding how much information to reveal. Research on the effects of self-disclosure support that disclosure is reciprocal—that is, the more people self-disclose, the more likely others are to self-disclose, though self-disclosure is not necessary to elicit disclosure (Dindia, 2002). Self-disclosure is typically conceptualized and operationalized as the sharing of sensitive personal information such as sexual intimacy or deviant behavior. While differences in the nature of information (e.g., embarrassing versus incriminating) likely influence decisions to disclose, the construct of disclosure is applicable to non-therapeutic interviewing settings with comparable outcomes of interest.

Research on self-disclosure in therapeutic contexts has found that the physical setting influences disclosure in metaphor-consistent ways (Chaikin, Derlega, & Miller, 1976).
Specifically, intimacy of self-disclosure was significantly greater for participants in a soft, intimate room (operationalized as one with pictures on the walls, a rug, cushy furniture, soft lighting, etc.) than for participants in a hard, non-intimate room (operationalized as windowless, drab, bare, with fluorescent lighting, etc.). This research suggests that disclosure can be facilitated through a sense of comfort and intimacy. Taken together, research on attachments, security, and self-disclosure converge on the notion that disclosure is characterized by communication and trust. More, recent work on embodied cognition and metaphoric transfer suggests that concepts of disclosure also involve concepts of openness (e.g., Okken, van Rompay, & Pruyn, 2013). Indeed, the language people use to describe disclosure includes various concepts relating to talking, comfort, and openness (e.g., “She was comfortable sharing stories about her mother, but when I asked about her father, she closed up.”). The semantic overlap between communication and openness suggests that disclosure may be facilitated by conceptual activation of concepts related to talking and trust, as well as by activation of concepts related to openness.
Chapter 4: Embodiment and Metaphors in Cognition

Embodied Cognition

Embodied cognition is the theory that cognition is grounded in sensorimotor experience. The embodiment hypothesis is based on the premise that our bodies and nervous systems evolved to coordinate action in our environments (Wolpert & Ghahramani, 2000). As such, in providing stimuli to sensory and perceptual systems, the physical environment is the source of the most basic influences on bodily state and cognitive processes. There is now a rich and growing body of literature of embodiment effects on various cognitive processes including attention, memory, and emotion (for a review, see Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). Further, research on embodied cognition supports that influences between bodily state and cognitive processes are bidirectional, and that cognition influences bodily state. For example, the physical experience of being warm influences people’s perceptions of others’ interpersonal warmth (Williams & Bargh, 2008). Conversely, thinking about being socially excluded can lead people to perceive the temperature as colder and to seek physical warmth (Zhong & Leonardelli, 2008). It is important to note that this relationship entails two concepts of perception—the traditionally biological notion of perception (i.e., exteroception), and that of social perception—views of others, which appears to be grounded in the former.

The embodied cognition framework must account for the role of the conceptual system when explaining how abstract concepts without direct sensorimotor correspondence are grounded. Our hominid ancestors’ neural resources were largely dedicated to interaction with the perceptible, tangible environment, but as humans evolved, our cognitive architecture became more sophisticated (e.g., in coordinating joint action) and abstract, and the motor system became
implicated in putatively non-motor domains like language and social interaction (Wilson, 2002; Wolpert, Doya, & Kawato, 2003). Neural exploitation theories (e.g., Anderson, 2010; Gallese & Lakoff, 2005) reason that language and conceptual systems make use of action systems because evolution tends to be conservative and efficiency-focused. Human cognition is now believed to operate “online,” i.e., in real-time environments, and “offline,” through simulation and symbolization of experience (Barsalou, 1999). Not only are there shared neural substrata when a person passively perceives or actively grasps a manipulable object (Chao & Martin, 2000), but there is also evidence of co-activation in regions associated with physical temperature sensation and conceptually related social perceptions (Kang, Williams, Clark, Gray, & Bargh, 2011). Though embodied cognition has been criticized as being unable to explain abstract concepts like cooperation and justice, which lack direct or reliable sensorimotor correspondence (Mahon & Caramazza, 2008), recent findings in social and affective neuroscience suggest that abstract concepts like trust and morality emerge from early sensorimotor experiences (Williams, Huang, & Bargh, 2009).

**Conceptual Metaphors**

Conceptual systems guide learning and understanding by enabling humans to categorize and make inferences and connections to previously learned or superficially related things. Cognitive linguists contend that metaphors are a central part of the conceptual system because of their utility in concretizing abstract concepts, most of which have a perceptual basis (Barsalou, 1999; Glenberg, 1997; Lakoff & Johnson, 1980). For example, the abstract concept “morality” can be understood in concrete, somatic concepts of cleanliness (e.g., Zhong & Liljenquist, 2006), taste (e.g., disgust, see Eskine, Kacinik, & Prinz, 2011), and verticality (i.e., moral is up/high, immoral is down/low, see Meier, Hauser, Robinson, Friesen, & Schjeldahl, 2007). Metaphors,
then, permit us to think and reason abstractly—with and about others—because they are grounded in common physical experience (Gibbs et al., 2004). It is important to note that, consistent with the notion that cognition operates “offline,” engaging the same systems as when it operates “online,” it need not be the sensorimotor experience itself that influences abstract thought, but the representation and thinking of the physical experience can influence abstraction (Boroditsky & Ramscar, 2002).

A growing body of literature supports the notion that metaphors influence various cognitive processes, and by extension, socially relevant outcomes. The influence of metaphors on cognition is typically tested by manipulating psychological states related to one concept to see if there are metaphor-consistent responses related to an apparently dissimilar concept (i.e., metaphoric transfer; see Landau et al., 2010). Metaphors operate across cognitive systems; hence, manipulating psychological processes in one system engenders metaphor-consistent processing in other systems. For example, the concept of power is understood in terms of verticality (e.g., Fiske, 2010; Judge & Cable, 2004). To succeed, one must work his or her way up. Powerful people have high status, work on top floors, and have people working under them. Illustrating the implicit association between power and vertical positioning, people more quickly identify powerful groups when they are presented at the top of a computer screen, and powerless groups when they are presented at the bottom (Schubert, 2005). Power also influences peoples’ perceptions—people position powerful others further away and higher up (e.g., Giessner & Schubert, 2007) and feel taller when they are more powerful (Duguid & Goncalo, 2012). These findings are consistent with metaphoric transfer effects found in various cognitive processes, including attention (Moeller, Robinson, & Zabelina, 2008), memory (Miles, Nind, & Macrae
Metaphors serve a foundational role in language and conceptualization. Cognitive linguists (e.g., Lakoff, 2008; Veale & Kean, 1992) invoke the metaphor of scaffolding to describe how elaborate conceptual structures are grounded in core structures, or primary metaphors based on early physical experience. From this view, experiences such as spatial orientation serve as basic mental structures upon which more complex concepts like time and containment are scaffolded onto (e.g., Casasanto & Boroditsky, 2008). For example, the metaphoric relationship between space and time in language is related to a primary relationship between spatial distance and duration, as the length of distances are positively correlated with the amount of time needed to traverse them. However, the “time as space” metaphor is asymmetrical, as people often talk about time in terms of space (e.g., “the meeting was moved back a day”) but rarely talk about space in terms of time (Lakoff & Johnson, 1980). Hence, concepts of time appear to be scaffolded onto primary, concrete experiences of space. A series of studies examining the influence of this metaphor on cognition found that influencing perceptions of space affected temporal judgments, but not the other way around. This finding suggests that our abstract representations of time are based on our representations of our physical experiences in spatial perception and sensorimotor action (Casasanto & Boroditsky, 2008).

Another basic structure upon which more complex concepts are scaffolded onto is the association between physical touch and body temperature. The “affect as warmth” metaphor appears to be rooted in early experiences with caregivers (e.g., being held and breastfed) that are associated with increased body temperature through contact and the release of hormones like oxytocin. From a neurological perspective, early experiences in which two domains (e.g., contact
and temperature) are simultaneously active permit neural metaphorical mappings that link those domains, engendering elaborated metaphoric/conceptual systems (Lakoff, 2008). There is evidence that areas in the brain associated with perception of physical warmth are also active during experiences involving trust and empathy, i.e., social warmth, suggesting a neurobiological basis for primary conceptual metaphors like “affect as warmth” and “intimacy as closeness” (Kang et al., 2011). Indeed, interpersonal warmth is a fundamental dimension on which people are automatically perceived and evaluated across cultures, suggesting universality in this metaphoric association (e.g., Fiske, Cuddy, & Glick, 2007). Evidence from various fields in psychology, including developmental, social, cognitive, and neuropsychology is converging on the notion that core conceptual structures may be innate, and that these foundational structures facilitate communication and socialization because humans have the same bodies and similar basic experiences in early life.

**Openness**

In addition to concepts related to talking, trust, and intimacy, people understand and refer to disclosure as a degree of openness, implying that information is contained within our bodies. Two lines of empirical work suggest that the metaphor of openness is scaffolded onto primary metaphors of containment and space. Consistent with the common metaphor of our physical bodies as containers (Lakoff & Johnson, 1980), information is understood as being held within our bodies, and disclosure involves release from such containment. From a metaphoric perspective, “keeping” or “holding” information implies that information of significance has “weight” (e.g., Jostmann, Lakens, & Shubert, 2009). Indeed, research on the physical burdens of secrecy supports that “heavy” information can literally “weigh one down.” A series of studies found that suppressing major secrets concerning partner infidelity and sexual orientation
influenced people’s perceptions and behaviors related to effortful activities in metaphor-consistent ways: compared to people without a secret, secret keepers overestimated hill slope and distance, overestimated the effort required for physical tasks, and were less willing to help others in a physical task (Slepian, Masicampo, Toosi, & Ambady, 2012). In two separate studies, people who revealed their secret no longer overestimated a hill’s steepness or distance, suggesting that revealing their secret physically unburdened them (Slepian, Masicampo, & Ambady, 2013). Further illustrating the scaffolding of the “information as contained”/“disclosure as openness” metaphor, the most common metaphor used to describe disclosure about sexual orientation (a relatively common secret) is that of “being in” or “coming out” of a closet, a literally closed container.

Recent empirical work on the metaphor of “disclosure as openness” has examined its primary spatial components. From the perspective that metaphors in cognition are embodied, it follows logically that the (metaphoric) openness of the self may be influenced by the (literal) openness of a setting. In other words, researchers have hypothesized that more open (i.e., bigger) spaces will lead to greater openness of the self (i.e., disclosure). Research on the effects of room environments on disclosure has found that manipulating openness through the physical setting (i.e., room size and desk size) influenced participants’ perceptions of spaciousness and promoted disclosure of personal information about sensitive topics such as sexual behavior, drug use, and negative emotions (Okken et al., 2013). Though most psychological research on environmental influences focuses on commercial and organizational settings, research on therapeutic contexts supports that the context can influence the amount and type of information people are willing to share with others (e.g., Miwa & Hanyu, 2006); this consideration is applicable to any context in
which practitioners seek to enhance communication and make others comfortable with providing information.
Chapter 5: Priming to Promote Disclosure

Priming influences various psychological processes, and the aim of the present study is to empirically examine the effects of priming in interview contexts. Investigative interviews are characterized by interpersonal dynamics in which authority, formality, etc. are salient and likely influence an interviewee’s thinking and behavior, possibly on an implicit level. It is possible that interviewers sometimes exploit these dynamics (e.g., by manipulating symbols of authority), but there is very little empirical research on the effects of these implicit influences in investigative interview settings. Moreover, subtleties in behaviors like mimicry and posture influence people’s perceptions (e.g., Chartrand & Bargh, 1999; Mehrabian, 1969), making it important to understand the extent to which nonconscious cues exert influence and may be facilitated to promote an interviewer’s goals. Here I test the effects of priming a relational style compatible with the information-gathering goal of an interviewer. Conceptual priming of a target concept can be accomplished by having people think about semantically related concepts. For example, instructing people to reflect on specific types of relationships can activate attachment concepts such as security or insecurity, in turn affecting how they view themselves and others (Baldwin, 2007). In the present research, I am interested in the effects of priming on people's willingness to disclose information in mock human intelligence interviews—a context in which elicitation of reliable and actionable information is of utmost importance. The concept I aim to activate is disclosure. Based on theories of implicit cognition, I predict that activating a secure attachment base with an instruction to reflect on feelings of security and trust that relate to disclosure (confiding in someone) will promote disclosure of information in a mock human intelligence interview.
Chapter 6: Pilot Study

In a pilot study, I tested whether the instruction to reflect on a secure attachment with someone whom one trusts and confides in would activate concepts related to disclosure when tapped by a traditional measure of implicit cognition (word completions, e.g., Richardson-Klavehn & Bjork, 1988). The purpose of this study is twofold: first, to test which words are more accessible when people think about disclosing, and second, to test the effectiveness of the priming manipulation at activating these concepts.

Method

Participants

64 participants from the community aged 18 to 64 years old ($M = 37.70$, $SD = 12.42$) were recruited online via an advertisement to participate in a study for $10$. 50% of participants were female; by race/ethnicity, the sample was 40.6% White, 28.1% Black, 12.5% non-White Hispanic, 7.8% Asian, and 10.9% Mixed or Other.

procedure

All procedures were reviewed and approved by the Institutional Review Board. Participants were randomly assigned to condition. Upon arrival to the lab and after providing informed consent, half of the participants ($N = 31$) were primed with a secure attachment; the other half ($N = 33$) were not primed. Following the priming manipulation, participants completed a word stem and fragment completion task. After they completed this task, they were debriefed, compensated, and thanked for their time.

Priming Manipulation
Half of participants were primed with a secure attachment. They were told that the research concerned people's ability to visualize a person who they are close to. They were asked to close their eyes and reflect on the target relationship for two minutes.

Participants were read the following instruction (adapted from Study 1, Bartz & Lydon, 2004): “Please think about a relationship you have that fits the following description. A relationship with someone you trust. Someone who you feel comfortable telling personal or sensitive things to. A relationship in which you feel supported and secure. Now, take a moment to visualize this person. What does this person look like? What is it like being with them? Think about yourself when you are with this person. How do you feel towards them? How do you feel because of them? Imagine they are here with you right now.” See Appendix A for the reflection instruction.

Measure

Disclosure-related concepts were words related to confiding such as communication, share, talk, free, reveal, and open. To measure the accessibility of these concepts, participants completed a measure with a mix of word fragments and word stems. Word fragments had specific letters missing and could be completed with equally common words (e.g., S H A __ E can be completed as shape or share), and word stems began with a few letters and had an open-ended completion (e.g., COMM________ can be completed as communicate, community, commute, etc.). Participants were instructed to fill in the word with the first that came to their mind and to skip the item if none did. There was a total of 36 words, 18 of which were targets (i.e., disclosure-related). The dependent measure was the total number of disclosure-related
words completed by each participant. See Appendix B for a list of the word fragments and word stems used in this measure (target words are emboldened).

**Results and Discussion**

A *t*-test indicated that participants primed with a secure attachment filled in more disclosure-related words (*M* = 3.74, *SD* = 1.62) than non-primed participants (*M* = 3.06, *SD* = 1.56), though this difference was not significant, *t*(62) = 1.718, *p* = .091, *d* = 0.43, 95% CI [-.07, .92].

Though the difference observed was not statistically significant, the magnitude of the effect and a trend towards a significant difference support that the instruction to reflect on someone whom one trusts and confides in made concepts such as engagement, communication, and talking more accessible, and that this manipulation activated concepts of disclosure. I proceeded to use this manipulation in a study employing a mock human intelligence paradigm.
Chapter 7: Study 1 Method

As described above, I used the secure attachment manipulation from the pilot study to prime participants prior to being interviewed about a mock conspiracy. Based on the literature reviewed, I predict that:

H1: Primed participants will report having provided more honest statements than non-primed participants.

H2: Primed participants will rate the interviewer as more trustworthy and friendlier than non-primed participants.

H3: Primed participants will disclose more details about the plot than non-primed participants.

H4: Primed participants will be rated as more forthcoming with information than non-primed participants.

Method

Participants

102 community members from a large Northeastern city were recruited online to participate in a study in exchange for $15. Participants ranged in age from 18 to 66 years old ($M = 35.49, SD = 13.26$). 55% were female; by race/ethnicity, the sample was 44.6% White, 31.7% Black, 11.9% Hispanic, 5.9% Asian, and 5.9% Mixed or Other.

Procedure

The Event
All procedures were fully reviewed and approved by the Institutional Review Board. Participants were randomly assigned to condition. Upon arrival to the lab and after providing informed consent, participants were tasked with delivering a flash drive ostensibly containing details about an upcoming event to a member of an environmental organization. They were asked to imagine being affiliated with the organization and told that while most of the organization’s activities involved demonstrations and protests, some members had been suspected of having committed terrorist acts. See Appendix C for the task instructions. Participants then delivered the flash drive to a confederate posing (and outfitted) as an agent of the organization; the confederate was located in an office on the same floor, which was decorated with maps and aerial photos of fracking sites. The confederate informed participants about the mission of the organization and then plugged in the flash drive, which played an approximately 1-minute long message from the ostensible leader of the organization to the agent they met; this message contained nearly 25 details of a bomb plot aimed at stopping the operations of a natural gas company. The transcripts of the confederate’s script and the audio recording are presented in Appendices D and E, respectively. The purpose of using a pre-recorded message was to standardize the manner in which participants were exposed to the information. After being exposed to this information, the confederate gave the participant documents to hold on to and asked them to not disclose anything. Participants then returned to the lab and completed a brief recognition test to check that they encoded the key information they had just been exposed to. See Appendix F for this test. They were then informed that they would be interviewed about the event they had just experienced.

**Preparations before the Interview**
Subsequently, participants were given information about and instructions for the interview. They were told that the interviewer was investigating a plot to attack a major corporation, that he knew they had met someone involved, and that the interview would concern the details of their interaction. Participants were then provided with the instructions for review. For the verbatim interview instructions, see Appendix G. For ethical reasons, it was noted at the bottom of the information sheet that the interview was part of the experiment; however, to reduce the salience of this reminder, this was not read aloud to participants. The instructions given to participants put them in a decision making dilemma about how much information to reveal. More specifically, they were told that being cooperative is a good strategy to minimize their involvement and to gain favor, plus they'd probably be rewarded for providing some information. However, they were also told to be cautious that the more information they revealed, the more suspicious of their involvement the interviewer could become, which could lead to further interviewing and investigation. This purpose of this instruction was twofold. First, I sought to prevent ceiling effects on forthcomingness and to maximize variation in forthcomingness by balancing the suggestion to be forthcoming with one to be withholding. Second, I aimed to mimic the position of a particular (and common) type of source, specifically, one who is complicit but not a main conspirator, and partly loyal to a cause, but concerned with risk of incrimination. Participants were given the instructions to review and a few minutes alone to prepare their statements. Prior to being interviewed, half of participants were primed and half were not.

**Priming Manipulation**

After receiving interview instructions and being given time to prepare for the interview, half of participants were given what they believed was a concentration task, but which was
actually the priming manipulation. Told that concentrating on positive experiences with certain
types of people has beneficial effects on decision making, participants were primed with a secure
attachment by being asked to deeply reflect upon a relationship they have with someone whom
they trust, feel secure with, and confide in. The concentration task is presented in Appendix H.
After two minutes of reflection, to enhance the prime, participants were asked to briefly write
about why the person they thought about represented that relationship. See Appendix I for this
second part of the task. To ensure privacy, the experimenter immediately destroyed their
writings. The other half of participants did not receive the concentration task and were
interviewed after receiving instructions and preparation time.

The Interview

All interviewees were interviewed by one interviewer (a military officer and
counterintelligence agent with experience conducting human intelligence interviews) in a semi-
structured information-gathering interview. The interviewer was blind to condition. Each
interview began with a brief conversational phase (lasting approximately 3 minutes) followed by
an open-ended question about whether the interviewee had met anyone new that day. If the
interviewee was withholding in response to this initial prompt for information, the interviewer
clarified the nature and purpose of the interview as non-accusatory and stated that his focus was
on activist groups with the potential of engaging in harmful, criminal acts. If the interviewee still
would not disclose, the interviewer made concluding remarks and ended the interview by asking
the interviewee, “Is there anything you can share with me?” All interviews, irrespective of the
interviewee's statement, ended with this open-ended question. The interviewer’s script is
presented in Appendix J.
Depending on the interviewee's willingness to provide information, as well as the nature of the information provided, the interviewer had three themes with specific questions in each to ask about. One theme was the Organization Theme, which included questions about the name, mission, and command structure of the environmental organization. A second theme was the Plot Theme, which began with a question asking if the organization had specific plans; if the interviewee affirmed, the interviewer then asked who/what/where/when/why questions and a question about the escape plan. The other theme was the Persons Theme, which the interviewer began by asking the interviewee if s/he had any contact with anyone in the organization; this theme contained questions about the names and roles of its members, the identity of the leader, and background information about them. The answers to these questions comprised the data for the details measures (see below).

Following their interview, participants were given a questionnaire concerning their interview behavior and perceptions of the interviewer. They were then debriefed, compensated, and thanked for their time. Prior to being debriefed, primed participants were probed for suspicion about the priming manipulation. None guessed the purpose of the study or were suspicious about the concentration task.

Measures

Self-Report Measures

Participants self-reported their veracity and perceptions of the interviewer on 10-point bipolar continuous scales. Specifically, participants were asked to answer the following questions [anchors in brackets]: 1) “The statement I gave during the interview was” [Completely deceptive to Completely truthful]; 2) “How trustworthy did you find the interviewer?” [Very
untrustworthy to Very trustworthy]; and 3) “How friendly did you find the interviewer?” [Very unfriendly to Very friendly].

Verbal Behavior

Participants’ verbal behavior was coded as units of information. In total, participants were exposed to approximately 25 details about the organization, its background, its mission, its members, and its plot to bomb a fracking site. Information was broken down into overall and critical details, creating two scores. The overall details included critical details and other information concerning the organization (e.g., anti-fracking mission, background of members), the participant's own role in the conspiracy (i.e., delivering the drive and receiving documents to return), and relatively less essential details about the event (e.g., the highway route to the bombing site, the number of explosives used). The critical details concerned the organization's name, its four members, the specific plot to bomb a fracking site, the corporate target, the attack date, the location of the attack, and details about an escape plan. The categorization of overall and critical details depended upon the operational value of the detail to an investigator seeking to prevent the plot or apprehend the perpetrators. There was also a 7-point continuous measure of forthcomingness, ranging from 1 (extremely withholding, i.e., did not even admit to meeting anyone new that day) to 7 (extremely forthcoming, i.e., disclosed everything s/he could remember); a score of 4 on this measure indicates an allusive statement, i.e., disclosure that the group had potential for violence, but that s/he was unaware of further details. This measure supplements the details measures by offering a categorical measure of statement types, permitting distinction between withholding and forthcoming interviewees who provide details, as well as each group's overall tendency to disclose details about the plot specifically.
Coding Procedure

One coder with experience of coding verbal content devised the coding scheme and coded all the videos. This coder instructed the second coder (both were blind to condition) on how to use the coding scheme, using random videos as examples. The two coders then proceeded to code a randomly selected 20% subsample of the entire set of videos. I ran interrater reliability analyses to measure agreement between coders on overall details, critical details, and the rating of forthcomingness. After discussion of the discrepancies and subsequent adjustment of the coding scheme, the raters achieved perfect agreement on the details and forthcomingness measures, all Cohen’s $\kappa = 1.00$. One coder subsequently proceeded to review the transcribed details in the remaining 80% of the videos for adherence to the modified scheme. This review indicated that 16 statement codings contained details that were no longer included under the modified scheme; these statements were re-coded.\(^1\)

\(^1\)Inaccurate non-critical details were not counted, but the accuracy of critical details could be calculated by checking the participants’ corresponding recognition test. The accuracy of critical details provided was calculated as number of errors per statement. One coder developed a scheme and trained a second coder on a random 20% subsample of statements. Coders were blind to condition. The two coders achieved acceptable agreement (Cronbach’s $\alpha = .913$) on this subsample and proceeded to code the remaining statements. Among those who disclosed critical details, there were no differences between primed participants ($M = .20, SD = .38$) and non-primed participants ($M = .28, SD = .46$) on accuracy, $t(80), p = .441, d = .19, 95\%$ CI [-0.62, 0.24].
Chapter 8: Study 1 Results

Self-Reported Experience

Concerning the first hypothesis that primed participants would report having been more honest than non-primed participants, t-test results showed that participants who were primed reported themselves as having provided more honest interview statements ($M = 7.18, SD = 3.05$) than participants who were not primed ($M = 6.18, SD = 2.83$), though this difference was not significant, $t(99) = 1.71$, $p = .092$, $d = .34$, $95\%$ CI [-.05, .73]. There were no differences between primed participants ($M = 7.55, SD = 1.99$) and non-primed participants ($M = 7.77, SD = 2.16$) on perceptions of the interviewer's trustworthiness, or between primed participants ($M = 8.76, SD = 1.41$) and non-primed participants ($M = 8.78, SD = 1.57$) on perceptions of the interviewer’s friendliness, $ps > .6$. Hence, the predicted transference effect was not supported.

Information Disclosure

Regarding actual disclosure, t-tests indicated that participants who were primed provided more overall details (range: 0 - 22) about the plot ($M = 8.0, SD = 6.02$) than those who were not primed ($M = 6.09, SD = 5.10$), though this difference was not significant, $t(100) = 1.74$, $p = .086$, $d = .34$, $95\%$ CI [-.05, .73]. There were no significant differences between groups on number of critical details (range: 0 - 11) provided, though primed participants also tended to provide more critical details ($M = 3.97, SD = 3.34$) than non-primed participants ($M = 3.14, SD = 3.03$), $t(100) = 1.31$, $p = .194$, $d = .26$, $95\%$ CI [-.13, .65]. The third hypothesis was therefore partly supported. Finally, t-tests on coders’ ratings of forthcomingness indicated that primed participants were rated as more forthcoming ($M = 4.32, SD = 2.31$) than non-primed participants ($M = 3.63, SD = 2.06$), though this difference was not significant, $t(100) = 1.58$, $p = .116$, $d =$
.32, 95% CI [-.08, .71]. Thus, the fourth hypothesis was weakly supported. See Figures 1 and 2 for the distribution of forthcomingness ratings by group.

In sum, analyses show some support that priming participants with a secure attachment prior to being interviewed led them to be more honest and to disclose more information compared to those who were not primed.
Chapter 9: Study 1 Discussion

The present studies sought to test the hypothesis that disclosure concepts could be activated through priming, resulting in an increase in verbally forthcoming statements in a subsequent mock human intelligence interview. I expected that priming a secure attachment characterized by trust and communication would lead participants to provide more information about the conspiracy compared to those who were not primed. Consistent with research showing that when concepts are more accessible, they tend to influence behavior in a prime-consistent manner, these findings demonstrate that activating a secure attachment and related concepts about disclosing can induce forthcomingness. It is important to note that the effects observed are comparable to those reported in previous research, which has found that secure attachment priming exerts a small-to-moderate effect on behavior (e.g., Mikulincer et al., 2005; Wilkinson, 1999). More generally, the results indicate that as in other types of social interactions, nonconscious processes are operating in investigative interviewing contexts.

Implications

The present study extends the basic research on implicit cognition and priming by showing that the effects last through complex social interactions. Social psychological research in general, and priming in social cognition specifically have been criticized for lacking behavioral outcomes (Baumeister, Vohs, & Funder, 2007). The real-world applicability of findings in social perception and behavior is tenuous when the majority of findings are based on questionnaires or reaction times tested in non-social contexts. In fact, 15 years of research on secure attachment priming has consistently demonstrated prosocial effects such as bias reduction and altruism (Mikulincer & Shaver, 2005), but only one study has examined whether such effects
would lead someone to actually help another (Study 2, Mikulincer et al., 2005). In this study, the outcome was a yes or no decision to take the place of a young woman struggling with a tarantula petting task in a prerecorded video; however, participants did not interact with her and were not asked to do the task if they said yes, leaving doubt that their behavior (i.e., petting a tarantula on her behalf) would have been influenced. To my knowledge, all other studies on contextual activation of attachments use questionnaire measures and self-reported perceptions or decisions in hypothetical situations. The present research adds to this body of literature by testing the extent of the effects’ influence on one’s behavior in a dynamic interaction with another person.

The finding that influences outside of an interviewee’s awareness can be manipulated to influence their interview behavior has two important practical implications. First, it is important for interviewers to be mindful of the concepts they may be heightening accessibility of through their questioning and behavior towards an interviewee, as it may influence decisions to disclose. Second, basic principles of nonconscious processes may be transformable into methods of influence for practitioners. I found that priming attachment security promotes disclosure, but it would also be useful to know the extent to which the activation of other concepts fosters or hinders disclosure.

Limitations and Future Directions

There are some limitations to note about the present research. First, I expected the priming effect to be partly due to transference in social perception; that is, I expected primed participants to be more forthcoming in part because of increased trust in the interviewer. It should be noted that all participants tended to rate the interviewer as highly trustworthy, hence, ceiling effects might have prevented observation of such an effect. Future research needs to
explore the potential mediators driving the effect of priming on verbal forthcomingness. Second, while I found support that basic nonconscious influences can be manipulated to induce forthcomingness, future research could examine the most feasible and effective ways of implementing these findings in the field. For example, while I tested the effect of priming attachment security prior to an interview, future research could explore the extent to which such concepts can be activated during various stages of the interview itself (e.g., during rapport building, in the questioning phase, during debriefing, etc.).

As described in the method section, participants in the experimental condition engaged in a priming task disguised as a concentration exercise, while participants in the control condition moved directly from the event to the interview. Thus, the experimental condition included a delay while the control condition did not. I deliberately refrained from having participants in the control condition engage in a reflection task because I did not want to inadvertently prime them in any way. There is no theoretically compelling reason that the delay rather than the prime caused the observed effects. Still, future research might include a second control condition that includes a delay but no priming task, as other factors (e.g., the act of writing) may have been influential. An additional methodological consideration for future research concerns the timing of the priming tasks. In this study, interviewees were primed after having had time to prepare their statements, and it is possible that the effects of the priming were weakened as participants may have already committed to a statement. It is interesting and of practical importance to know if the effects are stronger when the manipulation is delivered prior to interview preparation.

Our knowledge about the nature and boundaries of priming effects are limited by the dependent measures researchers are interested in, but a growing body of evidence converges on the notion that priming exerts effects across cognitive tasks and social situations, and these
findings support that they also operate in investigative interviews. The goals, environment, and dynamics between interviewer and interviewee vary considerably in such contexts, but the need to elicit reliable, actionable information is constant. Importantly, priming did not affect the accuracy of information disclosed. That increased information gain did not come with a trade-off in accuracy is of particular concern for the utility of priming applications to investigative interviews, and the current findings offer promising avenues for continued research on basic operations and applied techniques in this area.
Chapter 10: From Theory to Application: Using Priming to Promote Openness in an Interview

In Study 1 I examined whether disclosure and openness could be activated by priming a secure attachment. More specifically, prior to being interviewed about the details of a mock terrorism plot they were exposed to, participants in the experimental condition were asked to reflect on a person whom they trust and are open with. In line with predictions derived from research on implicit cognition, participants in this condition provided more information about the mock terrorism plot than participants in a control condition who had not engaged in the reflection task.

The priming manipulation in Study 1 occurred prior the interview. Study 2 builds on this by examining whether openness primes *can be built into the interview itself*. Here, I predict that using an interview introduction that involves a semantic priming of openness through the use of words related to openness will lead to greater forthcomingness and information disclosure compared to an introduction without such words.
Chapter 11: Pilot Study

In a pilot study, I tested whether or not an introduction containing openness-related words would heighten the accessibility of openness concepts using an implicit measure.

Method

68 adults between the ages of 18 and 64 years old (M = 34.75, SD = 12.64) were recruited from the community via online advertisement to participate in exchange for $10. 58.6% were male; by race/ethnicity, the sample was 38.5% Black or African-American, 33.8% White, 9.5% non-White Hispanic, Latino, or Spanish, 7.7% Asian, and 10.5% Mixed or Other.

Participants

Procedure

All procedures were reviewed and approved by the Institutional Review Board. Upon providing informed consent, participants were told they would be read and then asked to re-read an introduction that an interviewer would use to orient someone to the nature of an interview. They then heard and read either the experimental or control introduction. After this, participants worked for 3 minutes on filler tasks (pictorial puzzles) before being presented with “a word game,” which was the dependent measure.

Priming Manipulation

In the experimental condition, the introduction contained words relating to openness:

“I want to be clear with you about the purpose of this interview and hope that you feel free to come forward with anything you may have been exposed to... that you trust me enough to be
forthcoming and honest about your experience. This interview is a space for you to be open and air out any concerns you may have. Do you have any questions before we proceed?”

In the control condition, the introduction was comparable, but with neutral words:

“I want you to understand the purpose of the interview. It’d be great if you could provide me with information about your experience. I hope that we can have a good working relationship as we meet today. This interview is a place where you can tell me about any concerns you have. Do you have any questions before we proceed?”

Measure

To measure the accessibility of openness-related concepts, participants completed a 36-item word stem and fragment completion measure, with 18 target words relating to openness and disclosure (see Appendix B). The dependent measure was the number of target words completed.

Results and Discussion

Results indicated that participants who read the experimental script completed more openness-related words ($M = 3.82, SD = 1.82$) than participants who read the control script ($M = 3.09, SD = 1.42$) on the word completion measure, though this difference was not statistically significant, $t(66) = 1.858, p = .068, d = 0.45, 95\% \text{ CI } [-.03, .93]$.

Though not statistically significant at the two-tailed level, the effect is moderately strong and results are in line with predictions that the experimental script heightens the accessibility of openness-related concepts. I proceeded to use this manipulation in an interviewing study.
Chapter 12: Study 2 Method

As described above, I used the semantic priming manipulation from the pilot study to prime participants at the beginning of their interview about a mock conspiracy. Based on the literature reviewed, I predict that:

H1: Accessibility of openness-related concepts will be greater for primed participants than for control group participants.

H2: Primed participants will disclose more details about the plot than control group participants.

H3: Primed participants will be rated as more forthcoming with information than control group participants.

Participants

91 adults between the ages of 18 and 63 years old ($M = 32.97$, $SD = 12.22$) were recruited from the community via online advertisement to participate in exchange for $20. 52.8\%$ were female; by race/ethnicity, the sample was 38.2\% White, 32.6\% Black or African-American, 14.6\% non-White Hispanic, Latino, or Spanish, 10.1\% Asian, and 4.5\% Mixed or Other.

Procedure

All procedures were fully reviewed and approved by the Institutional Review Board. The procedure for this study was adapted from Study 1; the manipulation is the only difference. Participants were randomly assigned to condition. After arriving to the lab and providing informed consent, participants engaged in a courier task. After delivering a flash drive to a confederate and being exposed to the details of a mock environmental terrorism plot, participants returned to the lab to be interviewed.
**Priming Manipulation**

After receiving a few minutes preparation time, the interviewer came in and introduced himself to all participants, stating that he was there to gather information. In order to semantically prime openness, I manipulated his elaboration on the nature of the interview. For participants in the experimental condition, the interviewer introduced the purpose of the interview using openness-related words (e.g., “this interview is a space for you to be open and air out any concerns you may have”). For participants in the control condition, he introduced the purpose of the interview using comparable, but neutral words (e.g., “This interview is a place where you can tell me about any concerns you have”). The verbatim introductions are provided above in the Pilot Study Method.

The interviewer then asked all participants if they could tell him about their day and whether they had done anything unusual or met anyone new. When interviewees were withholding, the interviewer had two scripted prompts to employ to encourage them to be forthcoming: one prompt assured the interviewee that s/he was not under suspicion, and one appealed to the interviewee’s morality about the dangers of extremism. The use of prompts varied depending on the interviewees' disclosure, but both prompts were used with all withholding interviewees, ensuring everyone an equal number of opportunities to be forthcoming. The interviewer concluded all interviews by asking the interviewee if there was anything else of importance they wanted to disclose. Thus, in total, everyone received two-to-four chances to provide information. All interviews were conducted by a research assistant with extensive experience of interviewing in laboratory studies.
Following their interview, participants were given dependent measures and a suspicion probe about the purpose of the study. They were then debriefed, compensated, and thanked for their time.

**Measures**

**Self-Report Measures**

Participants self-reported their perceptions of the interview room, interviewer, and information disclosure on 10-point bipolar continuous scales.

**Accessibility**

To measure the accessibility of openness concepts after being interviewed, participants completed a 36-item word stem and fragment completion measure, with 18 target words relating to openness and disclosure. See Appendix B for this measure.

**Verbal Behavior**

As in Study 1, participants’ information disclosure was measured in units of information. Information was broken down into non-critical and critical details, creating two scores: overall details about the organization and plot, and critical details about the organization and plot. The *overall details* measure includes critical details and non-essential details about the organization and the plot. The *critical details* measure includes the organization's name, its members, the specific plot to bomb a fracking site, the corporate target, the attack date, the location of the attack, and details about the escape plan. There was also a 7-point continuous measure of *forthcomingness*, ranging from 1 (extremely withholding, i.e., did not even admit to meeting anyone new that day) to 7 (extremely forthcoming, i.e., disclosed everything s/he could
remember); a score of 4 on this scale indicated an allusive statement in which the group’s potential for violence was explicitly stated, however, no admission was made regarding the conspiracy.

**Coding Procedure**

Two research assistants with experience coding statements coded a random 20% subsample of the videos (both coders were blind to condition). Interrater reliability analyses measured agreement between coders on overall details, critical details, and the rating of forthcomingness. The raters achieved near-perfect reliability on each measure (all Cronbach’s α = 0.956 - 0.986) and resolved discrepancies through review and discussion. The remaining videos were randomly assigned and split between the two coders.
Chapter 13: Study 2 Results

Self-Reported Experience

There were no differences between groups on any self-report measures of interview preparation, experience, or perceptions of the interviewer, all $ps > .01$.

Accessibility

$t$-test results showed that participants who were primed with openness concepts completed more openness-related words ($M = 4.28$, $SD = 1.56$) than participants who were not primed ($M = 3.74$, $SD = 1.56$), though this difference was not statistically significant, $t(79) = 1.569$, $p = .121$, $d = 0.35$, 95% CI [-.09, .79]. Hence, hypothesis two was partially supported.

Information Disclosure

Participants who were primed provided more overall details ($M = 6.52$, $SD = 4.84$) than participants in the control condition ($M = 5.48$, $SD = 4.64$), but this difference was not significant, $t(88) = 1.045$, $p > .1$, $d = 0.22$, 95% CI [-.19, .63]. Participants who were primed also provided more critical details ($M = 3.36$, $SD = 2.71$) than participants in the control condition ($M = 3.09$, $SD = 2.85$), though this difference was not significant, $t(88) = 0.469$, $p > .1$, $d = 0.1$, 95% CI [-.32, .51]. Hence, hypothesis 2 was weakly supported. Participants who were primed with openness concepts during the interview were more forthcoming ($M = 4.30$, $SD = 2.1$) than participants in the control condition ($M = 3.62$, $SD = 1.95$), though this difference was not statistically significant $t(88) = 1.605$, $p = .11$, $d = 0.34$, 95% CI [-.08, .75]. As such, hypothesis 3 was also weakly supported.
In sum, the analyses partially support the hypotheses that semantically priming the concept of openness made related concepts more accessible and influenced disclosure of information.
Chapter 14: Study 2 Discussion

In Study 2 I aimed to create and test a priming technique that could be easily applied within an interview context. Study 1 showed that activating a secure attachment through priming prior to an interview led to more information disclosure compared to a condition in which such priming did not occur. Here, I was instead interested in whether semantic priming could be built into the interview in a readily applicable manner. I conducted a simple experiment comparing information disclosure as a function of two different interview introductions; one included words related to openness, and one excluded these words.

The results are consistent with Study 1: Participants who were primed with the concept of openness disclosed more information compared to participants who were not. In the pilot study, participants who were exposed to the experimental introduction tended to complete more words consistent with the concept of openness (using a word completion task) compared to those who were not, suggesting that the interview introduction indeed lead to a cognitive activation of openness. Importantly, the main study showed that this effect held through a sustained interaction with an interviewee: Participants in the experimental condition conveyed more information about the mock terrorism conspiracy than those in the control condition. From the perspective of implicit cognition, this is an important finding because it supports that priming effects can go beyond affecting static interpersonal impressions, and manifest themselves through a social interaction. Notably, the effects were observable on an implicit measure of accessibility and explicit measures of verbal behavior.

The practical implications of these results are clear: The language used by an interviewee can have a subtle but powerful effect on the behavior of interviewees. More specifically, interviewers can strategically tailor the semantic structure of the interview in order to accomplish
desired goals. Eliciting information from sources is a critical challenge of interviews in investigative and intelligence-gathering contexts. This research suggests that a simple manipulation of the language used during an interview can push interviewees in the direction of disclosure. As such, semantic consideration by the interviewer—when framing questions or the interview as a whole—can be a complement to previously established principles of effective interviewing such as rapport building, use of open-ended questions, etc.

**Limitations and Future Directions**

In Studies 1 and 2, I aimed at activating the concept of openness, though theoretically, it should be possible to prime different concepts using this semantic priming approach. For example, it may be possible to prime concepts such as honesty (which may have effects on sources’ propensity to lie) and warmth (which may affect the interpersonal dynamics in the interview room, and potentially promote rapport-building). Of course, the extent to which priming of concepts other than openness has beneficial effects is an empirical question that should be explored in future research.

Though results on each main dependent measure did not reach statistical significance, they converged with those from Study 1 and are consistent with the small effects typically observed in priming research. While sampling and measurement error cannot be ruled out as alternative explanations for the results, their coherence suggests that the effect is subtle and requires more power to observe.

As with any research, my methodology is not without limitations. Because I employed a laboratory-based approach with a mock terrorism paradigm, the primary concern is the generalizability of these findings and whether or not similar results would be obtained across populations and settings. While the general mechanisms of priming are likely to be universal
rather than culture-specific, it is important to replicate these findings using a non-Western sample, especially given the fact that many interviews in the human intelligence collection domain are cross-cultural in nature.

In conclusion, this study supports and extends the findings from Study 1 showing that priming of openness concepts can have beneficial effects on interviewees' tendency to provide information. These findings are easy to translate to practical context. However, continued research should examine the extent to which additional concepts can be primed, as well as the generalizability of these findings across cultures and contexts.
Chapter 15: Inducing Openness with Information through a Metaphor-Consistent Interview Setting

Researchers have traditionally conceptualized disclosure as a process of communication that involves trust and intimacy. Recent work drawing from theories on the embodiment of metaphors suggests that disclosure is also understood in terms of openness, and that “open” spaces may promote “openness” with information (e.g., Okken et al., 2013). Human intelligence interviews are conducted in various field and custodial settings, but no studies have looked at the impact of the physical setting on a source’s willingness to provide information. The present study seeks to extend implicit methods of promoting disclosure by examining the influence of the interview room on a subject's willingness to disclose. Specifically, I test the practice-based assumption that a prototypical interrogation setting promotes disclosure by promoting closeness with an interviewer against a theoretically driven hypothesis that a setting designed to promote openness will induce more forthcoming verbal behavior.

Though designed to limit distraction and promote intimacy (e.g., Inbau et al., 2004), small interrogation settings characterized by emptiness, drab colors, blank and windowless walls, artificial lighting and rigid furniture likely impose constraints on relationship building by engendering senses of isolation, enclosure, and constraint. These features are conceptually consistent with withholding, rather than forthcoming behavior. Based on theories of embodied cognition and metaphoric transfer, I aim to test the hypothesis that a context designed to promote openness through metaphor-consistent spatial and contextual features (e.g., open blinds, pictures of open windows, higher ceilings, open space, etc.) will lead to more disclosure than a prototypical interrogation room. More specifically, I predict that:
H1: Participants interviewed in an open setting will view the interview setting more positively than participants interviewed in a custodial setting.

H2: Participants interviewed in an open setting will rate the interviewer more positively than participants interviewed in a custodial setting.

H3: Participants interviewed in an open setting will disclose more information than participants interviewed in a custodial setting.

H4: Participants interviewed in an open setting will be rated as more forthcoming than participants interviewed in a custodial setting.
Chapter 16: Study 3 Method

Participants

112 community members were recruited online to participate in exchange for $15. Participants ranged in age from 18 to 87 years old ($M = 37.14, SD = 14.14$). 50% were female; by race/ethnicity, the sample was 34.8% White, 31.3% Black, 10.7% Hispanic, 10.7% Asian, and 12.5% Mixed or Other.

Procedure

All procedures were fully reviewed and approved by the Institutional Review Board. The procedure for this study was adapted from Studies 1 and 2; the only difference is the manipulation. Participants were randomly assigned to condition. After arriving to the lab and providing informed consent, participants engaged in a courier task. After delivering a flash drive to a confederate and being exposed to the details of a mock environmental terrorism plot, participants returned to the lab to be interviewed.

Setting Manipulation

After completing their delivery and information recognition tasks, half of participants were escorted to a prototypical interrogation setting (henceforth referred to as the custodial setting) and half were escorted to an interview room designed to contextually activate openness. The custodial setting was a small room with gray carpeting, bare, off-white walls, a two-way mirror with a shade drawn over 90% of it, overhead fluorescent lighting, two relatively hard chairs, and a small table. Participants and the interviewer sat on the same side of the table,
approximately 3 feet apart, with the interviewer between the participant and the door. See Figure 5 for a picture of this setting.

The open setting was a larger room (approximately twice the size of the custodial setting) with windows on half of one wall, blue tile flooring, off-white walls, and the following openness primes: a painting hung on each wall—on one, a picture of open water and an open sky, and on two other walls, pictures of open windows with diaphanous curtains overlooking open water and open skies; two open-top lamps; and a small table with a clear, open water jug, an open cup, a small open drawer with an open lock, and an open book. Participants and the interviewer sat in comfortable chairs at a bigger table on the same side of one another, spaced 3 feet apart, with the interviewer closest to the door. See Figure 6 for a picture of this setting.

Preparations before the Interview

Once in the interview room, participants were given information about and instructions for the interview. The instructions are the same from Studies 1 and 2. Briefly, they were told that the interviewer was investigating a plot to attack a major corporation, that he knew they had met someone involved, and that the interview would concern the details of their interaction. It was then suggested that they consider various risks and benefits to cooperating. They were given the instructions to review and a few minutes alone to prepare their statements.

The Interview

All interviewees were interviewed by one interviewer (with experience of conducting real-life intelligence interviews) in a semi-structured information-gathering interview. The interviewer used the same script as in Study 1, except that he ended the interviews by asking, “In the spirit of openness, is there anything else you can share with me?” All interviews, irrespective
of the interviewee's forthcomingness, ended with this open-ended question. As in Studies 1 and 2, responses to questions within the *Plot, Organization, and Persons* themes comprised the data for the details measures.

Following their interview, participants were given a questionnaire concerning their interview experience and behavior, as well as a suspicion probe about the purpose of the study. Finally, participants were debriefed, compensated, and thanked for their time.

**Measures**

**Self-Report Measures**

Participants self-reported their perceptions of the interview room, interviewer, and information disclosure on 10-point bipolar continuous scales.

**Verbal Behavior**

As in Studies 1 and 2, participants’ verbal behavior was measured in units of information. Information was broken down into non-critical and critical details, creating two scores: overall details about the organization and plot, and critical details about the organization and plot. The *overall details* concerned previous activities of the organization, the participant's own role in the conspiracy, and less essential details about the event; this measure also included critical details. The *critical details* concerned the organization's name, its four members, the specific plot to bomb a fracking site, the corporate target, the attack date, the location of the attack, and details about the escape plan. There was also a 7-point continuous measure of *forthcomingness*, ranging from 1 (extremely withholding, i.e., did not even admit to meeting anyone new that day) to 7 (extremely forthcoming, i.e., disclosed everything s/he could remember); a score of 4 on this
measure indicated an allusive statement in which the interviewee explicitly told the investigator that the organization should continue to be investigated because of its potential for violence, but that s/he could or would not provide further detail about their intentions.

**Coding Procedure**

One coder with experience coding verbal statements coded all of the statements. The coding scheme used was the same as in Study 1. The coder then trained a second coder how to apply the scheme using a subset of videos for training purposes. Coders were blind to condition, using audiotaped statements instead of videos to prevent identification of the interview condition. The two coders then coded a random 20% subsample of videos. Interrater reliability analyses between coders on critical details was acceptable, however, agreement on overall details and forthcomingness measures compelled review by both coders for discrepancies. Discussion and review of transcribed details resolved most of the discrepancies, though a minority of statements in which one coder transcribed a detail that the other had not necessitated recoding of the entire statement. After resolution of the discrepancies, the raters achieved perfect agreement on each measure. The coders proceeded to code an additional random subset of videos and achieved acceptable agreement on each measure (all Cronbach’s alphas ranged from 0.81 – 0.87). Approximately 70% of statements were coded by Coder 1 and 30% by Coder 2.
Chapter 17: Study 3 Results

Self-Reported Experience

Regarding perceptions of the room and interviewer, t-test results showed that participants who were interviewed in the open setting viewed the room as more comfortable ($M = 7.32, SD = 2.51$) than participants in the custodial setting ($M = 6.67, SD = 2.19$), though this difference was not statistically significant, $t(109) = 1.449, p = .15, d = .28$, 95% CI [-.1, .65]. Participants interviewed in the open setting also reported wanting to leave less ($M = 3.09, SD = 2.26$) than participants interviewed in the custodial setting ($M = 3.76, SD = 2.79$), though this difference was not significant, $t(110) = -1.405, p = .16, d = .26$, 95% CI [-.11, .64]. Regarding their perceptions of the interviewer, participants who were interviewed in the open setting reported feeling closer to the interviewer ($M = 6.07, SD = 2.45$) than participants who were interviewed in the custodial setting ($M = 5.22, SD = 2.53$), though this difference was not significant, $t(110) = 1.81, p = .073, d = .34$, 95% CI [-.03, .72]. Hence, the first two hypotheses received partial support.

Information Disclosure

Regarding actual disclosure, participants who were interviewed in the open setting provided significantly more overall details (range: 0 – 19.5) about the plot ($M = 8.21, SD = 6.18$) than those who were interviewed in the custodial setting ($M = 5.35, SD = 5.35$), $t(109) = 2.601, p = .01, d = .49$, 95% CI [.12, .87]. Participants interviewed in the open setting also provided significantly more critical details (range: 0 – 11.5) about the plot ($M = 4.77, SD = 3.82$) than participants interviewed in the custodial setting ($M = 3.02, SD = 3.14$), $t(109) = 2.63, p = .01, d = .499$, 95% CI [.12, .88]. Thus, hypothesis 3 was supported. Coders’ ratings of forthcomingness
indicated that participants interviewed in the open setting were significantly more forthcoming
\((M = 4.39, SD = 2.43)\) than participants who were interviewed in the custodial setting \((M = 3.31,\)
\(SD = 2.18)\), \(t(109) = 2.468, p = .015, d = .47, 95\%\ CI [.09, .84]\). The fourth hypothesis was
therefore supported. See Figures 7 and 8 for the distribution of forthcomingness ratings by group.

**Correlations**

I examined correlations between self-reported perceptions of the interviewer and
interview room with measures of verbal behavior. Disclosure of overall details was significantly
related to perceptions of the interviewer’s trustworthiness, Pearson’s \(r(110) = 0.2, p = .04, 95\%\)
CI [.01, .37]. Forthcomingness was significantly related to feelings of closeness with the
interviewer, Pearson’s \(r(111) = .21, p = .027, 95\%\ CI [.02, .38]. Feelings of closeness with the
interviewer was significantly related to perceptions of trustworthiness, Pearson’s \(r(111) = 0.58, p < .001, 95\%\ CI [.44, .69]. Finally, perceptions of spaciousness were significantly related to
closeness with the interviewer, Pearson’s \(r(112) = 0.37, p < .001, 95\%\ CI [.2, .52]. The full
correlation matrix is presented in Table 1.

**Mediational Analyses**

I followed up on the findings that the room setting influenced disclosure with PROCESS
Model 4, using bias-corrected 5,000 sample bootstrap confidence intervals (Hayes, 2013).
Results of mediational analyses indicated that there was an indirect effect of perceptions of room
spaciousness on the number of overall details disclosed, \(b = -1.68, 95\%\ CI [-3.24, -.36]\), on the
number of critical details disclosed, \(b = -1.00, 95\%\ CI [-1.88, -.21]\), and on forthcomingness, \(b =
-.688, 95\%\ CI [-1.28, -.17]\), such that perceptions of greater spaciousness mediated the effect of
the room setting, in turn increasing the odds of disclosure.
In sum, the analyses show that interviewing participants in a setting designed to promote openness led them to perceive the interviewer and interview more positively and to be more forthcoming compared to those who were interviewed in a prototypical interrogation setting.
Chapter 18: Study 3 Discussion

In this study I tested a theory-driven hypothesis that an interview setting designed to activate concepts of openness through metaphor-consistent design features would lead people to be more forthcoming than a prototypical interrogation room. I predicted that the custodial interrogation room would induce withholding, rather than forthcoming behavior, and that the room designed to prime openness would induce forthcoming, rather than withholding behavior. Consistent with research on embodied cognition and metaphoric transfer effects, I found that a larger room featuring various openness primes led interviewees to be more forthcoming compared to the smaller interview room modeled after a typical interrogation setting. This research offers the first empirical demonstration that the interview setting not only influences an interviewee's behavior, but that it can be specifically designed to promote forthcomingness.

While the open interview setting clearly influenced participants' forthcomingness—indeed, the modal response was to be entirely forthcoming, it is as important a finding that the custodial setting exerted a strong influence on their withholdingness—in this setting, the modal response was to be entirely withholding. These results are consistent with theories of embodied cognition and metaphoric transfer that larger, open spaces and openness reminders will promote openness of the self, and likewise, that smaller, constrained spaces will promote a closing of the self. Indeed, mediational analyses support that perceptions of spaciousness mediated the relationship between setting and disclosure, with perceptions of more space promoting disclosure. More, participants were unaware of its influence: None identified the purpose of the study. Though interrogation rooms are designed with the assumption that closer (i.e., smaller) space promotes closeness with the interviewer, I found the opposite—closeness was related to perceptions of trustworthiness, spaciousness, and all measures of disclosure. Participants in the
open interview room were also more comfortable, felt freer to leave, and wanted to leave less than those in the custodial setting. Taken together, these findings indicate that trust, openness, and closeness are related, and that a more spacious environment with symbols of openness can enhance each.

**Limitations and Future Directions**

While the findings show that the interview setting is an important factor in decisions about disclosing information, there are some limitations that must be considered. First, in addition to the openness primes, the open interview setting was larger and had more comfortable chairs and dimmer lighting. Indeed, interview room comfort was moderately correlated with room space, and it is conceivable that the effects of the openness primes are weaker without the space and comfort features. Future research should disentangle the effects of each to more systematically examine the contribution of each on decisions to disclose. While the results clearly show that the interview setting is an important factor, and it is promising for future research that interview settings can be designed constructively, the study was laboratory-based and the extent to which these findings will generalize to field settings is unknown. An important avenue for future research is to continue testing the effects of different types of settings in the lab, and to eventually test them in the field.

The relationship between disclosure and perceptions of the interviewer converge with the basic literature on self-disclosure—disclosure is related to trust, closeness, spaciousness and freedom. These findings suggest that a context designed to promote openness may be more suitable for rapport building and information elicitation than custodial-type settings. Research has long supported that rapport building and maintenance is important to facilitating communication in investigative interviews (Abbe & Brandon, 2014, 2013; Vallano & Schreiber
Camp, 2015). Analyses of field interviews with terrorists further demonstrate that use of rapport building techniques is critical to gaining information in intelligence settings (Alison, Alison, Noone, Elntib, & Christiansen, 2013; Alison, Alison, Noone, Elntib, Waring, & Christiansen, 2014). Future research should explore how physical features of the setting (e.g., comfort, space) and related interpersonal judgments (e.g., of trustworthiness, warmth) affect rapport and disclosure. Though the relative contribution of each should be systematically tested, it is promising that simple manipulations in space, décor, and comfort can enhance perceptions of an interviewer and lead people to be more forthcoming.
Chapter 19: The Effects of Spatial and Openness Primes on Openness with Information

In Study 3 I tested the effects that two interview settings had on interviewees’ disclosure. Consistent with research on embodied cognition and metaphoric transfer effects, I found that participants interviewed in an open setting were significantly more forthcoming with information compared to those interviewed in a custodial setting. The open interview setting clearly influenced participants’ cooperation—the modal response for participants in this condition was to be entirely forthcoming, while the modal response in the custodial condition was to be entirely withholding. These results cohere with theories of embodied cognition and metaphoric transfer effects: Larger, open spaces and openness reminders will promote openness of the self, and likewise, smaller, constrained spaces will promote a closing of the self.

In Study 3 I manipulated openness in different ways. One difference between the open setting and the custodial setting was the spatial layout of the room in which the interview took place: The open setting was more spacious and had windows, while the custodial setting was designed like a standard interrogation room (i.e., small and windowless). Moreover, the open setting also contained a number of objects intended to prime openness. For example, there were pictures on the wall featuring open spaces, and there were a number of open objects such as an open drawer in the room. The purpose of this was to maximize the strength of the openness manipulation. However, the nature of the manipulation presents a problem: I do not know whether the observed effects were due to the spatial layout of the room, or the presence of objects that primed openness (or both). In order to be able to advise practitioners about the optimal design of an interview room, it is necessary to disentangle the spatial manipulation from the object manipulations (i.e., the items designed to prime openness). The purpose of Study 4 is two-fold. First, I wish to replicate the findings obtained in Study 3. Second, I aim to examine the
effect of spacious interview rooms and openness-priming objects separately in order to understand the separate and combined effects of each on the disclosure of participants. Based on the literature and my findings in Study 3, I predict that:

H1: Participants interviewed in an open setting will view the interview setting more positively than participants interviewed in a custodial setting.

H2: Participants interviewed in an open setting will rate the interviewer more positively than participants interviewed in a custodial setting.

H3: Participants interviewed in an open setting will disclose more information than participants interviewed in a custodial setting.

H4: Participants interviewed in an open setting will be rated as more forthcoming than participants interviewed in a custodial setting.

H5: Participants interviewed in a room with primes will disclose more information than participants interviewed in a room without primes.

H6: Participants interviewed in a room with primes will be rated as more forthcoming than participants interviewed in a custodial setting.
Chapter 20: Study 4 Method

Participants

151 community members aged 18 to 70 years old ($M = 32.63$, $SD = 12.17$) were recruited via online advertisement to participate in exchange for $20. 55.6\%$ were female; by race/ethnicity, the sample was 38.4\% Black, 30.5\% White, 9.3\% non-White Hispanic, Latino, or Spanish, 9.3\% Asian, and 12.7\% Mixed or Other.

Procedure

All procedures were fully reviewed and approved by the Institutional Review Board. The procedure for this study was adapted from the previous studies; the manipulations are the only difference. Participants were randomly assigned to condition. After arriving to the lab and providing informed consent, participants engaged in a courier task. After delivering a flash drive to a confederate and being exposed to the details of a mock environmental terrorism plot, participants returned to the lab to be interviewed.

Manipulations

After completing their courier and information recognition tasks, participants were assigned to one of four conditions resulting from a 2 (spatial prime: open vs. control) x 2 (open objects prime: present vs. absent) between-subjects factorial design.

Participants in the control space were escorted to a prototypical interview setting (henceforth referred to as the custodial setting) and half were escorted to a larger interview room (henceforth referred to as the open setting). The custodial setting was a small, bare room with off-white walls, a two-way mirror with a shade drawn over 90\% of it, overhead fluorescent
lighting, two rigid chairs, and a small table. See Figure 5 for a picture of this setting. The *open setting* was a larger room (approximately four times the size of the control setting) with windows, off-white walls, blue tile flooring, and a bigger desk; the lighting and chairs in the open setting were identical to the control setting in order to control for differences in comfort.

Depending on the condition, the custodial setting and the open setting either contained or did not contain the following openness primes used in Study 3: on a small table was a clear, open water jug, an open cup, a small open drawer with an open lock, and an open book; in addition, three paintings hung on each wall—one, a picture of open water under an open sky, and on two other walls, pictures of open windows overlooking open water and open skies.

**Measures**

**Self-Report Measures**

Participants self-reported their forthcomingness, veracity, and perceptions of the interviewer, interview setting, and interview experience on 10-point bipolar scales.

**Verbal Behavior**

As in the previous studies, participants’ verbal behavior was measured in units of information. Information was broken down into non-critical and critical details, creating two scores: overall details about the organization and plot, and critical details about the organization and plot. The *overall details* measure includes critical details and non-essential details about the organization and the plot (e.g., the number of bombs to be used). The *critical details* measure includes the organization's name, its members, the specific plot to bomb a fracking site, the corporate target, the attack date, the location of the attack, and details about the escape plan.
There was also a 7-point continuous measure of *forthcomingness*, ranging from 1 (extremely withholding, i.e., did not even admit to meeting anyone new that day) to 7 (extremely forthcoming, i.e., disclosed everything s/he could remember); a score of 4 on this measure indicated an allusive statement about the organization's potential for violence without specifically detailing a bomb plot.

**Coding Procedure**

Three research assistants with experience coding statements coded a random 20% subsample of the videos (all coders were blind to condition). Interrater reliability analyses indicated high agreement among raters of this sample on all measures of information disclosure (all Cronbach’s α = 0.98 - 0.99). The remaining videos were randomly assigned and split between the coders.
Chapter 21: Study 4 Results

Self-Reported Experience

Factorial MANOVAs were used to test for main and interaction effects of room space and openness object primes on various aspects of peoples' interview experience. As predicted, people who were interviewed in a spacious room ($M = 2.90, SE = .29$) wanted to leave the interview to a lesser extent than people who were interviewed in a small room ($M = 3.63, SE = .28$), though this difference did not reach significance, $F(1,148) = 3.357, p = .07, \eta^2 = .022$. Hence, the first hypothesis was partially supported. Regarding expectations of the interview and perceptions of the interviewer, there was an unexpected main effect for the presence of primes on concerns for and perceptions of suspicion. Regarding their interview expectations, people who were interviewed in a room with primes ($M = 5.17, SE = .39$) reported being significantly more concerned about suspicion against them than people who were interviewed in a room without openness primes ($M = 4.19, SE = .32$), $F(1,148) = 4.662, p = .032, \eta^2 = .031$. Regarding their interview experience, people who were interviewed in a room with openness primes ($M = 7.18, SE = .28$) reported perceiving the interviewer as significantly more suspicious of them than people interviewed in a room without openness primes ($M = 6.09, SE = .29$), $F(1,148) = 7.316, p < .01, \eta^2 = .047$. There were no significant interactions between room space and openness primes on self-report measures of interview experience.

Information Disclosure

As expected, there was a significant main effect for the spaciousness of the room on disclosure of details. People who were interviewed in a spacious room provided significantly more overall details ($M = 6.21, SE = .57$) than people who were interviewed in a small room ($M = 6.00, SE = .57$).
= 4.64, SD = .58), $F(1,147) = 3.794, p = .05$, $\eta^2 = .025$. People who were interviewed in a spacious room also provided more critical details ($M = 3.24, SE = .33$) than people who were interviewed in a small room ($M = 2.42, SD = .34$), though this difference was not significant, $F(1,147) = 3.032, p = .08$, $\eta^2 = .02$. People who were interviewed in a spacious room were also more forthcoming ($M = 4.01, SE = .26$) than people who were interviewed in a small room ($M = 3.43, SD = .27$), though this difference was not significant $F(1,147) = 2.348, p = .13$, $\eta^2 = .016$. There were no significant interactions between room space and openness primes on measures of information disclosure.

**Mediational Analyses**

To follow up on the finding that the presence of primes increased concerns for and perceptions of the interviewer’s level of suspicion, I ran PROCESS Model 4 using bias-corrected 5,000 sample bootstrap confidence intervals (Hayes, 2013). Results of mediational analyses indicated that there was an indirect effect of perceptions of the interviewer’s suspicion on the number of overall details disclosed, $b = -.057, 95\% \text{ CI} [-.13, -.02]$, on the number of critical details disclosed, $b = -.038, 95\% \text{ CI} [-.07, -.01]$, and on forthcomingness, $b = -.028, 95\% \text{ CI} [-.06, -.01]$, such that perceptions of greater suspicion of the interviewer mediated the effect of the primes, in turn decreasing the odds of disclosure.

In sum, the analyses show that spaciousness influences disclosure, such that a more open space leads to greater disclosure.
Chapter 22: Study 4 Discussion

The present research is grounded in embodied cognition, which posits a bidirectional influence between bodily states and psychological processes. In this theoretical framework, many of the effects are metaphoric in nature. These effects have been demonstrated across a range of concepts and settings. Here, I attempted to replicate and extend my findings of metaphoric transfer effects in investigative interviews to examine the relative contribution of spatial and object openness primes.

In Study 3 some participants were interviewed in a room intended to activate the concept of openness, while others were interviewed in a control setting. Since previous research has not examined embodied cognition in interview settings, I manipulated openness in Study 3 in multiple ways in order to maximize the differences between the two conditions. In Study 4 I intended to separate the effects of spatial primes and object primes through a factorial design. The logic of extending my research in this fashion is not merely based on methodological concerns—from a practical perspective, it is valuable to know the mechanisms through which forthcoming behavior may be induced.

Limitations and Future Directions

Broadly, my results replicate the findings from Study 3: I did observe metaphorical transfer effects, in the sense that manipulations of openness made participants more forthcoming. However, while there were clear beneficial effects of the size of the room, the inclusion of objects priming openness did not have a similar effect, and apparently backfired by amplifying perceptions of the interviewer's suspicion. More, perceptions of space did not mediate disclosure as in Study 3. These results are not entirely easy to explain. From the theoretical perspective of
embodied cognition, activating the concept of openness, regardless of the method of activation, ought to have led to disclosure. A speculative explanation for the different effects of the two manipulations is that room size may be a more effective method of promoting disclosure because it changes the dynamic of the setting in a way that is both more subtle and pervasive. Simply put, it might have changed the atmosphere of the interview by creating a less constrained interpersonal dynamic, which translated into greater disclosure of information. Indeed, participants interviewed in the more spacious room expressed wanting to leave less than those interviewed in the custodial room, suggesting that the spaciousness of the interview room has pervasive effects on interviewees’ experience of the interview as a whole. It is plausible that alterations of the configuration of an interview room to make it more spacious can change the overall dynamic of the interview.

It is a question for future research to establish why priming openness through the inclusion of objects was not effective. Mediational analyses suggest that the presence of primes made the interviewer appear more suspicious, which in turn led people to disclose less information. In the small room particularly, the presence of primes also appeared to make the room feel smaller and less comfortable than the spacious room, which may result from it feeling too cluttered. It may be worthwhile to explore alternative manipulations of object primes, since there is a strong theoretical basis in embodied cognition to expect that they would have beneficial effects on the behavior of interviewees.

The ideal outcome would have been to find that both spatial priming and object priming had independent effects on information disclosure. From a practical perspective, establishing positive effects of object primes would have been valuable because it would mean that interviewers could promote forthcomingness from sources by simply inserting various objects
into an existing interview space. Manipulating the spaciousness of the interview room may be more challenging, and in some cases, conducting an interview in a spacious setting may not be feasible.

The finding that the spatial configuration and size of the interview room has a significant effect on information disclosure has important practical implications. The small room used as a control condition was closely modeled after a prototypical interrogation room. The finding that a less traditional setting is beneficial for information disclosure prompts consideration of existing dogma about the design of interview rooms in general. Based on the research conducted so far, it seems clear that prototypical interview rooms characterized by constrained space is not ideal, at least if the goal is to gather as much information as possible.

In conclusion, I found that larger interview rooms lead to greater disclosure of information, while the inclusion of object primes did not. While this research prompts further empirical questions, the practical implications are straightforward: If the aim of an interview is information disclosure, then considering the spatial attributes of the interview room itself is an important component. Moreover, such consideration may be exploited in order to facilitate forthcomingness from sources.
Chapter 23: General Conclusions

Summary of Research

A broad aim of this research was to explore the construct of disclosure and to examine nonconscious influences that may affect it. In Study 1 I found that disclosure entails concepts related to communication and trust, and that such concepts can be activated, leading people to disclose more information. In Study 2, I found that due to their semantic overlap, disclosure-related concepts can also be activated by priming openness. In Studies 3 and 4, I found that a metaphoric interview setting can lead people to disclose more information. Importantly, the influence is nonconscious: Across studies, the manipulations were undetected by participants.

In Study 1, participants primed with a secure attachment they have with someone whom they trust and confide in led them to be more verbally forthcoming than participants who were not primed. That is, thinking about someone whom they talk to led participants to talk and disclose more information to the interviewer. This finding further supports that mental representation occurs “offline,” and that merely thinking about a concept can activate its representation, making it more accessible (Boroditsky & Ramscar, 2002). Though the lack of support for the predicted transference effect obfuscates the mechanisms by which the prime influenced disclosure, it is reasonable that the prime exerted its effects in part by heightening the accessibility of related concepts. Though the observed effects were small, an increase in details and the general tendency for primed participants to be allusive rather than withholding is practically significant. Importantly, the observed gain in information did not occur at the expense of accuracy; priming led to an increase in details without an increase in errors.
In Study 2 I found that the interviewer can semantically structure the interview to facilitate disclosure. That is, when he used words related to openness to describe the nature of the interview, participants were more likely to disclose information than when he said the same thing with different words. There were no differences in self-report measures relating to people’s perceptions of the interviewer and interview, however, the tendency for participants in the experimental condition to both disclose more and complete more target words after being interviewed suggests that the effect is at least partly due to heightened accessibility of disclosure-related concepts.

In Study 3, I found that participants interviewed in a more spacious room designed to prime openness were more forthcoming with information about the conspiracy than participants who were interviewed in a prototypical custodial room. Consistent with theories of embodied cognition and metaphoric transfer, those interviewed in the open room were more “open” with information, and those interviewed in the small room were more withholding. The implication of this finding is obvious: The interview setting matters. To my knowledge, the only suggestions for room design come from Reid Technique manuals (Inbau et al., 2004), which suggest that interview rooms should be small because smaller spaces promote closeness and intimacy. Perspectives on attachments and metaphors support that intimacy is grounded in physical proximity, with literal closeness fostering interpersonal closeness (Lakoff, 2008). For this reason, I controlled for physical proximity by keeping the interviewer and interviewee 3 feet apart from each other, on the same side of the table in both rooms, with the interviewer closest to the door. Interestingly, closeness was significantly and positively related to openness for those interviewed in the open setting; openness was not associated with closeness for those interviewed in the
custodial setting. While this finding is limited to a single retrospective self-report item, it hints that feelings of closeness are more strongly related to openness.

In Study 4, the enhancing effect of a more spacious room and the undermining effect of a small room on disclosure were replicated. Unexpectedly, the openness primes did not have an enhancing effect, and seemed to backfire by increasing concerns for and perceptions of suspicion. While this effect should be further explored as it may not be the openness primes themselves but over-dosage that increased suspicion, the results from Studies 3 and 4 are consistent with predictions from embodied cognition that a more spacious room will promote a metaphoric “opening” of the self, while a constrained space will promote a “closing” of the self.

Implications

This research applies theories of implicit cognition towards a basic understanding and potential exploitation of factors influencing disclosure. Given the potent and robust nature of such theories, it is noteworthy that nonconscious influences have not been previously explored in investigative contexts. To date, research on investigative interviews and interrogations has primarily focused on the mechanisms and effectiveness of commonly employed techniques (for a review, see Gudjonsson, 2003), as well as the creation and testing of non-coercive techniques to enhance the reliability of memory, and to assist in credibility or veracity assessment. The latter line of research has drawn on various theories of social and cognitive psychology, but none of the work relies on implicit cognition, despite its influence in the basic social cognitive field (Fiske & Taylor, 2013). Thus, these studies represent the first step of a logical progression to investigate nonconscious influences that may complement existing interview approaches.
Research on investigative interviewing has primarily focused on criminal interviewing contexts, but intelligence interviewing differs from criminal interviewing, necessitating new scientific approaches to the problems associated with intelligence collection. With the present research, I aimed to create an experimental paradigm that simulated the nature of intelligence collection. Because intelligence gathering goals are relatively ambiguous and sources may not be motivated to cooperate, investigators must first facilitate disclosure. To examine influences in these contexts, experimental paradigms must include measures of disclosure. Researchers are beginning to address this need, creating information-gathering paradigms in which sources are semi- or uncooperative and the primary outcome is information disclosure (e.g., Granhag, Montecinos, & Oleszkiewicz, 2013; Oleszkiewicz, Granhag, & Kleinman, 2014).

Experimental paradigms typically assign participants to the role of guilty or innocent suspect, or cooperative witness, with clear instructions about how to behave in an interview (i.e., guilty suspects are to lie, innocent suspects are to tell the truth, and witnesses are to remember as much as they can). With the mock eco-terrorism conspiracy paradigm, I instead tried to simulate the experience of a different and common type of interviewee—a witness in the sense that s/he has information, but one who may not be motivated to cooperate. Here, participants were complicit, but not agentic, the organization’s cause (anti-fracking) and confederate were sympathetic, and the ambiguity of the danger of the plot permitted subjectivity in one’s appraisal of the plot and their involvement. Further, and more reflective of the way people make decisions about disclosing (Thibaut & Kelley, 1959), participants were instructed to consider various risks and benefits while planning their statements, rather than being explicitly instructed to lie, tell the truth, or remember everything they can. The purpose of these design choices is to mimic the
nebulous nature of many intelligence and law enforcement investigations, where people’s complicity, motivations, and considerations are complex.

Additionally, the interviews in this paradigm are semi-structured, permitting some flexibility for the interviewer in guiding conversation, leading to more natural interactions than scripted interviews with direct questions. The interviewer had three themes with specific questions in each to ask; thus, the interviewer would respond to the interviewee's disclosure rather than steer the interview in pursuit of specific details. If, for example, the interviewee first mentioned overhearing a plot, the interviewer could begin with the Plot theme, and after exhausting it, flesh out the interviewee's statement by transitioning into the Persons or Organization theme. If instead an interviewee mentioned meeting an environmentalist, the interviewer could ask questions within the Organization theme before inquiring about other persons or activities of the group. This allowed for a smoother dialogue, potentially reduced memory errors associated with off-topic questioning, and is more generalizable to the way that information-gathering interviews are conducted in real life.

Limitations

The findings from all six studies converge on the notion that nonconscious processes operate in intelligence interviewing contexts, and that they can be activated via mental representation, semantic manipulation, and environmental cues. There are limitations to the research though that must be noted. First, the research is laboratory-based, where the consequences for participants were trivial, thereby limiting conclusions about the generalizability of the effects in high-stakes and field settings. Replication of the effects using different samples and methods, followed by field validation is necessary for scientific research to impact practice
and policy (Brandon, 2011). Second, self-report measures did not generally elucidate the mechanisms by which priming exerted its influence. A transference effect was not observable in Study 1, nor were any mechanisms by which priming influenced disclosure in Study 2 or Study 4. It is possible that the meanings of some anchors (e.g., “withholding/forthcoming”) were not clear to participants, that there were too few items to sufficiently capture their perceptions and behavior, or that other aspects of the interview (e.g., a brief conversation phase) were used as the response referent instead of the intelligence collection phase. Though perceptions of spaciousness mediated the effect of the setting manipulation on disclosure in Study 3, conclusions about heightened accessibility and the mechanisms by which the other priming manipulations exerted their effects are speculative. Echoing the debate about the uncertainty of the mechanisms underlying priming effects on behavior (Bargh, 2006), future research should endeavor to add measures of theoretically relevant mediators and moderators.

Additionally, while the semi-structured nature of the interviews better reflects the dynamics of real-world interviews, the interviewer's behavior naturally varied somewhat with each participant, potentially introducing noise. Finally, my sample consisted of a diverse group of participants in terms of age, race, and ethnic background, however, most were Americans and all spoke English. Given the fact that many human intelligence interviews occur cross-culturally (Hartwig et al., 2014), these results need to be replicated in such settings, as it is possible that different norms and languages may influence the processes at play (Deignan, 2003).

Future Directions

These studies demonstrated two simple effects: first, concepts related to openness and disclosure can be primed via cognitive manipulations prior to and during an interview to
influence actual disclosure, and second, openness concepts can be activated through the interview environment to influence disclosure. There are many avenues for which to build upon these studies. A practical extension of the first two studies is to investigate additional methods of conceptual priming before or during an interview, and to create techniques that interviewers find easy and appropriate to employ. In Study 2 I found that semantic concepts could be activated through language, but research shows that concepts can also be activated through gestures and other behaviors that an interviewer can potentially manipulate at different stages of the interviewing process. It is also possible that complementary concepts can be simultaneously activated. For example, would activating concepts of warmth and security by giving an interviewee a warm meal reminiscent of home before an interview elicit information disclosure? Future research should also explore implicit influences on other aspects of interviewing. For example, concepts of interpersonal warmth are semantically related to concepts of rapport (e.g., mutual engagement, liking, trust, etc.). Analyzing the outcomes of real terrorist interviews, researchers have found that adaptive, collaborative interviewing techniques can enhance rapport, leading to greater information yield (Alison et al., 2013). Extending this, it is possible that priming warmth may influence a source’s perceptions of an interviewer, in turn enhancing rapport building and promoting disclosure.

The findings from all six studies are consistent with the small-to-moderate effects of priming on behavior. A question for future research is whether priming effects can be amplified by the presence of multiple primes. My finding that the room environment exerts influences on behavior in metaphor-consistent ways may be a fruitful avenue for research on the enhancement of primes. For example, would semantically priming openness during an interview in an open setting lead interviewees to be even more forthcoming? Another direction is to design and test
the influence of different room environments on disclosure and rapport building. For example, does the comfort of the room influence one’s comfort in the interview and willingness to cooperate? This question is of particular relevance to investigators who have little control over the interview room space and have to use a small room; in such cases, does manipulating the perception of a room’s spaciousness through design features (e.g., low shelves that make ceilings appear higher) have a comparable effect to an actually more spacious room? Complementing existing approaches toward interviewing, a direction for future research is to examine interactions (e.g., contrast effects) between the interview environment and questioning approach. This is particularly relevant to cases involving multiple interviews in which the interviewee may become bored with or have expectations about the environment that reduce engagement and cooperation.

While this paradigm was created to study intelligence collection from a single source, it may be adaptable for research on information-gathering approaches in law enforcement interviews, particularly those involving similar challenges. For example, investigations of gangs and other criminal organizations share many of the same challenges as intelligence collection, particularly those of uncooperative witnesses and the need for information about past and future events. Further study of how nonconscious influences facilitate (or inhibit) disclosure in criminal investigations is particularly important as policy changes encourage law enforcement interviewing practices to shift toward information-gathering models.

Intelligence collection is an information-gathering process with unique challenges that psychological science can inform upon. Drawing from principles of social influence, memory, communication, and decision making, researchers have shed light on various psychological processes that affect the dynamics and outcomes of investigative interviews. Applying well-
supported theoretical frameworks and extending existing methodologies can benefit our understanding of the psychological processes at play and lead to enhanced and novel approaches to human intelligence collection. Laboratory testing, replication, and field validation of basic influences and applied techniques are necessary towards scientifically based, effective, and ethical interviewing approaches that citizens and practitioners agree are critical to protecting national security interests.
Table 1

*Study 3 Correlation matrix of interviewee perceptions and measures of disclosure*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Forthcomingness</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>Interviewee perceptions</td>
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<td></td>
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<tr>
<td>1. Room space</td>
<td></td>
<td>.28**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2. Room comfort</td>
<td>.06</td>
<td></td>
<td>.48**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Want to leave</td>
<td>-06</td>
<td>.296**</td>
<td>-26**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Feel free to leave</td>
<td>.21*</td>
<td>.21*</td>
<td>.24*</td>
<td></td>
<td>-.296**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Interviewer trustworthiness</td>
<td>.19</td>
<td>.23*</td>
<td>.35**</td>
<td>-12</td>
<td>.21*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Closeness to interviewer</td>
<td>.21*</td>
<td>.37**</td>
<td>.37**</td>
<td>-24*</td>
<td>.15</td>
<td>.58**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information disclosure</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7. Overall details</td>
<td>.95**</td>
<td>.29**</td>
<td>-.01</td>
<td>-.08</td>
<td>.18</td>
<td>.197*</td>
<td>.24*</td>
<td></td>
</tr>
<tr>
<td>8. Critical details</td>
<td>.93**</td>
<td>.29**</td>
<td>.00</td>
<td>-.02</td>
<td>.14</td>
<td>.197*</td>
<td>.20*</td>
<td>.97**</td>
</tr>
</tbody>
</table>

*p = .05

**p = .01
Figure 1

Study 1: Forthcomingness of Non-Primed Interviewees
Figure 2

Study 1: Forthcomingness of Primed Interviewees
Study 2: Forthcomingness of Control Introduction Interviewees
Figure 4

Study 2: Forthcomingness of Open Introduction Interviewees
Figure 5
Custodial Setting
Figure 6
Open Setting
Figure 7

Study 3: Forthcomingness of Custodial Setting Interviewees
Figure 8

Study 3: Forthcomingness of Open Setting Interviewees
Appendix A

Pilot Study Reflection Instructions

We are interested in how you visualize people you are close to. Please think about a relationship you have that fits the following description.

A relationship with someone you trust. Someone who you feel comfortable telling personal or sensitive things to. A relationship in which you feel supported and secure.

Now, take a moment to visualize this person. What does this person look like? What is it like being with them? Think about yourself when you are with this person. How do you feel towards them? How do you feel because of them? Imagine they are here with you right now.
Appendix B
Word Completion Measure

R __ I N (RAIN/RUIN)
C __ __ M E (CRIME/CHIME)
R E P ____________ (REPORT/REPEAT)
V E R __ __ (VERSE/VERGE)
T E __ __ (TELL/TEST)
R __ __ S (RUNS/RUGS)
A P P _____________ (APPROACH/APPETITE)
O F F __ __ __ (OFFERS/OFFICE)
I N ________________ (INSIDE/INSURE)
L I ________________ (LISTEN/LICENSE)
C O M M ________________ (COMMUNICATE/COMMAND)
W __ __ D (WORD/WOOD)
D I S ____________ (DISCLOSE/DISTRUST)
C __ N T R __ L (CENTRAL/CONTROL)
E N __ A G E (ENGAGE/ENRAGE)
F __ __ E (FREE/FIRE)

E X P _____________ (EXPOSE/EXPLORE)

C O N __ __ __ (CONFIDE/CONTENT)

H O __ __ __ (HONEST/HOUSES)

I N ____________ (INSIDE/INDOOR)

O __ E N (OPEN/OVEN)

H __ __ E (HATE/HAVE)

S H A __ E (SHARE/SHAPE)

A D ____________ (ADMIT/ADORE)

G R __ P E (GRAPE/GRIPE)

S P E __ __ (SPEAK/SPELL)

H __ N T (HUNT/HINT)

T A __ __ (TALK/TALL)

B L __ N D (BLIND/BLOND)

C O __ __ E __ T I V E (COOPERATIVE/COMPETITIVE)

L __ __ E (LIFE/LOSE)

R E V _____________ (REVEAL/REVOLT)
B R _______________ (BROAD/BRAVE)

B E H __ __ (BEHIND/BEHAVE)

T R __ __ T (TRUST/TREAT)

B A __ K (BANK/BARK)
Imagine that you care about the environment, and that you are involved in an environmental organization called Warriors for Earth, whose mission is to “defend and protect the Earth by exposing and acting against those engaged in the Earth’s destruction.” Activities of this organization include sending petitions to legislators and staging protests and demonstrations, though some members of this collective are suspected to have been involved in a bombing that destroyed an Alaskan drilling site and left several workers injured. As part of your involvement in this organization, your task is to deliver a flash drive that contains a recording of instructions for the agent that you will meet in Room 2400. The person you will meet is part of this collective, and she needs the documents to help carry out a mission for the organization.

To get to Room 2400, please walk out the hallway you entered from, make a right, and then you will see Room 2400 on your left. Once there, introduce yourself and hand the flash drive to the agent.

After you have met with the agent and delivered the drive, please walk back to the lab for further instruction.
Hi, my name is Bree and I'm with a group called Warriors for Earth. Our main goal is to eliminate threats to Earth coming from energy companies. Their processes of releasing gas and oil from the Earth end up destroying it beyond repair. They contaminate the environment in ways that hurt people. One process is called fracking, it's been on the news a lot recently because of the environmental harm it causes. Basically, companies are injecting high pressure liquids into the Earth in order to fracture rocks and create conduits for natural gas and oil to stream through to wells. When this happens though, methane and other toxins are released into the water, up to the surface, and into the air, poisoning the water, ground, and air that life needs to survive. Many countries ban this practice now because of how many people and animals have died from serious respiratory problems and cancers that it's caused.

You should know if the water you drink is radioactive, or if the air you're breathing contains high levels of the most toxic gases on the planet. We are working with other groups around the world that are trying to get their governments to act on this problem. We want to expose the recklessness of these corporations and show people what the harm is. Information and demonstrations aren't enough, though anymore--it's time for serious action and we have a plan.

To participant: Sorry to keep you waiting. Not sure how much you heard of that conversation, but I hope you understand that you need to keep quiet about this. Can I trust you to do that? Thank you so much for your help, this is really important and all of us are extremely appreciative. You just helped save lives. I'll see you again soon.
Appendix E
Audio Recording Transcript

Very good, thank you. Now for each fracking site in Pennsylvania we have the locations and ranges of the cameras, security patrol routes, and warehouse gate codes. We’ve been watching the Horn River Basin site at the border of New York State for several years now and find that it is most vulnerable during middle of the night change of shifts during Labor Day weekend because there are far fewer guards on duty. So the night of August 30th Hawk and Red will drive out there on Highway 90— it’s safer because there’s less traffic and fewer businesses with customers or cameras that could possibly spot them. Once they get to the Northern Gas site they will go to the back gate, use the codes to gain entry, and go to Warehouse A where the diesel tankers are. There will be guards patrolling so Red will lookout while Hawk attaches the IEDs to the bottom of the tankers. He has 4 IEDs to plant within 20 minutes—he pulled off 3 bombs in 10 minutes in Alaska in 2008 and we are sure he can attach 4 in 20 minutes this summer at Horn River Basin, of course we hope without casualties this time. Once their mission is complete, they'll head to Nova Scotia to hide out as fisherman. We got them fishing and hunting permits and equipment to help with their cover... they'll stay there for a month or so until it's safe to come back to the states. Thank you for your help Bree, and please thank our friend who delivered these helpful documents to us.
Appendix F
Recognition Test

What is the name of the person you met today?

A. Bree
B. Britney

What is the name of the organization you and her are involved with?

A. Save the Earth
B. Warriors for Earth

Who are the other members of the organization?

A. Amber and Red
B. Hawk and Red

What is the name of a leader of this organization?

A. Zander
B. Mr. X

What is the name of the corporation that is the target of the attack?

A. American Gas Co.
B. Northern Gas Co.

Where is the location of the site the group wants to target?

A. Horn River Basin, PA
B. New York

On what date does the group intend to carry out the attack?

A. Memorial Day weekend

B. Labor Day weekend

What did the plot you overheard involve?

A. Protest at a conference on global warming

B. Bombing a fracking site

What is the organization’s plan for after the attack?

A. Claim responsibility immediately

B. Hide out as fisherman in Nova Scotia
Appendix G
Interview Instructions

Earlier today, intelligence officials discovered a plot to attack a major corporation. The interviewer knows that you’ve met with someone involved and the interview concerns the details of your interaction.

Being cooperative is a good strategy to minimize your involvement and gain favor, plus the interviewer will probably reward you if you provide information. Be cautious however that the more information you reveal, the more suspicious he may become of your involvement, which may result in further interviewing and investigation.

You have a few minutes to prepare for the interview. Think about what you are going to say.

Please note that the interviewer is well aware that you are participating in an experiment, and that there is no real suspicion against you. However, we appreciate if you help us make this study as realistic as possible. Do not tell the interviewer that you participated in an experiment.

Of course, you are free to leave the experiment at any time, without any consequences.
Appendix H
Priming/Concentration Task Part 1

Research suggests that concentrating on positive experiences with people can improve their decision making, which may benefit you in an interview. Please reflect deeply on a relationship you have that fits the following description.

A relationship with someone you trust. Someone who you feel comfortable confiding in. A relationship in which you feel supported and secure.

Now, take a moment to visualize this person. What does this person look like? What is it like being with them? Think about yourself when you are with this person. How do you feel towards them? How do you feel because of them? Imagine they are here with you right now.
Appendix I
Priming/Concentration Task Part 2

In the space below, please write about why you trust and feel secure with the person you visualized and thought about. Please note this is for the purposes of enhancing concentration, and no one will read what you write.

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
Appendix J
Interview Script

Introduction

Interviewer briefly introduces self, stating name, title, and purpose of interview. Alludes to incentive for cooperation.

Open Ended Question

Interviewer asks subject to share with him details of where s/he has been and what s/he has done that day. Interviewer may use his discretion to ask for elaboration on any response, but should begin specific questioning on a theme once interview subject mentions something relevant.

Specific Questioning Phase

Interviewer asks specific questions within themes. The order of theme development can vary, but all of the following questions must be asked:

Organization Theme:

1. What is the name of the organization?
2. What is the mission of the organization?
3. What is the command structure of the organization?
Plot Theme:

1. Is this organization planning any specific activity? [If yes, do you know any details about this?]
2. Why are they planning this?
3. Who is involved?
4. What is the target?
5. When is [the plot, if mentioned] supposed to occur?
6. Where is [the plot, if mentioned] supposed to occur?
7. Do they have plans to avoid being caught?

Persons Theme:

1. Have you had contact with anyone from this organization? [If yes, who?]
2. Do you know anyone else who is involved in this organization? [If yes, what are their roles?]
3. Do you know who the leader of this organization is?
4. Do you know anything about the backgrounds or activities of any of these members?

Interview Closing

Thank you for your help with this investigation. In the spirit of openness, is there anything else you can share with me?
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