Chapter 2
Psychological Processes Underlying True and False Confessions

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Overview

Chris Ochoa was told he would receive the death penalty for the crimes of which he was accused, but that if he confessed he would live. Eleven and a half years later, DNA testing exonerated Ochoa of any connection to the crimes for which he was imprisoned. Keith Brown was charged with the sexual assault of a woman and her 9-year-old daughter after falsely confessing due to high levels of pressure exerted by investigators. Brown served 4 years of a 35 -year sentence before he was exonerated via DNA testing. Finally, Nathaniel Hatchett falsely confessed to rape and robbery, serving 10 years in prison before he was exonerated due to DNA testing. Nathaniel was told that if he cooperated (and confessed) he would be allowed to go home. Chris Ochoa, Keith Brown, Nathaniel Hatchett; these three men are but a sample of the growing problem of false confessions within the legal system and together they served 25.5 years in prison as innocent men (The Innocence Project 2010).

There is a substantial need to determine the mechanisms under which an individual may be enticed to falsely confess to a crime that he or she did not commit. In an effort to address these questions, previous research has investigated a variety of situational and dispositional factors under which a false confession may occur. For example, research has demonstrated that certain police interrogation techniques have the potential to elicit false confessions (Meissner et al. 2012), and that being innocent can actually place interviewees at risk in interrogation settings (Kassin 2005). Furthermore, it has been shown that certain individual difference factors

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such as adolescence or mental retardation may place interviewees at risk for false confessions (Drizin and Leo 2004; Owen-Kostelnik et al. 2006). There are many excellent reviews of the false confession literature (e.g., Drizen and Leo 2004; Kassin et al. 2010; Lassiter and Meissner 2010; Leo 2008), and we encourage interested readers to access these for further details. To date, many of the recommendations for preventing false confessions in the USA have focused on identifying and discouraging interrogation approaches that may lead to false confessions, and advocate for the requirement of videotaping interrogations to provide courts with an objective record of the approaches used.

Over the past few years, researchers have also called for a more positive approach where the aim is to offer scientifically based techniques that might improve the diagnostic value of confessions (e.g., Evans et al. 2012; Meissner et al. 2010a). To this end, our laboratory has conducted a number of studies designed to assess the effectiveness of various interrogative approaches on confession likelihood (Horgan et al. 2012; Narchet et al. 2011; Russano et al. 2005a). These experimental studies used a paradigm designed to model the psychological processes experienced by a suspect (Russano et al. 2005a), and aimed to identify interrogative approaches that would elicit the greatest likelihood of true confessions from guilty individuals while limiting the likelihood of false confessions from innocent individuals. Further, our research has sought to better understand the psychological processes that might distinguish true and false confessions. Various psychological or decision-making models have been proposed to account for the role of social, cognitive, and affective factors in confession provision; however, little empirical data have been generated to assess the validity of the proposed theories or their relation to current interrogative practices (cf. Madon et al. 2013; Narchet et al. 2011).

The current chapter will provide a brief review of the relevant theoretical approaches to understanding confessions and describe the variety of internal and external pressures that individuals may experience in the interrogation process. We consider decision-making approaches that focus on the consequences of confession as a key motivator (Hilgendorf and Irving 1981), as well as the role of emotional or affective responses resulting from the interrogative process (Jayne 1986; Madon et al. 2013). We also assess the potential influence of internal experiences of guilt, remorse, and accountability, which may lead a suspect towards a "need to confess" (Berggren 1975; Reik 1959), and the influence of external social pressures to comply with the demands of an interrogator (Davis and O'Donohue 2004). Finally, we discuss the framework offered by Gudjonsson (2003) that brings together these and other motivational factors.

After considering the various theoretical accounts of confession, we discuss field studies that have begun to assess key psychological motivators for providing true versus false confessions (Sigursdon and Gudjonsson 1996; Redlich et al. 2011). We then present a meta-analysis of the various social, cognitive, and affective factors leading to confession across six experimental laboratory studies we have conducted using the Russano et al. (2005a) paradigm, contrasting our laboratory findings with those of prior studies. We synthesize this research by proposing a process model, highlighting key differences in the psychological states that may lead to true and false

confessions. Our thesis is that true and false confessions may be distinguished by several key psychological factors, and that an understanding of such factors can lead to the development of diagnostic interrogative approaches. Specifically, we propose that guilty individuals can be driven to confess based upon their perceptions of the evidence against them and certain internalized feelings of guilt, accountability, and responsibility for their actions. In contrast, we propose that false confessions are driven by innocent suspects' perceptions of the potential consequences of confessing and the social pressures placed upon them to comply with an interrogator's request for a confession.

Research on True and False Confessions

The false confession phenomenon has generally been studied in two domains: in the field via either observations of law enforcement interrogations or surveys of convicted felons, or in the laboratory. Both field and laboratory work have advantages and drawbacks (Meissner et al. 2010b). Field research, while high in external validity (the degree to which the parameters of a study correspond to the relevant context) has a weakness in the lack of ground truth that would support internal validity of the findings. Without knowledge of whether a suspect is factually innocent or guilty, or whether the prisoner who claims to have made a false confession actually did so (see Gudjonsson 2010), findings from the field will always require some form of validation in alternative contexts. The advantage of conducting experimental research in the laboratory, in contrast, is principally high internal validity resulting from control over the study context and knowledge of ground truth (Meissner et al. 2010b). Experimental laboratory research, however, generally lacks external validity, and researchers must seek to induce some degree of psychological realism in the laboratory if they wish to generalize their findings. Ultimately, the absence of a perfect scientific methodology leads researchers to seek convergent validity from findings across multiple contexts and approaches.

The classic experimental paradigm used to study false confessions was pioneered by Kassin and Keichel (1996) in their well-known "ALT-key paradigm". In this novel experiment, Kassin and Keichel asked college students to complete a typing task in pairs. Unbeknownst to the participant who was given the role of the typist, the other participant, whose role it was to read out a list of letters, was a confederate to the experiment. The researchers explained that due to a glitch in the computer program participants should refrain from pressing the ALT key during the task, as doing so would crash the computer and could lead to the loss of all data. Although none of the students hit the ALT key, the computer would always crash during the experimental session and the typist would subsequently be accused of pressing the ALT key. For half of the participants in this study, the confederate would claim to have seen the typist press the ALT key just before the computer crashed, while for the remaining half the confederate would claim not to have seen anything relevant. Following several direct accusations made by the researcher, participants were asked to sign a piece of paper stating that they were responsible for pressing the ALT key and causing the computer to crash. An overwhelming 69 % of participants signed

this "false confession" statement. Furthermore, participants were significantly more likely to provide a false confession when the interrogation technique of the other participant presenting false incriminating evidence was used.

Within the experimental literature, there have been numerous replications of the Kassin and Keichel (1996) paradigm and findings. For example, researchers have demonstrated that when confronted with false evidence of the misdeed, by way of a "witness", participants will sign a false confession even when doing so results in a financial penalty or having to return to the laboratory for 10 hours (Horselenberg et al. 2006; Redlich and Goodman 2003). Redlich and Goodman (2003) also found that younger participants were more likely to sign a false confession for pressing the ALT key. Klaver et al. (2008), on the other hand, investigated whether cultural and personality differences may influence the likelihood of a false confession. They found that having a compliant personality significantly increased the risk of false confession, as did the use of minimization interrogation techniques. Although Kassin and Keichel's ALT-key paradigm has been highly successful at allowing researchers to understand the false confession phenomenon, it also has certain limitations. For example, all of the participants are factually innocent—that is, none have pressed the ALT key, accidently or otherwise. Thus, the paradigm can only provide an assessment of factors that lead innocent (but not guilty) participants to provide a confession (e.g., Schacter 2003). Further, while the "crime" in the Kassin and Keichel paradigm is highly plausible—it is easy to imagine that one may accidentally have pressed the ALT key—it lacks ecological validity in that crimes are generally committed with both volition and a memory trace for the act (with the possible exception of cases involving psychological illness and/or pathology).

To address these shortcomings, Russano et al. (2005a) created a new experimental procedure for studying interrogations. They attempted to navigate the ethical challenges involved in studying confessions in the laboratory while preserving high psychological realism and successfully transposing key psychological processes believed to operate in the decision to confess. In their "cheating paradigm", they had participants enter the laboratory believing they were taking part in a study assessing the problem solving performance of individuals and teams. To that end, they and a partner would each complete a series of problems: for some of these problems, they would work together to reach an answer, while for the remaining problems, they would work individually and not seek assistance from their partner. The second participant in this paradigm, however, was a confederate who would either ask the (real) participant for the answer to one of the individual questions (guilty condition) or simply complete the problems on their own without asking for help (innocent condition). Upon completing the problem-solving tasks, the experimenter would reenter the room to collect and evaluate their responses. In each case, however, when the experimenter reentered the room he/she would claim that a problem occurred such that he/she needed to speak with each of the participants separately. Following a brief delay, in which the participant is isolated, the experimenter rejoins the participant and begins an interrogative process that accuses the participant of sharing answers and breaking the rules of the experiment. In their initial study, Russano et al. assessed the influence of direct offers of leniency (a "deal") and implications of leniency (minimization).

It is important to note that half of the participants were factually guilty of sharing answers and half were not, therefore, the Russano et al. paradigm afforded the first opportunity to assess the underlying mechanisms of true and false confessions from the same sample. In this way, this paradigm investigated the diagnosticity of confession evidence gained under different interrogation techniques. When participants were offered both the deal and the minimization tactics, 87 % of those who were guilty truthfully confessed and 43 % of those who were innocent falsely confessed (Russano et al. 2005a). When comparing these findings to the condition where no deal and no minimization techniques were used, truthful confessions drop from 87 to 46 % and only 6 % of innocent participants falsely confessed (Russano et al. 2005a).

Further iterations of the Russano et al. paradigm within our laboratory have evaluated a number of other aspects relating to the interrogative context. For example, Narchet et al. (2011) examined the influence of investigator biases on the likelihood of false-confession provision, finding that investigators who believed the participant to be guilty, employed more aggressive and manipulative tactics than the interviewers who believed the participant to be innocent, which was associated with a higher likelihood of false confessions from innocent participants. Horgan et al. (2012) investigated perceptions of the influence that certain interrogation techniques have on confession likelihood, finding that while participants were able to recognize that certain interrogation techniques were designed to manipulate individuals into confessing, they were not able to recognize that the techniques would increase their own false confession likelihood. Horgan et al. (2012) also found that manipulating the consequences of confessing significantly increased the likelihood of an innocent participant falsely confessing and significantly reduced the likelihood of a guilty participant confessing. Finally, Meissner, Russano, Rigoni, and Horgan (2011) conducted two experiments to compare the diagnosticity of confession evidence gained either via accusatorial interrogation techniques (which involve a combination of minimization and maximization approaches to interrogation), or information-gathering approaches (which involve a rapport-based approach to interrogation utilizing positive confrontation and elicitation strategies). Meissner et al. (2011) found that the diagnosticity of confession evidence was highest in the information-gathering conditions—in other words, false confessions were the lowest and true confessions were the highest when participants were interviewed with information-gathering approaches (see Meissner et al. 2012). The Russano et al. paradigm has proved useful for simulating the interrogative context and the generation of true and false confessions in a controlled laboratory setting. As will be discussed below, the paradigm also affords an opportunity to understand the psychological processes that underlie decisions to (truthfully or falsely) confess.

Theories of Confession

A variety of theories have been proposed to account for why an individual may confess (see Gudjonsson 2003). Some theories are based upon internal accountability models (e.g., Reik 1959) while others take into consideration external situational

factors that may influence the decision process of the interviewee (e.g., Gudjonsson 2003; Hilgendorf and Irving 1981). Unfortunately, existing theories generally fail to distinguish between processes that may lead to true versus false confessions, and little empirical data have been collected to offer validation or refinement of these accounts.

Internal Accountability Models of Confession

Perhaps the first and most controversial model of confession, proposed by Reik (1959), suggests that when one has transgressed against a societal or moral norm, a deep-seated internal feeling of guilt is experienced. This guilt is believed to lead to high levels of anxiety and discomfort in transgressors, resulting in their seeking an authority figure to whom they can confess, thereby alleviating the guilt (Gudjonsson 2003). This theory is based in part on the work of Freud (1916), and suggests a nonconscious motivation may be responsible for seeking resolution of the guilt and anxiety that is experienced. Although the model has been viewed as controversial, there is good reason to believe that internal accountability mechanisms may underlie truthful confessions from guilty individuals. For example, Horgan et al. (2012), Narchet et al. (2011), Redlich et al. (2011), and Sigurdsson and Gudjonsson (1996), have all found evidence, either in the laboratory or in the field, for the role of guilt or remorse in the provision of a true confession.

Decision-Making Models of Confession

Decision-making models, such as that proposed by Hilgendorf and Irving (1981), argue that interviewees calculate a cost-benefit ratio when determining whether or not to confess. In an interrogation context, suspects are believed to consider the possible courses of action currently available to them, the proximate and distal benefits and costs associated with such actions, and the probabilities associated with such benefits and costs. With this information, suspects could determine the utility of each action and generate a confession decision based upon this information, selecting the action that leads to highest levels of gains or utility value (Gudjonsson 2003). It is important to note here, however, that the weights assigned to this assessment involve the suspect's subjective perception of the situation—a perception that can be manipulated by an interrogator to increase the likelihood of a decision to confess. For instance, if the interviewee determines that confessing may increase the likelihood that he/she will not be prosecuted for the act, while not confessing would result in further investigation and prosecution, then a decision to confess may be more likely. Psychological manipulation of a suspect's perception of the evidence or the consequences associated with confession has been shown to influence the decision to confess in both guilty and innocent suspects (e.g., Horgan et al. 2012; Horselenberg et al. 2006; Russano et al. 2005a).

The Use of Anxiety and Social Pressure to Elicit a Confession

The desire to escape and/or terminate an uncomfortable situation is one that is played upon by some interrogation models (see Ofshe and Leo 1997 for a categorization of false confessions obtained via social pressure as stress compliant; see also Davis and O'Donohue 2004; Jayne 1986). One of the first to argue that stress and anxiety play a role in interrogation was Jayne (1986), who noted that anxiety and negative emotional states during interrogation are experienced by suspects when they are deceptive about their guilt. To that end, Jayne (1986) argued that any anxiety a suspect experiences should be increased by the interrogation tactics in order to increase the discomfort of being deceptive. A suspect's decision to confess is then associated with a reduction in the experience of negative emotions, such as anxiety and fear. Accusatorial approaches to interrogation rely upon this theory, often seeking to induce social pressure (and therein perceived anxiety) through repeated accusations of guilt and maximization of the perceived evidence against the suspect. While such approaches may lead to the elicitation of true confessions from some guilty individuals, a growing body of research suggests that such tactics may also induce false confessions from the innocent (see Meissner et al. 2012).

It may be useful to pause here and note an important distinction between models of anxiety and social pressure and models of internal accountability. While they may appear similar, a distinguishing characteristic involves the source of the psychological experience. Internal accountability models posit that guilty individuals will naturally experience feelings of remorse, guilt, and accountability for the misdeed; in contrast, anxiety and social pressure models suggest that interrogation tactics must be applied to induce stress and anxiety on the part of the suspect. In this way, the role of internal versus external motivations to confess may offer the potential to distinguish between the mechanisms leading to true versus false confessions, respectively (see Horgan et al. 2012; Narchet et al. 2011; Redlich et al. 2011; Sigurdsson and Gudjonsson 1996).

Cognitive Behavioral Model

A cognitive behavioral model was proposed by Gudjonsson (2003), which incorporates many of the theoretical perspectives discussed above. This model argues that the likelihood of confession is best understood as a relationship between the antecedents and consequences of providing a confession. For example, an antecedent to confession could involve social isolation due to confinement, emotional distress, and/or situational factors such as the presence or absence of a lawyer. Gudjonsson proposes that suspects will consider both the short-term and long-term consequences of such antecedents to inform their decision to confess. Consistent with other decision-making accounts (e.g., Hilgendorf and Irving 1981), a suspect's perceptions of these factors can be manipulated by the interrogator. The model includes a variety of psychological, criminological, and situational factors that may lead to confession, and affords certain predictions regarding factors that increase the likelihood of false confession.

Theory Testing: Empirical Assessments of True and False Confessions

Although psychological theories of confession, as described above, have been proposed over the years, little empirical data have been used to validate the psychological processes suggested as leading to confession. Two surveys of convicted felons, however, begin to distinguish between the motivations leading to true and false confessions. In the first study, Sigurdsson and Gudjonsson (1996) surveyed prisoners in Iceland using the Gudjonsson Confession Questionnaire (the GCQ) regarding self-reported motivations for any false confessions they admitted to giving, and compared these to their current offense, which they reported truthfully confessing to. These authors found that external mechanisms of perceived pressure to confess, intimidation by the interviewing officers, and fear of the consequences of not confessing were significantly higher for interrogations leading to false confessions. Alternatively, true confessions were more likely to result from internal pressures, such as confessing to relieve the distress and guilt feelings caused by the crime committed. Redlich et al. (2011) conducted a similar survey with American prisoners regarding the factors leading to true and false confessions using a revised form of the GCQ. Consistent with prior work, Redlich et al. found that when prisoners spoke of their false confessions they cited factors related to external pressures, such as social pressure by the interrogator to confess, as well as perceived short-term gains in confession (such as terminating the interrogation), and perceived leniency if they confessed. However, when these prisoners described interrogations leading to true confessions they were more likely to cite internal pressures, such as feelings of guilt, as well as perceptions of the evidence held against them and feelings that their involvement in the crime would inevitably be revealed.

As mentioned above, the drawback to field surveys such as those of Sigurdsson and Gudjonsson (1996) and Redlich et al. (2011), is that it is impossible to determine whether the false confessions reported actually occurred (Gudjonsson 2010). Thus, it is important to seek convergent validity for such findings by relying upon alternative methodologies, such as experimental laboratory studies. Over the past decade, our laboratory has engaged in studies seeking to understand the psychological mechanisms leading to true and false confessions. Since the introduction of the Russano et al. (2005a) paradigm, we have conducted five empirical studies assessing factors that may influence confessions (Horgan et al. 2012; Meissner et al. 2011; Narchet et al. 2011; Russano et al. 2005a, b). In addition to manipulating key facets of the interrogation context, we have also asked participants to complete a questionnaire that evaluates the psychological basis for their decision to confess (or not). Five key areas, relating to the theories described previously, have been explored in these studies, including participants' perceptions of: affective or anxiety-based responses to interrogation; the consequences associated with confessing (or not); the strength of the evidence (or proof) against them; feelings of guilt, shame, responsibility, or accountability; and the external, social pressures being placed upon them to provide a confession. Independently, data from these studies appear to support a pattern

of findings similar to that of Sigurdsson and Gudjonsson (1996) and Redlich et al. (2011). For example, both Narchet et al. (2011) and Horgan et al. (2012) found evidence suggesting that true confessions were associated with internal motivations to resolve feelings of guilt, shame, or accountability, while false confessions were motivated by external, social pressures being placed upon the participants in the interrogative context.

In the next section, we present a meta-analysis assessing the associations between these five factors and the likelihood of true and false confessions across all six studies. Our interest is to determine whether these laboratory studies might replicate the findings of prior field surveys, involving prisoner samples and whether unique patterns might emerge that distinguish the motivations associated with true versus false confessions. Our hypothesis is that, consistent with prior research, external social pressures will be associated with false confessions while internal motivations to resolve feelings of guilt, shame, or responsibility will be associated with true confessions. In contrast, we also expect that both true and false confessors will be influenced by their perceptions of the consequences associated with the decision to confess (or not). Finally, perceptions regarding the strength of evidence or proof against the participant (suspect) are expected to influence true confessions. To the extent that presentation of evidence is manipulated by the interrogator, it is also possible that innocent participants may rely upon their perceptions of proof in determining whether or not to provide a false confession.

Meta-Analysis of Psychological Factors Leading to True and False Confessions

Given the limited empirical data assessing current theories of confession and the need to evaluate psychological factors that might distinguish true and false confessions, the current meta-analysis sought to assess the association between key psychological factors self-reported by participants in our experimental laboratory studies and the likelihood of confession by innocent and guilty participants.

Method

Sample of Studies. Six experiments from five empirical studies conducted in our laboratory were included in this analysis (Horgan et al. 2012; Meissner et al. 2011; Narchet et al. 2011; Russano et al. 2005a, b). All studies employed the Russano et al. (2005a) paradigm in which participants were randomly assigned to a guilt or innocence condition—a total of 555 guilty participants and 519 innocent participants were included for this analysis. Each of the studies manipulated certain factors relevant to an interrogation, such as the interrogation approaches that were employed or the knowledge of the experimenter prior to interrogating the participant about the alleged act of cheating. In each study, participants were provided with a debriefing

questionnaire assessing various factors that might influence their decision to confess (truthfully or falsely). Below we provide a brief description of each study.

Horgan et al. (2012): In this study, the authors explored the use of interrogation tactics that manipulate a suspect's perception of the consequences associated with confessing. Using the Russano et al. (2005a) paradigm, the study found techniques that psychologically manipulate the perception of consequences were significantly less diagnostic of guilt when compared with approaches that retain an accusatorial approach but do not influence participants' perception of consequences.

Meissner et al. (2011; unpublished manuscript): Across two experiments, the authors examined the use of information gathering and accusatorial methods using the Russano et al. (2005a) paradigm. Both experiments observed a consistent advantage for information-gathering approaches in yielding more diagnostic outcomes.

Narchet et al. (2011): This study assessed the influence of interrogators' perceptions of the guilt or innocence of the suspect on the likelihood of eliciting true versus false confessions. Using the Russano et al. (2005a) paradigm, the authors found that a belief in guilt led interrogators (experimenters) to elicit more false confessions and to engage in a process of behavioral confirmation. The study also demonstrated that information-gathering approaches significantly reduced the likelihood of false confessions.

Russano et al. (2005a): In the first study of its kind, the authors engaged participants in a problem-solving task and manipulated whether participants were induced to cheat on the task (or not) with a confederate. As mentioned above, participants were later confronted with the accusation of cheating and were interrogated using minimization techniques, an explicit deal of leniency, both minimization and a deal, or neither (the control condition). The ratio of true to false confessions decreased with the use of accusatorial methods.

Russano et al. (2005b; unpublished manuscript): Using the Russano et al. (2005a) paradigm, this study assessed the influence of presenting false evidence to guilty and innocent participants on the likelihood of eliciting true versus false confessions, respectively. Participants in the false evidence condition were shown a written confession statement that appeared to have been signed by a second participant (a confederate to the experiment) prior to being asked to sign their own confession statement. There was no significant effect of the presentation of this false evidence.

Psychological Predictor Variables. Five psychological factors were assessed across the studies. First, a combination of items relating to the degree of stress, worry, and anxiety experienced by participants were combined to yield a factor referred to as *affect*, reflecting participants' emotional reaction to the interrogation. Four items related to participants' perceptions of the consequences of confessing and not confessing were combined to yield a factor referred to as *consequences*. Two items relating to participants' perceptions regarding the strength of any evidence against them and proof of their guilt were combined to produce a factor referred to as *evidence*. Three items probed participants' feelings of guilt, remorse, and responsibility for the alleged act as a product of the interrogation—these items were combined to yield a factor referred to as *guilt*. Finally, participants were asked to

Table 2.1 Mean weighted effects sizes and 95 % confidence intervals for the association between psychological factors and the likelihood of false and true confessions

	False Confessions-Innocent				False Confessions-Innocent			
	N	K	r	95 % Cl	N	k	r	95 % Cl
Affect	371	5	0.046	(− 0.058, 0.150)	407	5	*0.115*[a]	*(0.016, 0.214)*
Consequences	371	5	*0.139*[a]	*(0.035, 0.243)*	407	5	*0.162*[a]	*(0.063, 0.261)*
Evidence	371	5	0.071	(− 0.033, 0.175)	407	5	*0.140*[a]	*(0.041, 0.239)*
Guilt	371	5	0.028	(− 0.076, 0.132)	407	5	*0.203*[a]	*(0.104, 0.302)*
Pressure	371	5	*0.295*[a]	*(0.207, 0.382)*	555	6	0.064	(− 0.021, 0.148)

[a] denotes a significant effect

rate the degree of pressure placed upon them by the interrogator and interrogation context to provide a confession, producing a factor referred to as *pressure*. Items varied slightly across studies, though all five factors were present in five of the six experiments assessed here. The original Russano et al. (2005a) study included only the items relating to *pressure*.

Estimate of Effect Size and Meta-Analytic Approach. Our primary measure of effect size was Fisher's Z_r, calculated as a measure of association between each of the key psychological factors (described above) and the likelihood of true and false confession, respectively. This effect size was calculated by creating a path model in each study that controlled the direct and indirect effects of the study manipulations while also estimating the correlations among the psychological process predictors. Fisher's Z_r was then calculated based upon the critical ratio test for the direct effect of each psychological process predictor on true and false confession samples independently. Our meta-analysis involved estimating the mean weighted effect size for each psychological predictor across the sample of experimental laboratory studies using a fixed effects model (Hedges and Olkin 1985; Johnson et al. 1995). Mean weighted effects sizes were then back transformed into *r* coefficients to facilitate interpretation.

Results

Table 2.1 provides the mean weighted effect sizes and 95 % confidence intervals calculated for the association between each of the psychological process factors and the likelihood of true and false confessions, respectively. Positive values indicate an increased likelihood of confession being associated with an increase in the psychological response. Below we discuss the pattern of findings for true and false confessions, and we describe the robustness of the findings by presenting a fail-safe *N* calculation for all significant effects.

False Confessions. Across our sample of experimental laboratory studies, false confessions were associated with participants' considerations of the consequences associated with confessing and with their perceptions of the external social pressures

being placed upon them by the interrogator and the interrogative context. The influence of *consequences* was small, accounting for only 2 % of the variance in false confessions, and appeared potentially unstable with a $N_{FS} = 4$. In contrast, the influence of perceived *pressure* was rather robust ($N_{FS} = 60$) and accounted for nearly 9 % of the variance in false confessions. The role of external social pressure and perceptions of the consequences associated with confession are rather consistent with the literature on false confessions in general (cf. Gudjonsson and Kassin 2004; Kassin et al. 2010; Lassiter and Meissner 2010) and with prior surveys regarding psychological factors associated with false confessions (Redlich et al. 2011; Sigurdsson and Gudjonsson 1996). The psychological factors of *affect*, *evidence*, and *guilt* proved nonsignificant predictors of false confessions across studies.

True Confessions. Much like their innocent counterparts, guilty participants also showed a significant association between consideration of the *consequences* associated with confession and the likelihood of providing a true confession. This effect accounted for nearly 3 % of the variance and appeared somewhat robust ($N_{FS} = 8$) given the small sample of studies here. Beyond this effect, however, a distinct pattern emerged for true confessions suggesting that different psychological mechanisms may be associated with decisions by guilty compared to innocent participants. Participants' emotional responses to the interrogation (*affect*) were significantly associated with true confessions, though this small effect accounted for only 1 % of the variance and was quite unstable ($N_{FS} = 1$). Although we note that self-report assessments of affective responses can be problematic, recent research by Guyll et al. (in press) using physiological data is rather consistent with the role of affect in guilty participants. True confessions were also associated with perceptions of the *evidence* that may be available to investigators, a small effect accounting for 2 % of the variance with $N_{FS} = 7$. Finally, and most importantly, true confessions were significantly associated with participants' perceptions of responsibility, remorse, and *guilt*. This effect accounted for 4 % of the variance and appeared rather robust ($N_{FS} = 17$). Consideration of these factors, particularly the role of evidence and internal psychological motivations, is rather consistent with prior research (Redlich et al. 2011; Sigurdsson and Gudjonsson 1996) and suggests that certain factors may be useful for distinguishing true and false confessions.

Discussion: Theory and Application

The present meta-analysis sought to further clarify the underlying psychological processes that may increase the likelihood of true and false confessions elicited under the Russano et al. (2005a) paradigm. Using data collected in our laboratory over the last decade, we aimed to test predictions of the relevant theoretical models and, more specifically, the potential role of internal versus external motivations found in prior field surveys by Gudjonsson and Sigurdsson (1996) and Redlich et al. (2011). Consistent with the prior literature, our meta-analysis suggested that some of the factors to which guilty and innocent persons attend during interrogation overlap, such

as a perception of the consequences of providing a confession. However, consistent with the surveys of Gudjonsson and Sigurdsson (1996) and Redlich et al. (2011) we also found that true and false confessions may be distinguished by the influence of internal versus external psychological motivations, respectively.

As discussed above, a variety of theories propose to account for the underlying psychological processes involved in decisions to confess (see Gudjonsson 2003). Although these theories are not mutually exclusive, little empirical data have sought to assess or validate the various accounts and few studies have proposed an explanatory framework for distinguishing between true and false confessions. Notwithstanding the limitations of our experimental laboratory approach, our meta-analytic findings provide convergent validity to prior field surveys and suggest that different psychological processes may mediate the decision to provide a true or false confession. As such, it will be important that theoretical frameworks seeking to explain confessions generated through an interrogative process consider the mechanisms that may influence the guilty and innocent, respectively.

Taken together, true confessions appear to be the product of individuals' feelings of guilt, remorse, and accountability for the misdeed, providing support to internal accountability models (Reik 1959). Guilty individuals also appear to consider the strength of the evidence against them and the potential consequences associated with confessing (or not)—providing support for decision-making models such as that proposed by Hilgendorf and Irving (1981) and Gudjonsson (2003). To a lesser extent, our data suggest that affective processes may also play a role in true confessions. Though we note that self-report data on emotional states can be unreliable, physiological approaches taken by Guyll et al. (in press) may provide a more fruitful line of inquiry for further validating such processes in guilty versus innocent individuals.

False confessions from the innocent appear to be principally based upon perceived external social pressures to confess that stem from the interrogation approaches employed, the persistent accusations, disbelief, and requests for compliance from the interrogator, or the interrogation context itself. Such findings provide further support to our understanding of the factors leading to false confessions (see Kassin et al. 2010; Lassiter and Meissner 2010; Ofshe and Leo 1997), and to the potentially detrimental effects of accusatorial approaches to interrogation (Meissner et al. 2012). Our data also suggest that innocent participants engage in a cost-benefit analysis when considering the potential consequences associated with providing a confession (or not). As discussed below, this suggests that interrogators may need to exercise caution when psychologically manipulating the consequences associated with confession (see also Horgan et al. 2012).

Overall, our findings lend support to the Cognitive Behavioral theory posited by Gudjonsson (2003), suggesting that the likelihood of confession is motivated by a relationship between factors, rather than any one factor in isolation. At the same time, the available empirical data also suggest that Gudjonsson's model could be updated to reflect further distinctions in the internal and external psychological factors that may influence the guilty and innocent, respectively. Further theoretical and empirical research appears warranted to afford a fuller understanding of the

psychological and criminological mechanisms associated with confession (see also St-Yves and Deslauriers-Varin 2009).

While there exists some research on the correlates and causal factors of false confessions (see Kassin et al. 2010), less is known regarding the psychological mechanisms by which various interrogation practices exert their influence on suspect decisions to confess. In the USA, accusatorial interrogation techniques (broadly construed) seek to directly manipulate the external pressures placed upon the suspect as well as an individuals' perceptions of the consequences of complying (confessing) versus resisting the interrogation (Davis and O'Donohue 2004; Lassiter and Meissner 2010). In general, interrogators assume that by increasing the anxiety and social pressure placed upon a suspect and manipulating their perceptions of the likely consequences, individuals will more often comply with a request for confession/information, than resist (Jayne 1986). Research assessing the efficacy of these accusatorial techniques, however, suggests that they increase the likelihood of false confessions (Kassin et al. 2010; Lassiter and Meissner 2010; Meissner et al. 2012; Ofshe and Leo 1997), a pattern of data consistent with the role of external social pressure being associated with false confessions in the current meta-analysis. Alternative methods of interviewing, for example information-gathering approaches popular in countries such as the UK, Norway, Australia, and New Zealand, have proven effective at gaining truthful and complete accounts from suspects (and witnesses) when compared to standard US interview protocols (Evans et al. 2013; Meissner et al. 2012). While it is beyond the scope of this chapter to provide a comparative review of such methods (see Bull and Soukara 2010; Meissner et al. 2012), research in our laboratory suggests that information-gathering approaches may be effective principally because they highlight internal psychological mechanisms that promote true confessions while simultaneously reducing external social pressures associated with false confessions.

In closing, we propose that a strong theoretical understanding of the psychological mechanisms leading to true versus false confessions may offer insights into the development of interrogative approaches that prove useful for eliciting diagnostic confession evidence. We believe that such a process of "reverse engineering" could promote a positive perspective in the development of alternative approaches to interrogation that might replace methods which are detrimental to the collection of evidence despite their frequent use in certain countries (cf. Meissner et al. 2010a). Ultimately, we hope that the current discussion will encourage other social and behavioral scientists to join us in developing an ethical, evidence-based perspective on interrogation that ultimately replaces "art" with "science".

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