

# How Factors Present During the Immediate Interrogation Situation Produce Short-Sighted Confession Decisions

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Suspects have a preexisting vulnerability to make short-sighted confession decisions, giving disproportionate weight to proximal, rather than distal, consequences. The findings of the current research provided evidence that this preexisting vulnerability is exacerbated by factors that are associated with the immediate interrogation situation. In Experiment 1 ( $N = 118$ ), a lengthy interview exacerbated participants' tendency to temporally discount a distal consequence when deciding whether or not to admit to criminal and unethical behaviors. This effect was especially pronounced among less serious behaviors. In Experiment 2 ( $N = 177$ ), participants' tendency to temporally discount a distal consequence when making admission decisions was exacerbated by the expectation of a lengthy interview; an effect that became stronger the longer the interview continued. These findings suggest that conditions of the immediate interrogation situation may capitalize on an already-present vulnerability among suspects to make short-sighted confession decisions, thereby increasing the chances that even innocent suspects might confess.

*Keywords:* confessions, police interrogation, temporal discounting

A confession ranks among the most compelling forms of evidence in criminal law (Kassin, in press; Leo, 2008; Leo, Costanzo, & Shaked-Schroer, 2009). However, not all confessions are true. Psychological research using controlled laboratory procedures reveals that innocent suspects sometimes confess to crimes that they did not commit (Kassin & Kiechel, 1996; Narchet, Meissner, & Russano, 2011; Russano, Meissner, Narchet, & Kassin, 2005). DNA exoneration cases corroborate these empirical findings. Of the several hundred wrongful convictions that have surfaced thus far, approximately 25% involved a false admission of guilt (innocenceproject.org; Innocence Project Fact Sheet, (2011). The implications of these findings for the integrity of the criminal justice system and the civil liberties of suspects underscore the need for research that identifies the psychological processes that underly suspects' confession decisions as a way to inform reform efforts aimed at maximizing the diagnostic value of confession evidence.

In response to this need, theorists have articulated how several psychological processes may operate to elicit confessions from suspects (Kassin et al., 2010; Kassin & Gudjonsson, 2004). Chief among these is a tendency for immediate or proximal factors to influence behavior more strongly than delayed or distal factors (Kassin et al., 2010). This tendency has been demonstrated with respect to a wide-range of behaviors. Research derived from learn-

ing theory, for example, indicates that delayed punishment is preferred over immediate punishment and that delayed consequences have less influence on behavior than do immediate consequences (e.g., Renner, 1964; Tardy & Sawabini, 1974). Similarly, research examining processes of social influence indicate that people's obedience to an authority figure is greater when the negative consequences of their behavior are delayed or physically distant from them (Milgram, 1974).

The tendency for proximal consequences to influence behavior more strongly than distal consequences may partly reflect the perceived uncertainty of future events. When making decisions, people have a tendency to assign greater weight to certain outcomes than to probabilistic ones (Kahneman & Tversky, 1979), and there is wide agreement among researchers of decision-making that people tend to equate proximity with certainty (Kalencher & Pennartz, 2008; Rachlin, 1995, 2000). In addition, delaying a negative outcome enables one to enjoy the absence of its aversiveness, a benefit that would be forgone if one were to choose to endure the negative outcome immediately.

Drawing on the idea that proximal factors influence behavior more strongly than distal factors, confession researchers have speculated that suspects give priority to short-term goals over long-term goals (Follette, Davis, & Leo, 2007; Gudjonsson, 2003; Kassin et al., 2010). Recent experimental research has provided empirical support for this idea. Madon, Gyll, Scherr, Greathouse, and Wells (2012, Experiment 1) subjected participants to an interview in which participants reported whether or not they had ever committed 20 criminal and unethical behaviors (e.g., shoplifted, plagiarized). In one condition, participants faced a proximal consequence (answering a set of repetitive questions) for each denial of misconduct, but risked a distal consequence (meeting with a

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police officer in several weeks to discuss their interview responses in greater detail) for admissions of misconduct. Consistent with the idea that suspects make short-sighted confession decisions, participants showed a tendency to admit to misconduct as a way to avoid the proximal consequence even though doing so increased their risk of incurring the distal consequence. This finding, which reflected the influence of *temporal discounting*, suggests that suspects likely enter into an interrogation with a preexisting vulnerability to give too much weight to short-term gains—such as ending detainment, going home, eating, sleeping, calling family or friends and, in the case of drug addicts, obtaining drugs to end withdrawal symptoms—when making their confession decisions.

Having this preexisting vulnerability at the outset of an interrogation represents a potentially harmful limitation of suspects' reasoning abilities, and yet, it is also important to recognize that it might reflect just the beginning of a downward spiral. Once an interrogation starts, suspects may be confronted with an arsenal of manipulative interrogation tactics that may further divert their attention away from the distal and negative consequences associated with a crime and toward the favorable and proximal consequences associated with a confession (e.g., catharsis, escape, leniency, social approval; Leo, 2008). Moreover, the longer that suspects are exposed to these manipulative tactics, the more they might suffer a reduction in their self-regulatory capacities (Davis & Leo, in press), which could make it especially difficult for them to appropriately factor in distal consequences when deciding whether or not to confess. Thus, it is conceivable that the immediate interrogation situation may be characterized by factors that function to exacerbate suspects' preexisting vulnerability to make short-sighted confession decisions, thereby increasing the chances that even innocent suspects might confess.

### Hypotheses

The current research was designed to address the potential influence of the immediate interrogation situation on suspects' confession decisions. In two experiments, we examined whether the previously documented tendency for suspects to temporally discount distal consequences when deciding whether or not to confess (Madon et al., 2012) is influenced by an interrogation's length, a crime's perceived seriousness, and suspects' expectations about an interrogation's length. By addressing the moderating influences of these factors, our research advances understanding about how the immediate interrogation situation may capitalize on and exploit a natural human tendency to exhibit a "here and now" bias when making decisions.

### Interrogation Length

Police interrogations are aversive by design and lengthy interrogations serve to prolong suspects' discomfort. Recognizing this, current theoretical perspectives propose that one reason suspects confess to crimes when subjected to a lengthy interrogation is because they perceive a confession as an escape-hatch (Kassin et al., 2010; Leo, 2008). That is, at some point during an interrogation, suspects may reach their breaking points; they have become fatigued, emotionally exhausted, and overwhelmed with feelings of despair and hopelessness and, seeing no other alternative to release, may choose to confess as a way to escape the interrogation.

Correlational data have supported this theoretical perspective by showing that lengthy interrogations are associated with an increase in false confessions (Drizin & Leo, 2004). However, because of the inherent limitations of correlational designs, these data cannot rule out the potential influence of confounding factors such as the amount of evidence presented during the interrogations, the seriousness of the crimes investigated, and the use of coercive interrogation tactics. A primary aim of the current research, therefore, was to experimentally manipulate interrogation length in order to isolate its causal effect on confession decisions. The hypothesis tested was that lengthy interrogations increase the likelihood that suspects will use a confession as an escape-hatch by virtue of exacerbating their preexisting vulnerability to temporally discount distal consequences when making confession decisions.

### Crime Seriousness

Ample research within the field of criminology attests to the fact that people perceive crimes to vary in terms of their seriousness and that a major factor contributing to these perceptions are people's beliefs about a crime's consequences (Stylianou, 2003). It stands to reason, therefore, that suspects enter into a police interrogation with some preconceived notions about the seriousness of the crimes of which they have been accused and the severity of the consequences they risk incurring if convicted (Inbau, Reid, Buckley, & Jane, 2001; for a review, see Vrij, 2008). It is also the case that during the course of an interrogation police sometimes present to suspects crime scenarios that function to minimize suspects' perceptions of a crime's seriousness and its associated consequences, such as when police portray suspects' motives in sympathetic terms to minimize their culpability (Kassin et al., 2010; Leo, 2008). Thus, suspects' decisions to confess or deny guilt when subjected to a lengthy interrogation may be influenced to some degree by their perceptions of the seriousness of the crime(s) of which they have been accused. In particular, suspects may believe that confessing to an apparently minor crime in exchange for ending a lengthy interrogation outweighs the risk of incurring the expected distal consequences if convicted, but that confessing to a more serious crime does not because in that case, the distal consequences are perceived as too severe to risk. We tested this possibility in the current research by examining whether the tendency for a lengthy interrogation to exacerbate suspects' preexisting vulnerability to temporally discount distal consequences when making confession decisions is stronger the less serious a crime is perceived to be.

### Expected Interrogation Length

Conceptual analyses of the structure of police interrogation indicate that in an effort to obtain a confession police will sometimes employ strategies that manipulate suspects' perceptions of time (Leo, 2008; Leo et al., 2009). One of these strategies is to lead a suspect to expect that an interrogation will continue for an extended period of time unless the suspect cooperates, such as when police interrogators told Bruce Godschalk "*The sooner you tell us what happened, the sooner we will take you home*" (Leo, 2009, p. 182) or when police interrogators told Howard Allen "*If you tell the truth, it'll be a piece of cake. If you don't tell me the truth, we'll be here awhile*" (Leo, 2009, p. 149). Such statements

may cause suspects to develop the expectation that they will either have to endure the aversiveness of a lengthy interrogation or confess as a way to avoid it. With this expectation in effect, suspects may be willing to risk the long-term consequences that are associated with a confession in exchange for the short-term gain of reducing an interrogation's length. The current research examined this possibility by testing the hypothesis that the expectation of a lengthy interrogation exacerbates suspects' preexisting vulnerability to temporally discount distal consequences when making confession decisions.

We also wondered whether the actual length of an interrogation might potentiate this predicted effect. Prior research in social psychology has established that expectations often function as hypotheses that are subjected to hypothesis-testing strategies (Snyder & Swann, 1978). Conceptualized in this way, expectations—like hypotheses in general—may initially be held as tentative beliefs whose validity is evaluated against available information (Pyszczynski & Greenberg, 1987). In the context of a police interrogation, therefore, suspects who expect a lengthy interrogation may gain confidence in the validity of their expectations the longer the interrogation continues. To the extent that this occurs, suspects may become increasingly more likely to give too much weight to short-term gains when deciding whether or not to confess, thereby putting their long-term interests at risk. We examined this possibility in the current research by testing the hypothesis that the actual and expected length of an interrogation jointly influences the extent to which suspects temporally discount distal consequences when deciding whether or not to confess. In particular, we hypothesized that expecting a lengthy interrogation increases suspects' tendency to temporally discount distal consequences to a greater extent the longer that they are subjected to an interrogation.

### Research Overview

The experimental paradigm used in this research was adapted from Madon et al. (2012). Participants were interviewed about 20 prior criminal and unethical behaviors, with admissions and denials each paired with either a proximal consequence (answering a set of repetitive questions) or a distal consequence (meeting with a police officer in several weeks). Experiment 1 tested the hypothesis that an interrogation's length moderates suspects' preexisting vulnerability to temporally discount distal consequences when making confession decisions. Specifically, it examined whether the tendency for the proximal consequence to exert more influence on participants' admissions relative to the distal consequence occurred more strongly during the second half of the interview than during the first half. Experiment 1 also explored whether this hypothesized effect occurred more strongly for criminal and unethical behaviors that were perceived as less serious than for those that were perceived as more serious.

Experiment 2 tested the hypothesis that suspects' expectations about an interrogation's length moderates their preexisting vulnerability to temporally discount distal consequences when making confession decisions. It tested this hypothesis by examining whether the tendency for the proximal consequence to exert more influence on participants' admissions relative to the distal consequence occurred more strongly among participants who expected a long interview than among participants who expected a short

interview. Experiment 2 also tested whether the interview's actual length potentiated this hypothesized effect. Specifically, it examined whether the tendency for the proximal consequence to influence admissions more strongly than the distal consequence among participants who expected a long versus a short interview was more pronounced during the second half of the interview than during the first half.

### Preliminary Study 1

A primary aim of Experiment 1 was to examine the hypothesis that a crime's perceived seriousness moderates the extent to which an interrogation's length influences suspects' tendency to temporally discount distal consequences when making confession decisions. We assessed the perceived seriousness of the 20 criminal and unethical behaviors used in Experiment 1 with a preliminary study in which participants ( $N = 58$ ) rated each behavior along four dimensions: (a) Seriousness—“*How serious of an offense is (fill in the behavior)?*”; (b) Guilt—“*How guilty would you feel if you (fill in behavior)?*”; (c) Embarrassment—“*Imagine you actually had (fill in behavior). How much would it bother you if other people knew about it?*”; and (d) Shame—“*How ashamed would you feel to admit to another person that you (fill in behavior)?*” Participants responded to each question on a 7-point scale with endpoints 1 (*not at all*) and 7 (*extremely*). Because ratings of each behavior were highly correlated across these four dimensions,  $r_{(18)} \geq 0.95$ ;  $ps < .001$ , we averaged each participant's four ratings to create 20 scores per participant, with each score corresponding to the perceived seriousness of one behavior. Then, for each behavior, we averaged across participants' scores to create one perceived seriousness value for each of the 20 behaviors. The average perceived seriousness of the 20 behaviors was 4.90. Table 1 presents the interview questions used in Experiment 1, ordered according to their perceived seriousness.

### Experiment 1

#### Method

**Participants.** Participants were 118 undergraduates enrolled in psychology courses at Iowa State University who participated in the experiment to satisfy a course requirement. The sample consisted of 53 women and 65 men. Participants were all native English speakers, and included one African American, three Asian Americans, 100 European Americans, two Asian Indians, six Latinas/os, and six participants who self-described as multiethnic.

**Experimental manipulation.** The experiment entailed a 2 (contingency pairing: standard vs. reverse)  $\times$  2 (interview phase: first half of interview vs. second half of interview)  $\times$  4 (question order: order 1 vs. order 2 vs. order 3 vs. order 4) mixed-model experimental design with repeated measures on the factor of interview phase. Participants were randomly assigned to the between-subjects factors of contingency pairing and question order. All participants were interviewed about 20 criminal and unethical behaviors and were instructed to deny or admit to each one. Contingency pairing varied the consequences that participants faced for denials and admissions of these behaviors. In the standard contingency pairing condition ( $n = 55$ ), the consequences that participants faced for denials and admissions paralleled those

Table 1  
*Interview Questions Used in Experiment 1*

Have you ever. . .	Seriousness value
1. Transported fireworks across state lines?	2.47
2. Illegally downloaded music, movies, software, or anything else?	2.70
3. Hunted or fished without a license?	2.71
4. Drank, bought, or tried to buy alcohol before you were 21?	3.29
5. Smoked, bought, or tried to buy cigarettes before you were 18?	3.96
6. Trespassed or broken into buildings for fun or to look around?	4.30
7. Obtained or used any prescription drugs for nonmedical purposes (like getting high, staying awake, to have fun)?	5.04
8. Been joyriding (borrowed someone's car without permission)?	5.06
9. Taken credit for someone else's work, ideas, or answers as your own (plagiarism)?	5.27
10. Bought or held stolen goods worth \$25 or more?	5.37
11. Tried, used or experimented with any illegal drugs such as marijuana, cocaine, crack, LSD, or any other illegal drug?	5.41
12. Shoplifted something worth \$25 or more?	5.43
13. Carried an illegal or concealed weapon, like a gun, knife, or club?	5.48
14. Sold any type of illegal drug or controlled substance, like prescription drugs, marijuana, crack, or any other kind of drug?	5.80
15. Stolen property worth \$25 or more?	5.69
16. Vandalized property, like keying a car, slashing a tire, spraying graffiti, or destroying mailboxes?	5.72
17. Engaged in a nonviolent sex offense such exposing yourself to someone or voyeurism, which is being a peeping Tom?	5.84
18. Assaulted someone with the intent of harming him or her, either with your bare hands or with any kind of object or weapon?	6.11
19. Driven a vehicle while under the influence of alcohol or any other drug like marijuana, cocaine, LSD, etc.?	6.15
20. Intentionally set fire to destroy property that did not belong to you?	6.28

*Note.* Participants responded "yes" or "no" to each interview question. The questions were developed by Madon et al. (2012) and adapted from the illegal behavior checklist (McCoy et al., 2006).

that are experienced by interrogated suspects: Each denial resulted in an immediate (proximal) consequence but reduced the likelihood of a future (distal) consequence. At the same time, each admission resulted in the avoidance of an immediate (proximal) consequence but increased the likelihood of a future (distal) consequence. The proximal consequence was having to immediately answer a set of 32 repetitive questions. The distal consequence was having to meet with a police officer in several weeks to discuss their interview responses in greater detail. In the reverse contingency pairing condition ( $n = 63$ ), the contingencies were reversed: Each admission resulted in the immediate (proximal) consequence but reduced the likelihood of the future (distal) consequence. At the same time, each denial resulted in the avoidance of the immediate (proximal) consequence but increased the likelihood of the future (distal) consequence. Accordingly, in both contingency pairing conditions, admissions and denials were punished. However, whereas in the standard contingency pairing condition, denials were punished immediately and admissions were punished later, in the reverse contingency pairing condition, denials were punished later and admissions were punished immediately. The within-subjects factor of interview phase corresponded to the first and second halves of the interview. To ensure that interview phase was not confounded with the criminal and unethical behaviors assessed in the first and second halves of the interview, we created four question groups that included five criminal and unethical behaviors each. The question groups were created to be equivalent in terms of their perceived seriousness as assessed in Preliminary Study 1. The between-subjects factor of question order counterbalanced the presentation of the question groups across participants so as to preclude the possibility that any idiosyncratic differences between the specific behaviors assessed in the first and second halves of the interview could contribute to the effects associated with interview phase. Because none of the results in-

volving question order were significant, we omitted question order from the main analyses and do not further discuss this factor.

**Laboratory facility and cover story.** Participants were interviewed individually in a small room that was furnished with a personal computer, desk, and two chairs—one for the participant and the other for the experimenter. The walls were bare with the exception of two colored flyers that provided safety tips for crime prevention. One flyer was obtained from the university's Department of Public Safety Web site and included a university logo. The other was obtained from the local police department's Web site and included a police department emblem. The flyers were affixed to the wall directly above the computer screen so that they would be seen by participants. The flyers were used to support the cover story that the experiment was a partnership between professors in the Psychology Department and law enforcement personnel and that it was designed to examine the rate of criminal behavior among college students.

## Measures and Materials

**Interview questions.** The interview consisted of 20 questions that assessed whether or not participants had ever engaged in a variety of criminal (e.g., shoplifted) and unethical (e.g., plagiarism) behaviors (see Table 1). Participants denied or admitted to each behavior by responding *no* (coded as 0) or *yes* (coded as 1) to each question. The coded responses were summed to create one score per participant that equaled the total number of admissions made. The interview questions were developed by Madon et al. (2012) and adapted from the illegal behavior checklist (McCoy et al., 2006).

**Repetitive question set.** The proximal consequence consisted of a set of 32 repetitive questions. Participants answered the repetitive question set each and every time they either denied



(standard contingency pairing condition) or admitted to (reverse contingency pairing condition) a criminal and unethical behavior. The first 16 repetitive questions assessed participants' perceptions about how the "average Iowan" would feel when engaging in the criminal or unethical behavior about which participants had just denied or admitted to (e.g., *Thinking about the average Iowan. . . How hostile do you think the average Iowan would be feel while shoplifting? How disoriented do you think the average Iowan would feel while shoplifting? How jealous do you think the average Iowan would feel while shoplifting?*). The second 16 repetitive questions assessed participants' perceptions about how the "average American" would feel when engaging in that same criminal and unethical behavior (e.g., *Now, thinking about the average American. . . How hostile do you think the average American would be feel while shoplifting? How disoriented do you think the average American would feel while shoplifting? How jealous do you think the average American would feel while shoplifting?*). Responses were assessed on a 5-point scale with response options 1 (*not at all*), 2 (*a little bit*), 3 (*moderately*), 4 (*quite a bit*), and 5 (*extremely*). Participants responded to the repetitive questions on a computer that was programmed with a 4 second delay between each question. Each set of 32 repetitive questions took approximately 7 minutes to complete. It is important to note that the repetitive questions were not relevant to the hypotheses under investigation, but were instead developed solely for the purpose of creating a repetitive task for participants to engage in as a proximal consequence of having either denied or admitted to a criminal or unethical behavior. Thus, participants' responses to the repetitive questions were not recorded and are not further discussed.

**Manipulation check.** Participants' understanding of the contingency pairing was assessed with an item that asked them to indicate which interview response required them to answer the repetitive questions. The response options were: (a) "*When I gave a NO response*", (b) "*When I gave a YES response*", and (c) "*Sometimes when I gave a NO response and sometimes when I gave a YES response.*"

**Suspicion check item.** To assess suspicion, participants were asked whether they believed that they had been misled in any way during the study and if so, to describe how. Responses were examined to identify participants who were suspicious about the potential meeting with the police officer.

**Procedures.** Participants were run individually. Shortly after obtaining informed consent, the experimenter provided each participant with the cover story and then recited a prepared script that introduced the interview and established the contingency pairing. As shown below, the content of the script was the same for all participants save for a few key words (shown in parentheses) that served to reverse the contingency pairing:

I'm going to ask you some yes/no questions that will assess whether or not you've ever engaged in a variety of criminal and unethical behaviors. Every time you answer NO (YES) to one of these questions, you'll be asked some additional follow-up questions in order to get some more information. You'll answer these additional questions on the computer during your session today. On the other hand, if you tend to answer YES (NO) to the questions I ask you, then I will sign you up to meet with one of the police officers involved in this research to discuss your answers in more detail. We're doing this to get more information about people's criminal behaviors. So, let's see. . . you would meet with Officer Schiller. Assuming that your score requires

that you have this meeting, he would contact you in the next few weeks to set things up. These appointments have generally lasted about an hour. So, basically, if you answer YES (NO) a lot, you'll need to meet with Officer Schiller.

After reciting the script, the experimenter interviewed participants about 20 prior criminal and unethical behaviors (see Table 1). The experimenter recorded participants' responses throughout the interview. Participants in the standard contingency pairing condition answered the set of repetitive questions each and every time they denied one of the behaviors, whereas participants in the reverse contingency pairing condition answered the set of repetitive questions each and every time they admitted to one of the behaviors. Because each repetitive question set took approximately 7 minutes to complete, there was the potential for participants to spend a considerable amount of time on this task over the course of the interview. For example, participants whose interview responses required that they answer five sets of the repetitive questions would have each spent more than 30 minutes on this task during the interview. Although participants could avoid the proximal consequence of the repetitive questions by giving the alternative interview response (e.g., an admission from participants in the standard contingency pairing condition), doing so increased their risk of incurring the distal consequence of meeting with the police officer in several weeks. Following the interview, participants were probed for suspicion and then debriefed.

## Results

### Preliminary Analyses

**Data transformation and effect sizes.** The number of admissions that participants made in response to the 20 interview questions constituted the dependent variable. Preliminary analyses revealed that the number of admissions was positively skewed. Therefore, we square-root transformed this variable to reduce non-normality (Osborne, 2002). Although we used the transformed variable in the analyses, we also report raw score values for ease of interpretation. Effect sizes and confidence intervals for reported mean differences were based on the transformed variable.

**Manipulation and suspicion checks.** Examination of participants' responses to the contingency pairing manipulation and suspicion check items indicated that nine participants did not correctly report the contingency pairing that was associated with their interview responses, and one participant was suspicious about the potential meeting with the police officer. Results are reported with and without including these 10 participants in the analyses.

### Main Analyses

**Interrogation length.** We hypothesized that a lengthy interrogation exacerbates suspects' tendency to discount distal consequences when making confession decisions. We tested this hypothesis with a 2 (contingency pairing)  $\times$  2 (interview phase) mixed-model ANOVA in which contingency pairing was the between-subjects factor, interview phase was the within-subjects factor, and the square-root transformed number of admissions was the dependent variable. The between-subjects portion of the analysis yielded a significant main effect for contingency pairing,  $F(1,$

116) = 5.03;  $p = .03$ ;  $\eta^2 = .042$ . Examination of the means pertaining to this significant main effect indicated that participants made a greater number of admissions during the interview in the standard contingency pairing condition ( $M_{transformed} = 2.11$ ;  $SD_{transformed} = .98$ ;  $M_{raw} = 5.40$ ;  $SD_{raw} = 3.98$ ) than in the reverse contingency pairing condition ( $M_{transformed} = 1.75$ ;  $SD_{transformed} = .73$ ;  $M_{raw} = 3.57$ ;  $SD_{raw} = 2.43$ ), a mean difference that corresponded to .36, 95% CI [.05, .68], in terms of the transformed value of the total number of admissions. This effect, which replicates the previously documented effect of temporal discounting on confession decisions (Madon et al., 2012), shows that participants shifted their admissions to avoid the proximal consequence even though doing so increased their risk of incurring the distal consequence. Although the magnitude of the effect observed in the present experiment was smaller than the effect previously obtained by Madon et al. (2012), ( $z = 1.89$ ;  $p = .06$ ), such a difference is likely due to chance variations in the samples. The fact that the same pattern emerged across independent experiments despite the influence of these chance variations speaks to the robustness of the effect.

Turning to the within-subject portion of the analysis, the main effect of interview phase was not significant,  $F(1, 116) = .95$ ;  $p = .33$ ;  $\eta^2 = .008$ , but there was a significant Contingency Pairing  $\times$  Interview Phase interaction,  $F(1, 116) = 8.56$ ;  $p = .004$ ;  $\eta^2 = .069$  (see Figure 1). Therefore, we performed two sets of planned comparisons that examined whether the form of this significant interaction supported the hypothesis that a lengthy interrogation exacerbates suspects' tendency to temporally discount distal consequences when making confession decisions. The first set of comparisons tested whether the number of admissions made during the first and second halves of the interview differed across the contingency pairing conditions. The results indicated that, during the first half of the interview, the number of admissions made by participants in the standard contingency pairing condition ( $M_{transformed} = 1.34$ ;  $SD_{transformed} = .80$ ;  $M_{raw} = 2.44$ ;  $SD_{raw} = 2.08$ ) did not differ significantly from the number of admissions made by participants in the reverse contingency pairing condition ( $M_{transformed} = 1.24$ ;  $SD_{transformed} = .62$ ;  $M_{raw} = 1.90$ ;  $SD_{raw} = 1.32$ ),  $t(116) = .82$ ;  $p = .41$ ;  $d = .14$ ; 95% CI [-.15, .37]. By

contrast, during the second half of the interview, the number of admissions made by participants in the standard contingency pairing condition ( $M_{transformed} = 1.55$ ;  $SD_{transformed} = .75$ ;  $M_{raw} = 2.96$ ;  $SD_{raw} = 2.18$ ) was significantly greater than the number of admissions made by participants in the reverse contingency pairing condition ( $M_{transformed} = 1.13$ ;  $SD_{transformed} = .63$ ;  $M_{raw} = 1.67$ ;  $SD_{raw} = 1.41$ ),  $t(116) = 3.30$ ;  $p = .001$ ;  $d = .60$ ; 95% CI [.17, .67]. Therefore, the tendency for participants to shift their admissions to avoid the proximal consequence occurred predominantly during the second half of the interview.

The second set of comparisons tested whether the number of admissions made by participants within each contingency pairing condition differed across the first and second halves of the interview. The results indicated that participants in the standard contingency pairing condition admitted to a significantly greater number of criminal and unethical behaviors during the second half of the interview ( $M_{transformed} = 1.55$ ;  $SD_{transformed} = .75$ ;  $M_{raw} = 2.96$ ;  $SD_{raw} = 2.18$ ) than during the first half ( $M_{transformed} = 1.34$ ;  $SD_{transformed} = .80$ ;  $M_{raw} = 2.44$ ;  $SD_{raw} = 2.08$ ),  $t(116) = 2.69$ ;  $p = .009$ ;  $d = .30$ ; 95% CI [.05, .36]. The number of admissions did not differ significantly across the first and second halves of the interview among participants in the reverse contingency pairing condition (first half:  $M_{transformed} = 1.24$ ;  $SD_{transformed} = .62$ ;  $M_{raw} = 1.90$ ;  $SD_{raw} = 1.32$ ; second half:  $M_{transformed} = 1.13$ ;  $SD_{transformed} = .63$ ;  $M_{raw} = 1.67$ ;  $SD_{raw} = 1.41$ ),  $t(116) = 1.42$ ;  $p = .16$ ;  $d = .15$ ; 95% CI [-.25, .04]. Therefore, the tendency for participants to show an exaggerated propensity to temporally discount the distal consequence more strongly during the second half of the interview than during the first half occurred primarily among participants who faced the proximal consequence for each denial of criminal or unethical behavior—the condition that most closely resembles the situation faced by criminal suspects during a police interrogation (Ofshe & Leo, 1997). An analysis that excluded participants who misreported the contingency pairing and/or were suspicious about the potential meeting with the police officer yielded virtually identical results. The main effect of contingency pairing and the Contingency Pairing  $\times$  Interview Phase interaction remained significant and in the same direction as reported above,  $F_s(1, 106) \geq 4.33$ ;  $p_s \leq .04$ ;  $\eta^2_s \geq .039$ .

**Crime seriousness.** We next examined whether the effect of the interview's length on the number of admissions varied according to the perceived seriousness of the 20 criminal and unethical behaviors about which participants were interviewed. Results reported above pertaining to the simple main effect analyses that explored the Contingency Pairing  $\times$  Interview Phase interaction indicated that the interview's length significantly influenced admissions only among participants in the standard contingency pairing condition. For this reason, we focused solely on these participants' data when examining how the perceived seriousness of the criminal and unethical behaviors might have influenced admissions across the course of the interview.

To examine the effect of perceived seriousness, we performed a question-level analysis in which interview phase and perceived seriousness were included as predictor variables. The dependent variable was participants' dichotomous response to each interview question (i.e., 0 = *denial*, 1 = *admission*). Because these dichotomous responses were not independent within individual participants, we performed the analysis using SAS PROC GLIMMIX. This analytic procedure accounted for both the binary nature of the

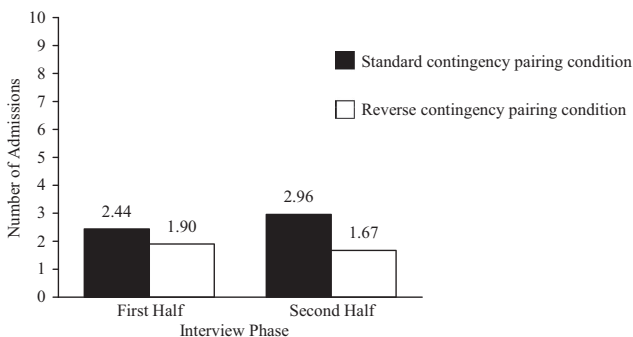


Figure 1. Results of Experiment 1.  $N = 118$ . Values reflect the number of admissions made during the first and second halves of the interview. The number of admissions could range from 0 to 10. The tendency for the proximal consequence to influence the number of admissions more strongly than the distal consequence was greater during the second half of the interview than during the first half.

dependent variable, as well as the multilevel structure of the data by nesting the dichotomous responses within participants, with participants identified as random effects. Fixed effects included interview phase (first half of interview vs. second half of interview), the continuous predictor of perceived seriousness (which we standardized prior to performing the analysis), and the interaction of these two variables. These fixed effects were entered into the analysis in two steps. Step 1 included the predictor variables of interview phase and perceived seriousness. Step 2 added the interaction of these variables.

The results from Step 1 indicated a significant main effect of interview phase indicating that the interview's length significantly influenced the number of admissions,  $F(1, 1041) = 4.74$ ;  $p = .03$ ;  $\beta = .35$ ; Odds Ratio (OR) = 1.41; 95% CI (OR) = [1.04, 1.93]. Specifically, as reflected by the OR value, the admission rate increased from 18% in the first half of the interview to 24% in the second half. There was also a significant main effect of perceived seriousness showing that the number of admissions was greater for behaviors that were perceived as less serious than for behaviors that were perceived as more serious,  $F(1, 1041) = 131.51$ ;  $p < .001$ ;  $\beta = -.90$ ; OR = .41; 95% CI (OR) = [.35, .47]. The results from Step 2 indicated a significant Interview Phase  $\times$  Perceived Seriousness interaction,  $F(1, 1040) = 4.36$ ;  $p = .04$ ;  $\beta = -.32$ ; 95% CI ( $\beta$ ) = [-.61, -.02]. The pattern of the interaction showed that the tendency for participants to temporally discount the distal consequence to a greater extent during the second half of the interview than during the first half was stronger for behaviors that were perceived as less serious than for behaviors that were perceived as more serious. For example, whereas an admission was significantly more likely during the second half of the interview ( $M = 47\%$ ) than during the first half ( $M = 33\%$ ) for criminal and unethical behaviors that were 1 *SD* below the average perceived seriousness value,  $t(1040) = 2.98$ ;  $p < .01$ ;  $\beta = .59$ ; OR = 1.81; 95% CI (OR) = [1.22, 2.67], an admission was just as likely during the second half of the interview ( $M = 9.5\%$ ) as during the first half ( $M = 9.8\%$ ) for criminal and unethical behaviors that were 1 *SD* above the average perceived seriousness value,  $t(1040) = .17$ ;  $p = .87$ ;  $\beta = -.04$ ; OR = .96; 95% CI (OR) = [.59, 1.55]. Thus, the effect of the interview's length on the number of admissions was stronger the less serious the criminal and unethical behaviors were perceived. Very similar results were obtained when the analysis excluded participants who misreported the contingency pairing and/or who were suspicious about the potential meeting with the police officer. The main effects of interview phase and perceived seriousness were significant,  $F_s(1, 889) > 4.57$ ;  $\beta_s \geq .38$ ;  $p < .03$ , and there was a nearly significant interaction between interview phase and perceived seriousness,  $F(1, 888) = 3.59$ ;  $\beta = -.32$ ;  $p = .058$ . Note, as well, that all three effects were in the same direction, and had effect sizes that were very close in magnitude to those reported above.

## Discussion

In this research, we proposed that factors that are present during an interrogation can capitalize on and exploit suspects' preexisting vulnerability to make short-sighted confession decisions. The results of Experiment 1 supported this idea. It showed that the length of the interview exacerbated participants' tendency to discount the distal consequence when deciding whether or not to admit to the

criminal and unethical behaviors. It also showed that this tendency was stronger for criminal and unethical behaviors that were perceived as less serious than for behaviors that were perceived as more serious. Overall, these results suggest that lengthy interrogations and police interrogation tactics that either downplay a suspect's culpability for a crime or minimize a crime's consequences can increase the extent to which suspects focus on short-term gains. In terms of reforms, therefore, our results point to the need for time limits on police interrogations and regulations that limit the use of exploitive interrogation tactics, especially those that alter suspects' beliefs about how harshly they may be punished if convicted.

Building on these results, Experiment 2 examined whether the expected length of an interrogation influences suspects' tendency to make short-sighted confession decisions. We addressed this issue using the same general paradigm that we used in Experiment 1. However, because preliminary analyses of the data from Experiment 1 indicated that the number of admissions was positively skewed, we performed a second preliminary study with the goal of normalizing the distribution of admissions in Experiment 2.

## Preliminary Study 2

Preliminary Study 2 attempted to normalize the distribution of admissions by identifying behaviors with admission rates approximating 50%. Participants ( $N = 96$ ) first denied or admitted to each of 53 behaviors (including the 20 used in Experiment 1) in the absence of any consequences, and then rated each behavior's seriousness by responding to the question "*How serious of an offense is (fill in the behavior)?*" The 20 behaviors selected for use in Experiment 2 included the 10 with admission rates greater than but closest to 50%, and the 10 with admission rates less than but closest to 50%. The average admission rate across the 20 behaviors was 52%. The average perceived seriousness of the 20 behaviors was 3.94. Table 2 presents the interview questions used in Experiment 2, ordered according to their perceived seriousness.

## Experiment 2

Experiment 2 tested the hypothesis that suspects who expect a lengthy interrogation are more likely than those who do not expect a lengthy interrogation to make their confession decisions on the basis of short-term contingencies even though this strategy is not in their long-term interests. Experiment 2 also examined whether this hypothesized effect becomes stronger the longer that an interrogation continues, thereby addressing the possibility that the actual and expected length of an interrogation may interact to influence how likely suspects are to temporally discount distal consequences when making confession decisions. Experiment 2 used the same contingency pairing manipulation that was used in Experiment 1. In addition, prior to the start of the interview, participants' expectations about the interview's length were manipulated by leading participants to believe that the interview was either short, including 20 questions, or long, including 100 questions.

## Method

**Participants.** Participants were 177 undergraduates enrolled in psychology courses at Iowa State University who participated to

Table 2  
*Interview Questions Used in Experiment 2*

Have you ever. . .	Seriousness value
1. Jumped or cut in line such as at the dining hall, movie theater, or grocery store?	2.25
2. Transported fireworks across state lines?	2.67
3. Engaged in criminal mischief such as a senior prank, egging a house or car, or TP-ing a house?	2.97
4. Hunted or fished without a license?	3.14
5. Used something that belonged to somebody else without permission, such as something that belonged to a family member, friend, roommate, or acquaintance?	3.18
6. Knowingly kept something of value that you received in error, such as extra change given to you by a cashier or extra merchandise from a store or from an internet purchase?	3.20
7. Started or spread a rumor about someone?	3.29
8. Illegally downloaded music, movies, software, or anything else?	3.32
9. Invaded another's privacy such as by reading another's diary, text messages, or e-mails without permission?	3.64
10. Purposefully not returned something that you borrowed like a book, clothing, or money?	3.75
11. Drank, bought, or tried to buy alcohol before you were 21?	3.91
12. Failed to wear a seat belt?	3.91
13. Been publicly intoxicated?	3.93
14. Texted somebody while driving since it became illegal in Iowa?	4.31
15. Ran a red light?	4.33
16. Made a harassing, threatening, or prank phone call or text message?	4.57
17. Cheated on an exam, homework, school project, or helped another person cheat?	4.66
18. Bought or held stolen goods worth \$25 or more?	5.26
19. Tried, used, or experimented with any illegal drugs such as marijuana, cocaine, crack, LSD, or any other illegal drug?	5.77
20. Driven a vehicle while under the influence of alcohol or any other drug like marijuana, cocaine, LSD, etc.?	6.70

*Note.* Participants responded "yes" or "no" to each interview question. The questions were adapted from Madon et al. (2012) and the illegal behavior checklist (McCoy et al., 2006).

satisfy a course requirement. There were 86 women and 89 men in the sample, plus two participants who did not report their gender. Participants were all native English speakers, and included six African Americans, seven Asian Americans, 150 European Americans, three Latinas/os, seven participants who self-described as multiethnic, and four participants who did not report their ethnicity.

**Experimental design.** The experiment entailed a 2 (contingency pairing: standard vs. reverse)  $\times$  2 (expected interview length: short vs. long)  $\times$  2 (interview phase: first half of interview vs. second half of interview)  $\times$  2 (question order: order 1 vs. order 2) mixed-model experimental design with repeated measures on the factor of interview phase. Participants were randomly assigned to the between-subjects factors of contingency pairing, expected interview length, and question order. The contingency pairing was the same as that used in Experiment 1. In the standard contingency pairing condition ( $n = 88$ ), the proximal consequence (answering set of repetitive questions) was paired with denials and the distal consequence (meeting with police officer) with admissions. This pairing was reversed for participants in the reverse contingency pairing condition ( $n = 89$ ). Expected interview length manipulated participants' perceptions of the number of questions included in the interview. Participants were either told that the interview was short and that they would be interviewed about 20 prior criminal and unethical behaviors ( $n = 81$ ), or that the interview was long and that they would be interviewed about 100 prior criminal and unethical behaviors ( $n = 96$ ). In reality, all participants answered 20 interview questions. The factor of interview phase matched that used in Experiment 1 and corresponded to the first and second halves of the interview. To ensure that interview phase was not confounded with the specific criminal and unethical behaviors assessed in the first and second halves of the interview, the 10 questions included in each interview half were matched on admis-

sion rates and perceived seriousness as assessed in Preliminary Study 2. Furthermore, the between-subjects factor of question order counterbalanced the order in which these question sets were presented to participants. As was the case in the Experiment 1, the results revealed no significant effects involving question order. Therefore, we omitted question order from the main analyses and do not further discuss it. The number of participants in the four conditions that were created by crossing contingency pairing and expected interview length were as follows: (a) standard contingency pairing—short expected interview:  $n = 37$ ; (b) standard contingency pairing—long expected interview:  $n = 51$ ; (c) reverse contingency pairing—short expected interview:  $n = 44$ , and; (d) reverse contingency pairing—long expected interview:  $n = 45$ . Lastly, because the final set of criminal and unethical behaviors used in Experiment 2 included predominately minor offenses (see Table 2), Experiment 2 was not well-suited to testing whether the perceived seriousness of the behaviors influenced participants' admissions. For this reason, we did not examine the effect of perceived seriousness on admissions in this experiment.

**Procedures, measures, and materials.** The procedures, measures, and materials used in Experiment 2 were the same as those used in Experiment 1 with the following exceptions. First, we designed the procedures in such a way as to continuously remind participants that the interview was either short or long. This was accomplished by having the experimenter mark each participant's interview responses on a form that was printed in large font and affixed to the wall in the participant's direct line of sight. The form included two columns. One column was labeled "Question Number," and listed the numbers either 1 through 20 (short expected interview) or 1 through 100 (long expected interview). The other column was labeled "Response," and included "NO" and "YES" check boxes for each question number listed. In the short expected



interview condition, the form was approximately 1 foot long. In the long expected interview condition, the form was approximately 5 feet long. In addition, after completing the first 10 interview questions, the experimenter reinforced the expected interview length manipulation by announcing that the participant had completed 10 questions and had either 10 (short expected interview condition) or 90 (long expected interview condition) more to go. Second, after the 20 criminal and unethical behaviors constituting the actual interview had been assessed and repetitive questions answered, the experimenter excused her/himself from the lab under the guise of having to call the graduate student in charge of the study. The experimenter returned a few minutes later and explained that the graduate student needed to use the lab in about 10 minutes so they needed to skip ahead, thereby giving the experimenter an excuse to prematurely end the interview in the long condition. Third, as noted in Preliminary Study 2, a different set of interview questions was used in Experiment 2 (see Table 2) than in Experiment 1 (see Table 1).

## Results

### Preliminary Analyses

**Data transformation and effect sizes.** The dependent variable was the number of admissions that participants made in response to the interview questions. Preliminary analyses indicated that this variable was normally distributed—a consequence of having revised the interview questions to include a greater number of less serious behaviors. Accordingly, we used the raw score number of admissions in all of the analyses.

**Manipulation and suspicion checks.** There were eight participants who failed to correctly report the contingency pairing that was associated with their interview responses on the contingency pairing manipulation check item. Results are reported with and without including these eight participants in the analyses. No participants were suspicious about the potential meeting with the police officer.

### Main Analyses

The data were analyzed with a 2 (contingency pairing)  $\times$  2 (expected interview length)  $\times$  2 (interview phase) mixed-model ANOVA with repeated measures on the factor of interview phase. The dependent variable was the number of admissions. The between-subjects portion of this analysis tested the hypothesis that suspects' tendency to temporally discount distal consequences when making confession decisions is exacerbated by the expectation of a lengthy interrogation. The within-subjects portion of the analysis tested the hypothesis that the tendency for an interrogation's expected length to exacerbate suspects' tendency to temporally discount distal consequences when making confession decisions is more pronounced the longer an interrogation continues.

The results pertaining to the between-subjects effects indicated a significant main effect for contingency pairing,  $F(1, 173) = 48.13$ ;  $p < .001$ ;  $\eta^2 = .218$ , but not for expected interview length,  $F(1, 173) < .01$ ;  $p = .95$ ;  $\eta^2 < .001$ . Examination of the means pertaining to the significant contingency pairing main effect indicated that participants made a greater

number of admissions during the interview in the standard contingency pairing condition ( $M = 11.46$ ;  $SD = 4.07$ ) than in the reverse contingency pairing condition ( $M = 7.64$ ;  $SD = 3.36$ ), a mean difference that corresponded to 3.82, 95% CI [2.71, 4.93], in terms of the total number of admissions. This effect replicates the pattern of temporal discounting observed in Experiment 1 and in prior research (Madon et al., 2012) whereby participants shifted their admissions to avoid the proximal consequence even though doing so increased their risk of incurring the distal consequence.

There was also a significant Contingency Pairing  $\times$  Expected Interview Length interaction that qualified the main effect of contingency pairing,  $F(1, 173) = 11.54$ ;  $p = .001$ ;  $\eta^2 = .063$  (see Figure 2). To examine whether the form of the interaction supported the hypothesis that an interrogation's expected length exacerbates suspects' tendency to temporally discount distal consequences when making confession decisions, we performed two simple effects tests. One test showed that participants in the standard contingency pairing condition admitted to more criminal and unethical behaviors when they expected the interview to be long ( $M = 12.41$ ;  $SD = 3.71$ ) than when they expected it to be short ( $M = 10.51$ ;  $SD = 4.33$ ),  $t(175) = 2.44$ ;  $p = .02$ ;  $d = .47$ ; 95% CI [.35, 3.45]. The other test showed that participants in the reverse contingency pairing condition admitted to fewer criminal and unethical behaviors when they expected the interview to be long ( $M = 6.73$ ;  $SD = 3.11$ ) than when they expected it to be short ( $M = 8.57$ ;  $SD = 3.39$ ),  $t(175) = 2.38$ ;  $p = .02$ ;  $d = .56$ ; 95% CI [.31, 3.35]. Thus, across both contingency pairing conditions, participants showed a greater tendency to shift their admissions to avoid the proximal consequence when they expected a long interview than when they expected a short interview. This pattern supports the hypothesis that the tendency for suspects to temporally discount distal consequences when making confession decisions is exacerbated by an expectation of having to endure a lengthy interrogation.

The within-subjects effects indicated a significant two-way interaction between contingency pairing and interview phase that essentially replicated the effect observed in Experiment 1. Once again, participants' tendency to shift their admissions to

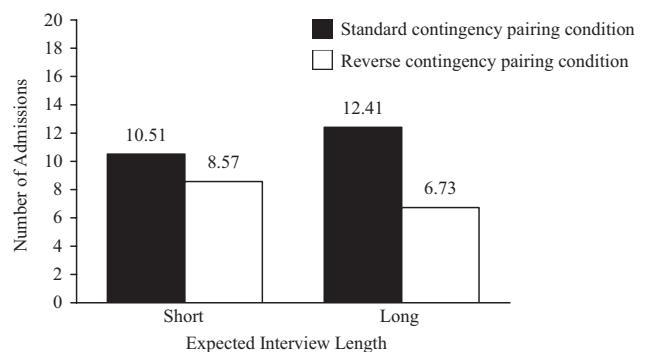


Figure 2. Results of Experiment 2.  $N = 177$ . Values reflect the number of admissions made during the interview. The number of admissions could range from 0 to 20. The tendency for the proximal consequence to influence the number of admissions more strongly than the distal consequence was significantly greater when participants expected a long interview than when they expected a short interview.

avoid the proximal consequence occurred more strongly during the second half of the interview than during the first half,  $F(1, 173) = 50.92$ ;  $p < .001$ ;  $\eta^2 = .227$ . However, whereas in Experiment 1 this effect was restricted to participants in the standard contingency pairing condition, simple effects tests revealed that in Experiment 2 the effect was present in both contingency pairing conditions. Participants in the standard contingency pairing condition admitted to significantly more criminal and unethical behaviors during the second half of the interview ( $M = 6.00$ ;  $SD = 2.12$ ) than during the first half ( $M = 5.47$ ;  $SD = 1.86$ ),  $t(175) = 3.31$ ;  $p < .001$ ;  $d = .27$ ; 95% CI [.21, .85]. Likewise, participants in the reverse contingency pairing condition admitted to significantly fewer criminal and unethical behaviors during the second half of the interview ( $M = 3.28$ ;  $SD = 2.09$ ) than during the first half ( $M = 4.38$ ;  $SD = 1.83$ ),  $t(175) = 6.88$ ;  $p < .001$ ;  $d = .56$ ; 95% CI [.79, 1.42].

There are two reasons that may explain why, in Experiment 2, the interview's length influenced the number of admissions in both contingency pairing conditions, but in Experiment 1, only had that effect among participants in the standard contingency pairing condition. First, the overall admission rate was lower in Experiment 1 than it was in Experiment 2. This aspect of the data, which likely reflected the greater number of serious behaviors assessed in Experiment 1 relative to Experiment 2, caused Experiment 1 to be characterized by floor effects in the number of admissions. Consequently, in Experiment 1, participants in the reverse contingency pairing condition were restricted in their ability to decrease their admissions further as a way to avoid the proximal consequence. Second, and related to the first point, the overall low admission rate in Experiment 1 created a situation in which participants experienced the proximal consequence relatively infrequently in the reverse contingency pairing condition (i.e., 3.57 times, on average), but relatively frequently in the standard contingency pairing condition (i.e., 14.60 times, on average). As a result, the effect of the proximal consequence in Experiment 1 was likely attenu-

ated in the reverse contingency pairing condition. The interview questions developed for Experiment 2 served to increase the overall admission rate (and thus, minimized floor effects) by including a greater number of less serious behaviors in the interview. This increase caused the proximal consequence to be experienced more equally across the contingency pairing conditions (i.e., 7.64 times, on average, in the reverse contingency pairing condition and 8.54 times, on average, in the standard contingency pairing condition). Therefore, variations in the number of admissions was not restricted in either contingency pairing condition in Experiment 2, thus enabling the interview's length to demonstrate its effect on admissions in both conditions.

The results also yielded a significant three-way interaction between contingency pairing, expected interview length, and interview phase,  $F(1, 173) = 4.25$ ;  $p = .04$ ;  $\eta^2 = .024$ . As shown in Figure 3, the tendency for the proximal consequence to influence the number of admissions more strongly than the distal consequence among participants who expected a long versus a short interview was greater during the second half of the interview than during the first half. Thus, the expectation of a long interview led to greater temporal discounting of the distal consequence the longer participants had been interviewed. The between- and within-subjects effects reported above also emerged when the analysis excluded participants who misreported the contingency pairing. There remained a significant main effect of contingency pairing and a significant two-way interaction between contingency pairing and expected interview length that followed the same pattern as reported above,  $F_s(1, 165) \geq 10.60$ ;  $p_s \leq .001$ ;  $\eta^2_s \geq .060$ . The three-way interaction between contingency pairing, expected interview length, and interview phase also emerged, but was reduced to marginal significance,  $F(1, 165) = 3.31$ ;  $p = .07$ ;  $\eta^2 = .020$ . Overall, the pattern of results suggests that suspects who expect a lengthy interrogation are at increased risk of making their confession decisions on the basis of short term contingencies and that this risk becomes even more pronounced the longer that they are interrogated.

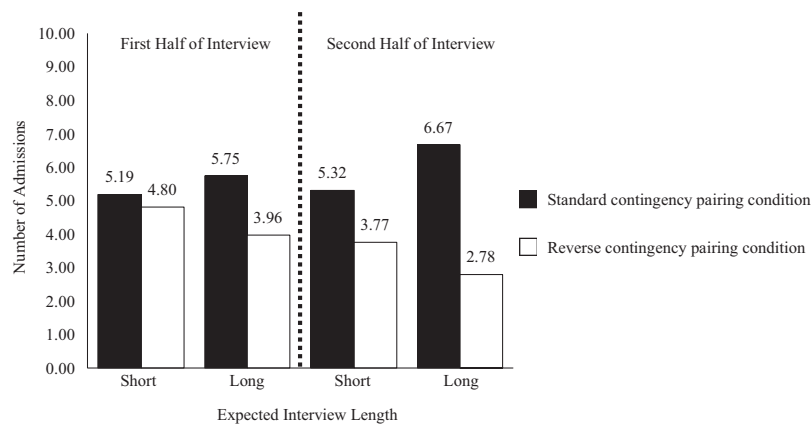


Figure 3. Results of Experiment 2.  $N = 177$ . Values reflect the number of admissions made during the first and second halves of the interview. The number of admissions could range from 0 to 10. The tendency for the proximal consequence to influence the number of admissions more strongly than the distal consequence when participants expected a long versus a short interview was significantly greater during the second half of the interview than during the first half.

## Discussion

The results of Experiment 2 further supported the idea that factors present during an interrogation can exacerbate suspects' preexisting vulnerability to make short-sighted confession decisions. Consistent with the hypothesis that the expected length of an interrogation influences how likely suspects are to temporally discount distal consequences when deciding whether or not to confess, participants who expected a long interview were more likely than those who expected a short interview to shift their admissions to avoid the proximal consequence even though doing so increased their risk of incurring the distal consequence. Moreover, participants exhibited this tendency to a greater extent the longer the interview lasted. This latter result suggests that suspects who expect a lengthy interrogation may become increasingly confident that their expectations will be confirmed the longer an interrogation continues. Overall, these findings provide evidence that interrogation tactics that explicitly alter suspects' perceptions of time can cause them to focus too narrowly on the short-term gain of avoiding a potentially lengthy interrogation, thereby jeopardizing their long-term interests.

We also want to point out that even though Experiment 2 involved an explicit expectation regarding the interview's length, the findings may also have implications for naturally occurring expectations. In the naturalistic environment, people often develop expectations on their own and those expectations are fluid, meaning that they can change in response to new information (Hart, 1995). For example, a suspect who initially expects a short interrogation may, after several hours of questioning, come to revise that belief and expect a lengthy interrogation instead, even in the absence of any explicit statements made to that effect by police. Thus, our results likely have implications not only for interrogations in which police make explicit statements to suspects about an interrogation's length, but also for interrogations in which suspects naturally develop expectations about an interrogation's length on their own accord.

## General Discussion

Theory and research relevant to police interrogation indicate that suspects have a preexisting vulnerability to make their confession decisions on the basis of short-term contingencies (Follette et al., 2007; Kassin et al., 2010; Madon et al., 2012). The present research provided evidence that this preexisting vulnerability can be exacerbated by factors that are present during an interrogation. Experiment 1 showed that a lengthy interview increased participants' tendency to temporally discount a distal consequence when deciding whether or not to admit to a series of criminal and unethical behaviors. In addition, it showed that this effect was stronger for criminal and unethical behaviors that were perceived as less serious than for behaviors that were perceived as more serious. Experiment 2 showed that participants' tendency to temporally discount a distal consequence when deciding whether or not to admit to the criminal and unethical behaviors was greater among participants who expected a long interview than among participants who expected a short interview and that this effect became stronger the longer the interview continued.

The results of this research are important for several reasons. First, they help to explain why lengthy interrogations are associated with false confessions. A typical interrogation is brief, lasting

between 30 minutes and 2 hours (Cassell & Hayman, 1996; Kassin et al., 2007; Leo, 1996). By contrast, among a sample of proven false confessors, 34% were interrogated for 6 to 12 hours, 39% were interrogated for 12 to 24 hours, and 11% were interrogated for 24 to 96 hours (Drizin & Leo, 2004). These statistics reflect an association between the length of police interrogation and false confessions. However, the cause of the association is not clear. Due to the correlational nature of the data, it is not possible to disentangle the effect of interrogation length from the potential effects of other factors that may also have influenced suspects' confession decisions (e.g., Kassin, Goldstein, & Savitsky, 2003; Narchet et al., 2011; for a review, see Kassin et al., 2010).

The findings of the current research provide the first experimental evidence that lengthy interrogations may increase the likelihood that suspects will confess. Accordingly, our results complement the findings of the correlational research reviewed above by supporting a causal link between interrogation length and confessions. Our findings also provide insight into an underlying psychological process that may contribute to this causal effect. In the current research, participants were more likely to temporally discount the distal consequence during the second half of the interview than they were during the first half. In other words, the longer the interview continued, the more likely participants were to respond to the interview in a way that enabled them to avoid the proximal consequence even though doing so increased their risk of incurring the distal consequence. Our data, therefore, suggests that lengthy interrogations increase suspects' likelihood of confessing because they exacerbate a preexisting vulnerability of suspects to focus on short-term contingencies.

Second, it is important to point out that in the current research the effect of the interview's length on participants' admissions varied according to the perceived seriousness of the criminal and unethical behaviors assessed by the interview. The tendency for participants to admit to a greater number of behaviors during the second half of the interview than during the first half as a way to avoid the proximal consequence occurred primarily for behaviors that were perceived as relatively minor. The effect was not evident for behaviors that were perceived as relatively serious. This pattern suggests that police interrogation tactics that minimize the perceived seriousness of a crime or that reduce suspects' apparent culpability may increase suspects' propensity to confess as a way to escape from a lengthy interrogation. The pattern also has implications for understanding the prevalence of false confessions. Less serious crimes rarely have biological evidence available for DNA testing and confessions pertaining to less serious crimes rarely receive close scrutiny following conviction (Drizin & Leo, 2004; Gudjonsson, 2003; Kassin, 2008). Therefore, our results support the view that DNA exonerations involving false confessions likely represent only a portion of actual false confession cases because false confessions pertaining to minor crimes—though likely more prevalent than false confessions pertaining to serious crimes—may go undetected.

Third, our results suggest that suspects who expect a lengthy interrogation may be particularly susceptible to the influence of proximal consequences and, accordingly, may be more likely to confess than are suspects who do not expect a lengthy interrogation. In our research, the proximal consequence more strongly influenced the number of admissions made by participants who expected a long interview than by those who expected a short

interview. The expectation of having to endure a long interview, therefore, increased participants' willingness to risk the distal consequence in exchange for avoiding the proximal consequence.

Finally, our results showed that the influence of participants' expectations about the interview's length on their admissions was stronger during the second half of the interview than during the first half. This latter finding indicates that the effect of the interview's expected length on participants' tendency to temporally discount the distal consequence gained strength the longer the interview continued. However, we want to emphasize that the effect was present during both halves of the interview. In other words, even before the interview had become lengthy, participants' expectations about its length had an effect on their admission decisions. This is an important finding because it suggests that expecting an interrogation to be lengthy, even before it has become lengthy, can cause suspects' confession decisions to be too strongly influenced by the proximal consequences delivered by police during an interrogation, without sufficient consideration of the distal (and often more severe) consequences that may be levied by the judicial system.

### Diagnostic Value of Confession Evidence

At this point, it is also useful to consider the implications of the current findings with respect to confession evidence, especially because the method that we used did not permit us to establish ground truth with respect to the veracity of participants' admissions decisions. That is, although our data showed that participants shifted their admissions to avoid the proximal consequence to a greater extent when the interview was long versus short and when participants expected a long interview versus a short interview, the method that we used precluded us from determining whether such shifts were from true denials to false admissions or from false denials to true admissions. That said, we do know that in each experiment participants in at least one of the contingency pairing conditions were deceitful. We know this because the contingency pairing manipulation pushed participants' admissions in opposite directions—admissions were higher among participants in the standard contingency pairing condition and lower among participants in the reverse contingency pairing condition. Indeed, had participants honestly reported whether or not they had committed the criminal and unethical behaviors, then random assignment would have resulted in equivalency in the number of admissions across the contingency pairing conditions. The fact that it did not leads to two conclusions: (a) Participants in at least one of the contingency pairing conditions (and possibly both) misrepresented their past behaviors in order to avoid the proximal consequence, and (b) The extent to which this misrepresentation occurred was greater when the interview was long than when it was short and when participants expected a long interview than when they expected a short interview. Therefore, even though our results cannot speak to false confessions per se, they do show how the diagnostic value of confession evidence can be compromised by factors that capitalize on and exploit suspects' preexisting vulnerability to focus on short-term contingencies.

Further consideration of this point also helps to clarify how the results of the current research support interrogation reforms. Across both experiments, the admission rate was highest when participants in the standard contingency pairing condition (the

condition that most closely resembles the situation faced by criminal suspects) had been subjected to a lengthy interview, perceived a behavior to have low seriousness, or expected a long interview. Though these results suggest that lengthy interrogations and coercive interrogation tactics that alter suspects' perceptions of time or a crime's seriousness can increase the confession rate, it is important to emphasize that doing so comes at a cost to the diagnostic value of the resulting confession evidence. For example, an increase in the confession rate that arises from a lengthy interrogation or coercive interrogation tactics could be due, at least in part, to a rise in the rate of false confessions, a possibility that is supported by case studies (Drizin & Leo, 2004). Because false confessions often lead to wrongful convictions (Drizin & Leo, 2004), it is essential that interrogation reforms be enacted to bar against their occurrence, thus protecting the civil liberties of suspects and upholding the integrity of the criminal justice system.

### Interrogation Myopia

The present research supports the idea that the interrogation situation is characterized by factors that can capitalize on and exploit a preexisting vulnerability of suspects to focus on short-term contingencies, ultimately narrowing their attentional focus to the short-term gains associated with a confession. Research relevant to the effects of negative emotions on attention provides a theoretical context within which to understand this pattern. Unlike positive emotions that produce creative, flexible, unusual, and integrative thought (Fredrickson, 2001), negative emotions narrow attention to centrally relevant information (Easterbrook, 1959). Therefore, common reactions to police interrogation, which include fatigue and hopelessness as well as anxiety, and fear (Irving, 1980; Gudjonsson, 2003), may narrow suspects' attentional focus to the events and conditions operating in the immediate interrogation situation while simultaneously diverting their attention away from factors that are temporally remote, such as the future consequences that they may face if convicted. Ultimately, this narrowing of attentional focus may create a psychological state of *interrogation myopia* whereby suspects' choices are driven too much by the social influences that are operating during the immediate interrogation situation, and too little by their long-term interests.

The tendency for suspects to develop this myopic perspective may be particularly likely among innocent suspects and those with psychological or cognitive vulnerabilities. According to theory and research relevant to the phenomenology of innocence, innocent suspects strongly believe that their innocence will protect their long-term interests (Kassin, 2005; Kassin & Norwick, 2004). As a result, innocent suspects may (wrongly) believe that they can escape from the aversiveness of an interrogation by offering a confession and also avoid future conviction and punishment on the grounds that their objective innocence will somehow prevent a miscarriage of justice. Thus, compared with their guilty counterparts, innocent suspects may underestimate the probability of conviction and punishment—a miscalculation that may encourage them to focus on the short-term gains that can be achieved by offering a confession.

Suspects with vulnerabilities may also be particularly susceptible to taking a myopic perspective, though for different reasons. Suspects with cognitive deficits, mental illness, substance dependence, as well as minors tend to be impulsive (Owen-Kostelnik,



Reppucci, & Meyer, 2006; Redlich & Drizin, 2007), a cognitive style that may substantially increase the extent to which they are unduly influenced by factors that are present in the immediate interrogation situation. A similar tendency may be present among individuals who are highly suggestible. According to Gudjonsson and Clark (1986), suspects with high interrogative suggestibility are especially sensitive to the effects of negative feedback (e.g., repeated questioning). Because many of the proximal consequences facing suspects during an interrogation are negative, it may be that highly suggestible suspects are less able to appropriately weigh distal consequences when deciding whether or not to confess, thereby increasing the extent to which proximal consequences influence their confession decisions. An important step toward protecting innocent and vulnerable suspects, therefore, is to institute recommended reforms that limit the use of aversive and manipulative interrogation tactics that focus suspects' attention too narrowly on the short-term benefits associated with a confession.

### Limitations and Methodological Considerations

There are several aspects of our research that warrant discussion. First, even though both experiments manipulated whether admissions or denials were paired with the proximal or the distal consequence, the repetitive questions always served as the proximal consequence and the potential meeting with the police officer always served as the distal consequence. This aspect of our research raises the possibility that the main effects that we observed for the contingency pairing may have reflected the unique characteristics of the consequences rather than their temporal distance. However, the findings of prior research argue against such an interpretation. Using the same interview paradigm that we used here, Madon et al. (2012) found that the proximal consequence exerted more influence on participants' admissions relative to the distal consequence regardless of whether the proximal consequence was the repetitive questions and the distal consequence was meeting with the police officer, or the proximal consequence was meeting with the police officer and the distal consequence was the repetitive questions. This prior experimental evidence indicates that the findings of the present research are more likely due to the proximity of the consequences than they are to the unique characteristics of the consequences themselves.

Second, ethical concerns precluded us from creating a situation that was as coercive or as psychologically distressing as an actual police interrogation. Participants in our research were questioned in a physical environment that was less threatening than that of an interrogation room, and they faced consequences that were less severe than those faced by criminal suspects. Consideration of two factors, however, argue for the relevance of our method for understanding the underlying psychological processes that are at play in real police interrogations. First, the tendency for participants in our research to engage in temporal discounting when deciding whether or not to admit to the criminal and unethical behaviors falls in line with prevailing theoretical perspectives on criminal confessions. Confession theorists have posited that criminal suspects are motivated more by short-term goals than by long-term goals (Follette et al., 2007) and that their behaviors are driven more by short-term consequences than by long-term consequences (Kassin et al., 2010; Kassin & Gudjonsson, 2004). Hence, current theoretical perspectives suggest that criminal suspects engage in

the same psychological process as did the participants in our research, thereby lending credibility to our results as representative of the effects that occur within actual police interrogations. In addition (and more generally), the experimental approach has been regarded as an invaluable tool in the scientific investigation of psychological processes that underlie behavior in extraordinary real-world circumstances (e.g., Asch, 1956; Haney, Banks, & Zimbardo, 1973; Latané & Darley, 1968; Milgram, 1974; Tajfel & Wilkes, 1963). We believe that our procedures similarly tapped a key psychological process that influences suspects' decisions to confess during police interrogation; namely, that suspects enter the interrogation context with a preexisting vulnerability to make short-sighted confession decisions and that this vulnerability is exaggerated by factors that are present in the immediate interrogation situation.

Third, our research relied exclusively on a population of college students who were relatively homogenous in terms of age and ethnicity and who were probably less vulnerable to coercion than the typical criminal suspect. As a result, the magnitude of effects that we observed may differ from those that exist in real interrogations. However, the nature of this difference is such that it is more likely that we underestimated, rather than overestimated, the magnitude of the effects. Because our participants did not constitute a vulnerable population, our results are likely conservative estimates of the causal effect of temporal discounting on confession decisions. Accordingly, the effects observed in our research would likely be stronger among real suspects who are often cognitively or socially impaired (Gudjonsson, 2003; Redlich, 2007).

### Conclusion

Prior research has established that suspects have a preexisting vulnerability to discount distal consequences when making their confession decisions (Madon et al., 2012). The findings of the current research provided evidence that this preexisting vulnerability is exacerbated by factors that are associated with the immediate interrogation situation. Participants showed an exaggerated tendency to temporally discount a distal consequence when making their admission decisions the longer they had been interviewed, the less serious they perceived a criminal and unethical behavior, and when they expected to be interviewed for a long time. The fact that our participants exhibited this tendency even though doing so increased their risk of incurring a distal consequence supports recommended reforms to impose time limits on interrogations and to restrict the use of techniques that either reduce suspects' apparent culpability by altering their perceptions of a crime's seriousness, or that imply that an interrogation's length will depend on their cooperativeness. These reforms are needed because, as suggested by our data, lengthy interrogations and coercive interrogation tactics can increase the likelihood that suspects will confess (not because they are guilty, but instead) as a way to escape from the immediate interrogation situation, thereby undermining the diagnostic value of confession evidence.

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