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Communication error management in law enforcement interactions: a receiver's perspective

Miriam S.D. Oostinga^a, Ellen Giebels^a and Paul J. Taylor^{a,b}

^aDepartment of Psychology of Conflict, Risk and Safety, University of Twente, Enschede, The Netherlands;

^bDepartment of Psychology, Lancaster University, Lancaster, UK

ABSTRACT

Two experiments explore the effect of law enforcement officers' communication errors and their response strategies on a suspect's trust in the officer; established rapport and hostility; and, the amount and quality of information shared. Students were questioned online by an exam board member about exam fraud ($N_{\text{study1}} = 188$) or by a police negotiator after they had stolen money and barricaded themselves ($N_{\text{study2}} = 184$). Unknown to participants, the online utterances of the law enforcement officer were pre-programmed to randomly assign them to a condition in a 2(Error: factual, judgment) \times 3(Response: contradict, apologize, accept) factorial design, or to control where no error was made. Our findings show that making (judgment) errors seem more detrimental for affective trust and rapport in a suspect interview, while no such effects appeared in a crisis negotiation. Notably, we found a positive effect of errors, as more information was being shared. The ultimate effect of the error was dependent on the response: accept was effective in re-establishing rapport and decreasing hostility, while contradict threatens it. Accept seems more effective for the willingness to provide information in a suspect interview, while apologize seems more effective for affective trust and rapport in a crisis negotiation.

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Errors can have negative consequences for relationships and cooperation. Customers discredit firms and cancel purchases because of wrong information (Dutta & Pullig, 2011), while employees reduce the effort they make at work for a leader who has erred (Thoroughgood, Sawyer, & Hunter, 2013). Arguably, the negative effects of errors are likely pronounced in law enforcement interactions where stakes are high and trust is low, since errors serve to confirm initial negative expectations (Beune, Giebels, & Sanders, 2009). Yet, as with everyday conversations, law enforcement officers will likely make errors. They may mix up names, incorrectly recall a suspect's circumstances, or make an inappropriate inference from what a suspect says. Indeed, US interrogators view trial and error as a common strategy for determining 'what works best' (Russano, Narchet,

CONTACT Miriam S.D. Oostinga  m.s.d.oostinga@utwente.nl  Department of Psychology of Conflict, Risk and Safety, University of Twente, PO Box 217, Enschede 7500AE, The Netherlands

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Kleinman, & Meissner, 2014), while European hostage negotiators view errors as inevitable and as a valuable form of feedback (Oostinga, Giebels, & Taylor, *in press*). Officers may also use different strategies following their error, and this may affect what occurs. Alison, Alison, Noone, Elntib, and Christiansen (2013) have shown that failing to adequately address what a suspect considers an error undermines rapport and suspect cooperation (e.g. a suspect reverts to 'no comment'). It is thus important to consider both the effects of errors and the officer's behavior following the error.

In this article, we provide an initial experimental exploration of the effects of different types of communication errors and response strategies in two types of law enforcement interactions: suspect interviews (Study 1) and crisis negotiations (Study 2). We examine two contexts in recognition of the fact that prior work has shown that interviews, due to their focus on investigative information, are largely instrumental in goal focus, while negotiations, due to their focus on helping somebody in crisis, often have an expressive focus (Beune, Giebels, & Taylor, 2010; Hammer & Rogan, 1997; Vecchi, Van Hasselt, & Romano, 2005). We examine both contexts by analyzing the interplay between law enforcement officer and suspect. Specifically, we conceptualize the error-recovery event as involving four stages: the law enforcement officer utters a message; the suspect judges the message to contain an error; the suspect (in)directly addresses the error; and, the law enforcement officer realizes the error and responds. We examine how the error and response made during this interaction may affect cognitive, relational and behavioral factors. At the cognitive level, we are interested in the effects of errors on the degree a suspect trusts the law enforcement officer, since trust is essential in the development of dependency between people (Ross & Wieland, 1996). We distinguish between affective trust (i.e. perceived capability to care for another person without self-interest) and cognitive trust (i.e. perceived trustworthiness and reliability for performing a task; cf. Conchie, Taylor, & Donald, 2012; McAllister, 1995). At the relational level, we are interested in rapport and hostility, since these capture the possible cooperative and non-cooperative relational orientations of the suspect (Drolet & Morris, 2000; Kleinman, 2006). At the behavioral level, we are interested in the suspect's willingness to provide information and their actual information provision, since these are direct measures of cooperation.

Since this is the first exploration of communication error management in law enforcement interactions, we tested with students. Using students in an initial examination afforded three advantages. First, the crimes of interest are relevant and 'close to the imagination' of students, who are overrepresented in the general population of people who commit crimes (Donker & Slotboom, 2008). Second, as several authors have argued (Kardes, 1996; Petty & Cacioppo, 1996), the use of students in tightly controlled designs is suitable when the research seeks to provide theory-driven groundwork on which future studies can build. Third, students have been used successfully before in studies in the suspect interview (cf. Beune, Giebels, Adair, Fennis, & Van der Zee, 2011; Russano, Meissner, Narchet, & Kassin, 2005) and crisis negotiation domain (cf. Giebels, Oostinga, Taylor, & Curtis, 2017) with results corresponding to those found in field studies.

Communication errors

In their interviews with crisis negotiators, Oostinga et al. (*in press*) identified three types of communication error: contextual, factual and judgment errors. Contextual errors

encompass messages that relate to police practices or procedures. An example might be using police tactical language, or mentioning the approaching arrest team. Factual errors comprise messages that contain an error of fact and are objectively wrong. An example might be using the wrong name or date. Judgment errors covers messages in which the negotiator fails to reflect the thoughts and feelings of the perpetrator adequately and are subjectively wrong. An example might be trying to solve the problem when the perpetrator is still high in emotions or focusing too much on a topic that the perpetrator does not want to talk about. Here we focus on the last two types of errors, as they stem from the police-suspect exchange and the locus of control is the suspect.

As might be expected, research outside of the law enforcement officer-suspect interaction literature suggests that the consequence of both types of errors is negative. For example, in their study of leaders' errors, Thoroughgood et al. (2013) found that errors related to gathering information and problem-solving (i.e. kinds of factual error) and errors related to supporting, recognizing and rewarding (i.e. kinds of judgement error) decrease an employees' desire to work for a leader. This suggests that a law enforcement officer's errors may have a negative effect on the relationship between law enforcement and suspect because it will degrade the suspect's desire to engage in the interaction. Other work has shown that errors can have an indirect impact on perceptions of the error maker. Vignovic and Thompson (2010) found that factual and judgment (etiquette errors in their terminology) errors negatively affect a recipient's perception of the error maker's professionalism and dedication to the job. Critically, they found that judgment errors led to a more negative evaluation of the extent to which the error maker was capable of empathizing. Collectively, this research suggest that a factual error may undermine the perceived reliability of a law enforcement officer and threaten cooperation, while a judgment error will also lead the suspect to feel misunderstood or unappreciated. Consequently, we hypothesize that:

H1a: Compared to an interaction where no error is made, an interaction in which the law enforcement officer makes an error will be associated with greater suspect perceptions of law enforcement officer distrust, less rapport and more hostility, and less information provision by the suspect.

H1b: The predicted impacts of communication errors will be greater for a judgment error compared to a factual error.

Response strategies

Studies in marketing (Roschk & Kaiser, 2013; Smith, Bolton, & Wagner, 1999) and leadership (Reb, Goldman, Kray, & Cropanzano, 2006) suggest that the type of response used to reconcile an error may ultimately determine the attitude of the error receiver towards the error maker. The negotiators interviewed in Oostinga et al. (in press) reported three types of response: contradict, apologize and accept. Contradict refers to communication that denies responsibility for the error. Apologize refers to communication that apologizes for the error and takes responsibility. Accept refers to communication that agrees that an error has been made and assures prevention in the future.

Importantly, these three response strategies vary on three dimension: (1) the responsibility that the officer takes for the error; (2) the extent to which the officer shows empathy for the other party; and, (3) the extent to which the officer assures prevention of the same

error in the future (Dutta & Pullig, 2011; Fukono & Ohbuchi, 1998). The responsibility dimension differentiates contradict responses from apologize and accept responses, since in the former any association with the error is rejected, while in the latter some responsibility is acknowledged. The empathy dimension differentiates apologize responses from contradict and accept responses, since apologize is the only response that conveys some understanding of the other party. Finally, the prevention dimension differentiates accept responses from the contradict and apologize responses, since accept is the only strategy that suggests the error will be avoided in the future.

These differences in the thoroughness of the response suggest that an apologize and accept response strategy will be the most effective response since it deals with multiple facets of the 'offending' statement. By contrast, contradict is the most adverse. To fully understand what happens when an error is being managed, we are interested in the comparison between the different responses and the situation in which no error was made. Thus, we hypothesize that:

H2: Compared to an interaction where no error is made, an interaction in which the law enforcement officer contradicts the error will be associated with higher suspect perceptions of law enforcement officer distrust, lower rapport and more hostility, and less information provision by the suspect.

Study 1

Method

Participants

A total of 205 undergraduate psychology students from the University of Twente participated for course credit. This number was guided by a rule-of-thumb stopping rule that more than 25 participants per condition was sufficient and we had left some buffer for if they did not recognize the error. Because our definition of communication error management requires the receiver (the participant) to recognize the error, the first author and an independent second coder performed a content analysis of the participants' responses to determine whether or not they recognized and responded to the officer's error. They identified the same 17 participants as not explicitly addressing the error. In 14 cases this concerned a factual error (i.e. they agreed to being a Sociology student when they were not) and in 3 cases it concerned a judgment error (i.e. they agreed to being an unmotivated student). As we consider such identification crucial to the error management process, we excluded these participants from further analysis. Of the remaining 188 students, 54 were male (28.7%), 89 were Dutch (47.3%; the others were German, $n = 98$, and Flemish, $n = 1$), and their mean age was 20.6 years ($SD = 2.17$).

Measures

Affective trustworthiness. We measured participants' post-interview affect-based trust for the interviewer (i.e. error maker) using three of the five items from Colquitt, LePine, Piccolo, Zapata, and Rich's (2012) affect-based trust scale. The two discarded items were not applicable to the current context because they referred to a long-term working relationship (e.g. 'We would both feel a sense of loss if one of us was transferred'). Specifically, participants were asked to rate, using a scale ranging from 1 (strongly disagree) to 5 (strongly

agree), the extent to which they agreed with the following statements: 'The interviewer and I freely shared our ideas and feelings'; 'I can talk freely to the interviewer about problems I experience'; and 'The interviewer responded caringly when I shared my problems.' We created an affective trustworthiness score by averaging the scores on these 3 items. A high score on this scale means that the participant trusted the interviewer more.

Cognitive trustworthiness. We measured participants' post-interview cognitive-based trust for the interviewer using 5 of the 6 items from Colquitt et al's (2012) cognition-based trust scale. The sixth item, 'I can rely on my supervisor not to make my job more difficult', was not applicable to a suspect interviewing context because it focuses on the job setting. Participants were asked to rate, on a scale ranging from 1 (strongly disagree) to 5 (strongly agree), the extent to which they agreed with statements such as: 'The interviewer approaches the job with dedication' and 'I see no reason to doubt the interviewer's competence.' In the analysis we present, we decided to leave out this scale due to reliability concerns ($\alpha = .41$). Specifically, the fourth and fifth item appeared to be too general once translated into Dutch, and so did not appear to elicit trust perceptions of the interviewer as much as perceptions of the University system.

Rapport. We measured participants' post-interview perceived rapport with the interviewer using Vallano and Schreiber Compo's (2011) 9-item questionnaire. Participants were asked to rate, using a five-point scale ranging from 1 (not at all) to 5 (very much), the extent to which they viewed the interaction as being characterized by a series of adjectives, such as 'friendly,' 'positive,' and 'smooth.' We created a rapport score by averaging the scores on these 9 items. A high score on this scale means that the participant experienced a higher level of rapport with the interviewer.

Hostility. We measured participants' post-interview hostility toward the interviewer using Watson and Clark's (1994) PANAS-X scale. Participants were asked to rate the interviewer on a scale, ranging from 1 (not at all) to 5 (very much), regarding the extent to which they felt each of the following 6 negative emotion items: angry, hostile, irritable, scornful, disgusted and loathing. We created a hostility score by averaging the scores on these 6 items. A high score on this scale means that the participant felt more hostility towards the interviewer.

Willingness to provide information. Following Beune et al. (2011), we assessed the willingness to provide information by asking participants to report the extent to which they perceived the following to be true: 'I would tell the interviewer everything'; 'I would provide a lot of information to the interviewer'; 'I would give truthful information to the interviewer' (1 = strongly disagree to 5 = strongly agree). We created a willingness to provide information score by averaging the scores on these 3 items. A high score on this scale means that the participant was more willing to provide information to the interviewer.

Quantity of information provision. Research on the cognitive interview shows that the response length is a strong indicator of the amount of unique information in that account (Memon, Fraser, Colwell, Odinet, & Mastroberardino, 2010). For testing

Hypothesis 1, we used the number of words uttered by the suspect directly after the error manipulation and before the response manipulation. For testing Hypothesis 2, we used the number of words directly after the response manipulation and before the next question. In line with Giebels and Taylor (2009), we took the frequency of the words as a proportion of the total words used across the whole interaction to control for individual differences in production. A high score on this measure means that the participant provided more information.

Quality of information provision. Although number of words uttered is a valuable proxy for information provision, it does not necessarily reflect the quality of the information reported in terms of utility and validity. To address this, we examined the utility of information provided by rating each message on a 4-point scale as follows: -1 = suspect uses incorrect information or reinforces denial of the fraud (e.g. denies taking a peek into the exam, provides evidence for why he/she did not need to commit fraud); 0 = suspect circumvents the message (e.g. poses a contra-question, is vague, simple 'ok' or 'no problem'); 1 = suspect gives plain correct information (e.g. yes or no, mere denial in case of mistake); and 2 = suspect gives plain correct information and elaborates with information about the circumstances (e.g. explains which study he/she is doing, elaborates on personal background). Thus, the higher a message scores on the scale, the more valuable it is from an information gathering perspective. The first and second author independently applied this coding scheme to the suspect's response following the interviewer's error and the suspect's response following the interviewer's response strategy. This resulted in excellent agreement for the classification of the messages that followed the error (Cohen's $\kappa = .82$), and a sufficient agreement for messages that follows the response strategy (Cohen's $\kappa = .67$).¹ The remaining coding disagreements were discussed to determine a final code.

Alongside the variables described above, Study 1 also asked participants to respond to 3 open questions (e.g. how did you experience the error?) so that we could better design future studies. Study 1 and Study 2 also asked participants to reflect on how well they engaged in the task (e.g. how much did you get distracted during the interaction?) and how they experienced the relationship (e.g. the hierarchical power position compared to the interviewer). The original data is available at <https://doi.org/10.17026/dans-x6e-rv48>.

Procedure

The participants were provided with an exam fraud scenario close to the perception of the students (i.e. psychological realism; Evans, Meissner, Brandon, Russano, & Kleinman, 2010): While participating in a study on personality assessment, the students were told that an exam they were about to take as part of their Psychology course was apparently accidentally left behind in the room. Due to the death of a close relative there was not enough time to study for the exam, so 'they took a peek'. Identification with the scenario was reinforced by showing a video with the event filmed from a first-person perspective. Participants were then told that the investigator of the study suspected them of exam fraud and had informed a member of the board of examiners of their suspicion. As this person, named 'Anne Bruinsma',² wanted to speak with them right away, they would be questioned online (i.e. via a chat utility on the computer). They were also told that it was not in

Table 1. Overview of the messages used in the chat session in Study 1.

	Messages
Opening questions	1. 'What is your name, student number and day of birth?' 2. 'Have you ever been suspected of exam fraud before?' 3. 'Did you perform the fraud that you are accused of?' 4. 'Can you tell me a bit more about that?'
Error manipulation	5. Factual: 'Ok. So you are a Sociology student.' Judgment 'Ok. So you are a rather unmotivated student.' No error: 'Ok. So you were indeed there during the study.'
Response manipulation	6. Contradict: 'I do not have it wrong.' Apologize: 'I had it wrong, I apologize.' Accept/no error: 'I have noted everything.'
Closing questions	7. 'Do you have anything else to add?' 8. 'Ok. I believe I have enough information. I will contact you again in the near future to inform you about the procedure. Goodbye.'

their best interest to tell the truth due to the negative consequences of their act, which could include not being allowed to sit their exams and being expelled from further education.

The online interaction scenario has been used effectively in previous interviewing research (Beune et al., 2011) and it is known for having similar social influence processes present as real-life interactions (Hilverda, Kuttschreuter, & Giebels, 2017). For us it offers the opportunity to standardize the questioning of the exam board member and to exclude confounding variables such as the gender of the interviewer and nonverbal characteristics, such as tone and pitch. It also allowed us to assign participants randomly to a 2 (error type: factual, judgment) \times 3 (response strategy: contradict, apologize, accept) between-subjects design, with a control condition in where no error was made. It provided the opportunity to measure actual and concrete responses of participants instead of intentions of behavior, which are the usual measure in vignette studies of error response (cf. Dutta & Pullig, 2011; Fukono & Ohbuchi, 1998).

Table 1 presents the messages that the interviewer used. After the chat session, respondents completed a questionnaire. They were then debriefed and credited for their participation.

Results

Scale reliability

Table 2 shows the means, SDs, Cronbach alphas, and zero-order correlations among the study measures. As can be seen from Table 2, the measures have high internal reliability and there are positive correlations among affective trust, rapport, willingness to provide information and the quality of info provision following error and response. As might be expected, each of these measures correlates negatively with experienced hostility. Interestingly, affective trust has the highest association with participants' willingness to provide information, as well as the quality of information provided following the error and response. By contrast, rapport is negatively correlated with the quantity of information provided after the response. These findings suggest that error making and the response strategies we tested had their largest impact through shaping of affective trust. Finally, the high negative correlation between quantity and quality of information after error suggests that more information quantity does not necessarily reflect information value.

Table 2. Means, standard deviations, and inter-correlations among study variables in Study 1.

Variables	<i>M</i>	<i>SD</i>	<i>α</i>	1	2	3	4	5	6	7
1. Affective trust	2.01	0.82	.72							
2. Rapport	2.88	0.53	.77	.54*						
3. Hostility	2.48	0.80	.84	-.25*	-.21*					
4. Willingness to provide info	2.22	0.99	.80	.59*	.37*	-.23*				
5. Quantity of info provision (after error)	0.12	0.11		-.10	-.12	.06	-.09			
6. Quality of info provision (after error)	1.07	1.08		.14	.12	-.10	.21*	-.36*		
7. Quantity of info provision (after response)	0.07	0.07		.08	-.08	.02	-.03	-.06	-.02	
8. Quality of info provision (after response)	0.11	0.63		.11	-.00	-.13	.19*	-.02	.11	.02

Note: $N = 188$.

* $p < .05$, calculated using 1000 bootstrapped resamples for each coefficient.

Hypothesis testing

Error effects

Table 3 presents participants' perceptions and behavior as a function of the communication error to which they were exposed. To test our prediction that a communication error would negatively impact perceptions and behavior (H1a), and that this effect would be stronger for a judgment error compared to a factual error (H1b), we conducted a one-way MANOVA with communication errors as Independent Variable and the six effectiveness measures as the Dependent Variables. There was a significant multivariate effect of error type, $F(12, 362) = 14.04$, $p < .001$, with significant main effects found for affective trust, $F(2, 187) = 3.29$, $p = .040$, $\eta^2 = .034$, rapport, $F(2, 187) = 3.75$, $p = .025$, $\eta^2 = .039$, quantity of information provision, $F(2, 187) = 64.22$, $p < .001$, $\eta^2 = .410$, and quality of information provision, $F(2, 187) = 37.67$, $p < .001$, $\eta^2 = .289$. There was no significant effect for hostility, $F(2, 187) = 1.82$, $p = .165$, $\eta^2 = .019$, nor for willingness to provide information, $F(2, 187) = 2.51$, $p = .084$, $\eta^2 = .026$.

In comparison to the control condition, the making of a judgment error led to less affective trust, $t(41.52)^3 = -2.41$, $p = .020$, $d = -.517$, 95%CI $[-.95, -.08]$,⁴ and less rapport, $t(67.06) = -3.26$, $p = .002$, $d = -.699$, 95%CI $[-1.13, -.26]$, but, unexpectedly, to a greater quantity of information provision, $t(78.52) = 8.43$, $p < .001$, $d = 1.81$, 95%CI $[1.30, 2.31]$. There was no difference in the quality of information provision, $t < 1$. A set of equivalent effects of lesser magnitude were observed for factual errors when compared to the control group, both for affective trust, $t(50.05) = -1.52$, $p = .135$, $d = -.334$, 95%CI $[-.77, .10]$, and

Table 3. Means and standard deviations for interviewing effectiveness measures as a function of communication error in Study 1.

Effectiveness measure	Communication error					
	Control ($N = 29$)		Factual ($N = 72$)		Judgment ($N = 87$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. Affective trust	2.32	0.89	2.03	0.86	1.88 ^a	0.73
2. Rapport	3.09	0.39	2.90	0.54	2.79 ^a	0.54
3. Hostility	2.41	0.82	2.36	0.75	2.60	0.83
4. Willingness to provide info	2.52	0.95	2.29	0.95	2.07	1.02
5. Quantity of info provision (after error)	0.05	0.07	0.06 ^b	0.04	0.20 ^{a,b}	0.11
6. Quality of info provision (after error)	0.72	0.80	1.81 ^{a,b}	0.52	0.59 ^b	1.17

^aDiffers significantly from control, $p < .05$.

^bDiffers significantly from the other communication error, $p < .05$.

rapport, $t(71.62) = -1.98, p = .052, d = -.435, 95\%CI [-.87, .00]$. There was no difference in quantity of information provision, $t < 1$, but there was a higher quality of information provision, $t(38.02) = 6.75, p < .001, d = 1.49, 95\%CI [.93, 2.02]$. Judgment errors were associated with a greater quantity of information provision compared to a factual error, $t(116.29) = 10.61, p < .001, d = 1.69, 95\%CI [1.31, 2.07]$, but also with a lower quality of information provision, $t(123.73) = -8.75, p < .001, d = -1.39, 95\%CI [-1.75, -1.03]$. There was no significant difference for affective trust and rapport, both t 's < 1.3 .

Response effects

Table 4 presents participants' perceptions and behavior as a function of the response strategy to which they were exposed. To test our predictions that a contradict response will be less effective than the situation in where no error was made (H2), we conducted a one-way MANOVA with type of response strategy as the Independent Variable and the six effectiveness measures as the Dependent Variables. There was a significant multivariate effect of response type, $F(18, 543) = 2.99, p < .001$, with significant main effects for affective trust, $F(3, 187) = 5.84, p = .001, \eta^2 = .087$, rapport, $F(3, 187) = 4.96, p = .002, \eta^2 = .075$, willingness to provide information, $F(3, 187) = 8.40, p < .001, \eta^2 = .120$, and the quantity of information provision, $F(3, 187) = 2.67, p = .049, \eta^2 = .042$. There were no significant effects for hostility, $F(3, 187) = 2.11, p = .100, \eta^2 = .033$, nor the quality of information provision, $F(3, 187) = 1.96, p = .121, \eta^2 = .031$.

When comparing the response strategies to the control, we found that an accept response after an error had a positive effect on participants' perceptions and behavior. Specifically, the effectiveness measures 'recovered' following an accept response to the level of the control group. That is, there were no differences between the accept and control group on affective trust, rapport, willingness to provide information or quantity of information provision (all t 's < 1.3). By contrast, when comparing apologize to control, we found that apologizing led to less rapport, $t(67.87) = -2.04, p = .045, d = -.471, 95\%CI [-.93, -.01]$, and willingness to provide information, $t(53.52) = -2.18, p = .033, d = -.504, 95\%CI [-.96, -.04]$, marginally significantly less affective trust, $t(48.23) = -1.77, p = .083, d = -.409, 95\%CI [-.87, .05]$, and no significant difference for the quantity of information provision, $t < 1$. When comparing contradict to control, we found that contradicting led to significantly less affective trust, $t(48.66) = -3.37, p = .001, d = -.776, 95\%CI [-1.25, -.30]$, rapport, $t(75.89) = -3.96, p < .001, d = -.912, 95\%CI [-1.38, -.44]$, and willingness to provide information, $t(51.91) = -3.29, p = .002, d = -.757, 95\%CI [-1.23, -.28]$, but no

Table 4. Means and standard deviations for interviewing effectiveness measures as a function of response strategy in Study 1.

Effectiveness measure	Response strategies							
	Control (N = 29)		Contradict (N = 54)		Apologize (N = 53)		Accept (N = 52)	
	M	SD	M	SD	M	SD	M	SD
1. Affective trust	2.32	0.89	1.67 ^a	0.73	1.98	0.72	2.20	0.85
2. Rapport	3.09	0.39	2.68 ^a	0.56	2.90 ^a	0.47	2.96	0.55
3. Hostility	2.41	0.82	2.70	0.73	2.35	0.81	2.41	0.83
4. Willingness to provide info	2.52	0.95	1.82 ^a	0.85	2.05 ^a	0.87	2.65	1.07
5. Quantity of info provision (after response)	0.06	0.07	0.09	0.07	0.06	0.05	0.06	0.06
6. Quality of info provision (after response)	-0.07	0.53	0.26	0.85	0.06	0.46	0.10	0.53

^aDiffers significantly from control, $p < .05$.

significant difference for the quantity of information was found, $t(58.93) = 1.63$, $p = .108$, $d = .375$, 95%CI [-.08, .83].

Additional explorative analysis

To explore any interaction effects between the communication error and response strategies, we conducted a two-way MANOVA with type of communication error and response strategies as the Independent Variables and the six effectiveness measures as the Dependent Variables. There was no significant multivariate interaction effect, $F(12, 298) = 1.30$, $p = .216$.

Discussion

As predicted, our analyses demonstrate that errors negatively affect a suspects' affective trust in the interviewer, and negatively affect the rapport between interviewer and suspect. Consistent with research in other domains, this was especially true for judgment errors whose relational-focus led to a worse set of suspect reactions compared to a factual error. We further found that apologizing for the error, and accepting that the error had occurred, were both more appropriate response strategies than contradicting the suspect. In comparison to the situation where no error was made, contradicting led to less affective trust, rapport, and willingness to provide information.

Of the accept and apologizing strategies, we found that accept was the more effective at repairing the damage done by the error. In contrast to apologizing, suspect perceptions and behaviors following an accept response were no different from suspects who were exposed to no error. The difference between these two strategies is important because it suggests that offering to 'correct the record' (i.e. the prevention dimension) plays an important role in the recovery process. This is perhaps not surprising within the interview context of Study 1 since the purpose of the interview was to gather information about what occurred. It remains, then, an open question as to whether this recover strategy will remain as effective within more 'expressive' law enforcement interactions (Beune et al., 2010), where the context is less information gathering and more resolving a suspect's aggression or crisis. In these contexts, the empathy dimension that distinguishes apologize responses may conceivably play a larger role.

Our findings also revealed a counterintuitive relationship: the making of a judgment error led to more sharing of information than the other errors. Although clearly unexpected, this finding may be interpreted through the same instrumental 'prevention' lens as the difference found across recovery strategies. That is, our suspects are choosing to respond to the error by providing more details (i.e. evidence) that they are correct. The error is paradoxically working to encourage disclosure. If this account of the observed relationship is correct, then we might again expect it to be contingent on the type of law enforcement context. Errors may elicit a different response when the interaction is not oriented around information provision.

Study 2

Considering the possible contextual dynamics identified above, the goal of Study 2 was to replicate the findings of Study 1 within a more expressive crisis intervention interaction.

We therefore tested the same hypotheses as Study 1. Additionally, however, we sought to better understand the effect of responses on the receiver's internal thoughts and perceptions (Nadler & Schnabel, 2015) by examining the extent to which effective responses replenish the receiver's fundamental social needs (Van Beest & Williams, 2006). As Williams et al. (2002) describe, one of the fundamental purposes of social interaction is to enable an actor to maintain their need for social belongingness, control, self-esteem and meaningful existence. A sense of belonging arises when a person has close relationships with others and a sense of control can be felt if a person has the power to, for example, engage in an interaction or not. A sense of self-esteem emerges when someone feels they are taken serious and someone feels that it is meaningful to exist if they sense their presence is important (Van Beest & Williams, 2006). Taking responsibility for the act and showing empathy or assuring prevention may indicate consideration for the other person's needs. By contrast, denying responsibility may show disregard for what the other person seeks or is thinking. Therefore, we hypothesize that:

H3: Interpersonal needs mediate the effects of response strategies on the perceptions of trust, rapport, hostility and information provision.

Method

Participants

A total of 234 students from the University of Twente participated for course credit. As with Study 1, this number was guided by a rule-of-thumb stopping rule that more than 25 participants per condition was sufficient and we had left some buffer for if they did not recognize the error. We screened participants for whether or not they recognized the error. The first author and a second independent coder assessed participants' responses and agreed that 47 participants did not recognize the error (93% agreement). Of the 17 participants on which they disagreed, another 3 were excluded following discussion and agreement that they had not likely recognized the error. This resulted in 50 participants being removed from the data, spread evenly across factual (54%) and judgment (46%) errors. The remaining 184 participants were predominantly female (62.0%) and 114 were of Dutch origin (62%; German, $n = 69$, and Italian, $n = 1$). Their mean age was 20.8 years ($SD = 2.33$).

Measures

We retained the measures used in Study 1, except for some minor changes.⁵ The content coding of the quality of information provision was undertaken by the first author and a second independent coder, who achieved excellent agreement for the classification of the messages that followed the error (Cohen's $\kappa = .94$), and a sufficient agreement for messages that follows the response strategy (Cohen's $\kappa = .69$). The remaining coding disagreements were discussed to determine a final code.

Social needs. To examine Hypothesis 3, we added a scale for measuring social needs. Specifically, we used 19 of the 20-item need threat scale from Van Beest and Williams (2006) to measure the four interpersonal needs: belongingness, self-esteem, control and meaningful existence. One item of the belongingness scale was not used (i.e. 'I felt like an outsider during the game') because it was too specific and could not easily be

transformed to the interaction context. Participants were asked to rate on a scale from 1 (do not agree) to 7 (agree) statements that include: 'I felt as one with my conversation partner' (belongingness); 'During the conversation I felt insecure' (self-esteem); 'I had the feeling that I could say what I wanted as often as I wanted' (control); and 'During the conversation I had the feeling that my presence did not count' (meaningful existence). We created a belongingness score by averaging the scores on 4 items, and a self-esteem, control, and meaningful existence score by averaging the scores on 5 items each. A high score on these scales means that the participant experienced respectively more belongingness, self-esteem, control, and meaningful existence during the conversation.

Procedure

The procedure matched Study 1 except that we used a video-based scenario designed to mimic a crisis negotiation training simulation (Giebels et al., 2017). Participants were asked to imagine that they were a second-year student who was having financial problems, that they had to pay their tuition fees soon, but that they had no money to do so. They notice a cash box at an advertisement stand of a student association and decide to take it, but while doing so get caught by other students. Out of panic, they run, barricade themselves in a room, and shout that they have a gun. Identification with the scenario was reinforced by showing a video with the event filmed from a first-person perspective. Participants were then told that a police negotiator sought contact with them over the computer. After this, an online chat session equivalent to Study 1 but using the messages presented in Table 5 commenced. To ensure the ecological validity of the messages presented to participants, we based them on transcripts from actual police negotiation training. After the chat session, respondents completed a questionnaire, were debriefed and were credited for their participation.

Results

Scale reliability

Table 6 presents the means, SDs, Cronbach alphas, and zero-order correlations among the study variables. As can be seen in Table 6, the reliability of the different measures was high and there were high positive correlations among both trust measures, rapport, and willingness to provide information scales. Consistent with Study 1, there were negative

Table 5. Overview of the messages used in the chat session in Study 2.

	Messages
Opening questions	1. 'Hi Anne from the police here, who am I talking to?' 2. 'I heard you have locked yourself in a room?' 3. 'And what about the theft?' 4. 'Can you tell me a bit more about that?'
Error manipulation	5. Factual: 'Ok. So this is the first time you are on campus.' Judgment: 'Ok. So you stole out of boredom.' No error: 'Ok. So you study here at the UT.'
Response manipulation	6. Contradict: 'I do not have it wrong.' Apologize: 'I had it wrong, I apologize.' Accept/no error: 'I have noted everything.'
Closing questions	7. 'Are you alone in the room?' 8. 'What do you plan on doing next?'

Table 6. Mean, standard deviations, reliability, and inter-correlations among study variables in Study 2.

Variables	<i>M</i>	<i>SD</i>	<i>α</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Affective trust	2.38	0.96	.78												
2. Cognitive trust	3.11	0.66	.70	.54*											
3. Rapport	3.03	0.56	.78	.67*	.60*										
4. Hostility	2.74	0.70	.72	-.10	-.23*	-.23*									
5. Willingness to provide info	2.47	1.07	.87	.68*	.46*	.48*	-.18*								
6. Quantity of info provision (after error)	0.12	0.10		-.03	-.13	-.11	.10	-.05							
7. Quality of info provision (after error)	1.36	0.85		.12	.17*	.08	-.10	.28*	.20*						
8. Quantity of info provision (after response)	0.08	0.07		-.13	-.08	-.11	-.01	-.17*	-.13	-.12					
9. Quality of info provision (after response)	0.34	0.69		-.06	.00	-.09	.00	.04	.00	.03	.51*				
10. Belongingness	2.85	1.06	.72	.55*	.42*	.52*	-.25*	.51*	-.07	.21*	-.06	-.03			
11. Control	3.32	1.34	.85	.27*	.20*	.29*	-.04	-.19	.08	.06	-.05	.04	.30*		
12. Self-esteem	3.66	1.10	.69	.11	.10	.20*	-.36*	.00	-.04	-.07	-.03	-.02	.22*	.36*	
13. Meaningful existence	4.01	1.31	.89	.48*	.44*	.52*	-.21*	.40*	-.03	.26*	-.02	.01	.48*	.45*	.15*

Note: *N* = 184.**p* < .05, calculated using 1000 bootstrapped resamples for each coefficient.

correlations between these measures and hostility. The fact that these positive correlations are consistent with previous findings that have drawn on different methodologies (e.g. Giebels & Taylor, 2009) suggests that our measures are capturing the psychological variables known to correlate with effective crisis negotiating. Moreover, the highest correlations between these effectiveness measures and the different social needs is found with belongingness and meaningful existence. This suggests that the effectiveness measures were mostly impacted by these two needs.

Hypothesis testing

Error effects

Table 7 shows the perceptions of the participants toward the negotiator as a function of negotiator error. To test our prediction that communication errors have a negative effect on perpetrators' perceptions and behavior (H1a), particularly judgment errors (H1b), we conducted a one-way MANOVA with type of communication error as the Independent Variable and the seven effectiveness measures as the Dependent Variables. There was a significant multivariate main effect for error type, $F(14, 352) = 4.32, p < .001$, which was driven by the significant main effect of the quantity of information provision, $F(2, 183) = 18.01, p < .001, \eta^2 = .166$, and the quality of information provision, $F(2, 183) = 7.40, p = .001, \eta^2 = .076$. There was no significant difference for affective trust, $F(2, 183) = 1.37, p = .257, \eta^2 = .015$, cognitive trust, $F(2, 183) = 1.12, p = .329, \eta^2 = .012$, rapport, $F(2, 183) = 1.06, p = .348, \eta^2 = .012$, hostility, $F(2, 183) = 2.69, p = .071, \eta^2 = .029$, nor willingness to provide information, $F(2, 183) = 0.06, p = .945, \eta^2 = .001$.

Planned comparisons revealed that both the making of a factual error, $t(64.56) = 3.18, p = .002, d = .659, 95\%CI [.23, 1.08]$, and a judgment error, $t(100.36) = 5.99, p < .001, d = 1.24, 95\%CI [.79, 1.67]$, led to significantly more quantity of information being provided than the situation where no error was made. This was more the case for judgment errors than for factual errors, $t(121.93) = 3.94, p < .001, d = .643, 95\%CI [.31, .97]$. Similar results were found for the quality of information provision after the making of a factual, $t(70.32) = 4.70, p < .001, d = .974, 95\%CI [.53, 1.41]$, and judgment error, $t(93.47) = 3.34, p = .001, d = .689, 95\%CI [.27, 1.10]$, in comparison to control. Again, the quality of information provision did not differ between the different types of errors, $t < 1, ns$, suggesting

Table 7. Means and standard deviations for negotiating effectiveness measures as a function of communication error in Study 2.

Effectiveness measure	Communication error					
	Control (N = 34)		Factual (N = 74)		Judgment (N = 76)	
	M	SD	M	SD	M	SD
1. Affective trust	2.39	0.97	2.51	1.00	2.25	0.91
2. Cognitive trust	3.13	0.75	3.19	0.67	3.03	0.61
3. Rapport	3.06	0.54	3.09	0.61	2.96	0.51
4. Hostility	2.88	0.74	2.59	0.66	2.81	0.69
5. Willingness to provide info	2.42	1.06	2.46	1.13	2.50	1.03
6. Quantity of info provision (after error)	0.06	0.07	0.11 ^{a,b}	0.07	0.17 ^{a,b}	0.11
7. Quality of info provision (after error)	0.88	0.64	1.53 ^a	0.71	1.41 ^a	0.98

^aDiffers significantly from control, $p < .05$.

^bDiffers significantly from the other communication error, $p < .05$.

that the quantity of information provision does not necessarily reflect the quality of the information provided.

Response effects

Table 8 presents the perceptions of the perpetrator towards the negotiator as a function of response. To test our predictions that a contradict response will be less effective than the situation in where no error was made (H2), we conducted a one-way MANOVA with the type of response as Independent Variable and the seven effectiveness measures as the Dependent Variables. There was a significant multivariate effect of response type, $F(21, 528) = 2.82, p < .001$, with participants reporting significant differences in affective trust, $F(3, 183) = 4.24, p = .006, \eta^2 = .066$, rapport, $F(3, 183) = 6.68, p < .001, \eta^2 = .100$, and the quality of information provision, $F(3, 183) = 7.78, p < .001, \eta^2 = .115$. There was no significant difference for cognitive trust, $F(3, 183) = 0.54, p = .654, \eta^2 = .009$, hostility, $F(3, 183) = 2.49, p = .062, \eta^2 = .040$, willingness to provide information, $F(3, 183) = 0.59, p = .619, \eta^2 = .010$, nor the quantity of information provision, $F(3, 183) = 1.88, p = .135, \eta^2 = .030$.

When comparing the response strategies to control, we found no significant differences for affective trust: contradict vs. no error, $t(66.67) = -1.56, p = .123, d = -.358, 95\%CI [-.81, .10]$, apologize vs. no error, $t(69.88) = 1.53, p = .130, d = .333, 95\%CI [-.10, .76]$, and accept vs. no error, $t < 1$. We found that a contradict response after an error led to significantly less rapport, $t(68.73) = -2.70, p = .009, d = -.620, 95\%CI [-1.08, -.16]$. No significant differences were found between an apologize, $t(65.36) = 1.40, p = .167, d = .304, 95\%CI [-.13, .73]$, and accept, $t < 1$, response after an error was made in comparison to the control. Lastly, we found that a contradict $t(61.53) = 4.28, p < .001, d = .982, 95\%CI [.50, 1.46]$, and apologize, $t(85.47) = 2.68, p = .009, d = .583, 95\%CI [.15, 1.02]$, response led to a significantly higher quality of information provision in comparison to control. No significant difference was found when comparing the accept and control conditions, $t < 1$.

Social needs mediation

To test our hypotheses that social needs mediate the effect of response strategies on the effectiveness measures (H3), we first compared the response strategies to each other (see Table 8). We found that using an apologize response led to significantly more affective

Table 8. Means and standard deviations for negotiating effectiveness measures as a function of response strategy in Study 2.

Effectiveness measure	Response strategies							
	Control (N = 34)		Contradict (N = 43)		Apologize (N = 56)		Accept (N = 51)	
	M	SD	M	SD	M	SD	M	SD
1. Affective trust	2.39	0.97	2.06 ^b	0.86	2.71 ^c	0.97	2.27 ^b	0.95
2. Cognitive trust	3.13	0.75	3.00	0.71	3.16	0.59	3.13	0.65
3. Rapport	3.06	0.54	2.74 ^{a,b}	0.50	3.22 ^c	0.49	3.04 ^c	0.60
4. Hostility	2.88	0.74	2.82	0.65	2.53	0.60	2.80	0.77
5. Willingness to provide info	2.42	1.06	2.34	0.99	2.62	1.19	2.44	1.04
6. Quantity of info provision (after response)	0.06	0.05	0.10	0.07	0.07	0.08	0.07	0.06
7. Quality of info provision (after response)	0.09	0.38	0.70 ^a	0.83	0.41 ^a	0.76	0.14 ^{b,c}	0.49

^aDiffers significantly from control, $p < .05$.

^bDiffers significantly from apologize, $p < .05$.

^cDiffers significantly from contradict, $p < .05$.

trust perceptions in comparison to accept, $t(104.40) = 2.37, p = .020, d = .459, 95\%CI [.07, .84]$, and contradict, $t(94.91) = 3.55, p = .001, d = .720, 95\%CI [.31, 1.13]$. A similar, but non-significant pattern was found when comparing accept to contradict, $t(91.53) = 1.14, p = .258, d = .236, 95\%CI [-.17, .64]$. We found significantly more rapport when comparing apologize vs. contradict, $t(89.71) = 4.76, p < .001, d = .965, 95\%CI [.54, 1.38]$, and when comparing accept vs. contradict, $t(92.00) = 2.65, p = .010, d = .549, 95\%CI [.13, .96]$. A similar but non-significant pattern was present when comparing apologize vs. accept, $t(97.44) = 1.70, p = .092, d = .329, 95\%CI [-.05, .71]$. Apologize led to a higher quality of information provision in comparison to accept, $t(95.15) = 2.24, p = .028, d = .434, 95\%CI [.05, .82]$. Interestingly, the quality of information provision was higher for contradict in comparison to accept, $t(65.52) = 3.88, p < .001, d = .803, 95\%CI [.37, 1.23]$, but no significant difference was found when comparing apologize and contradict, $t(85.90) = -1.77, p = .081, d = -.359, 95\%CI [-.76, .04]$.

To test the mediation proposed by H3, we used model 4 of the PROCESS macro from Hayes (2012) with 1000 bootstrapping samples to derive Confidence Intervals. Because our previous analysis showed that response strategies had a direct significant effect on affective trust, rapport and the quality of information provision, we only tested these three mediation models. The three mediation analyses used response strategy as the Independent Variable, belongingness, control, self-esteem and meaningful existence as Mediators in parallel, and affective trust, rapport, and the quality of information provision as Dependent Variables, respectively. Since the response strategy is a categorical variable, we dummy-coded this variable into: contradict vs. control, apologize vs. control, accept vs. control, apologize vs. contradict, accept vs. contradict, and accept vs. apologize.

Our analyses of social needs and affective trust revealed two mediation effects. First, a significant indirect effect of response on affective trust, via meaningful existence, when comparing accept with apologize, $b = -.09, SE = .06, 95\%CI [-.23, -.01]$. When modeling this effect, the original direct effect of response strategy on affective trust, $b = -.44, SE = .18, t(180) = -2.42, p = .016, 95\%CI [-.80, -.08]$, became non-significant, $b = -.24, SE = .15, t(176) = -1.60, p = .112$, suggesting that meaningful existence mediated the difference between strategies. Second, significant indirect effects of response on affective trust, via belongingness, $b = .22, SE = .08, 95\%CI [.09, .38]$, and via meaningful existence, $b = .09, SE = .06, 95\%CI [.00, .25]$, when comparing apologize with contradict. When modeling this effect, the original direct effect, $b = .65, SE = .19, t(180) = 3.43, p = .001, 95\%CI [.28, 1.03]$, was reduced but not eliminated, $b = .37, SE = .16, t(176) = 2.23, p = .027$, suggesting that belongingness and meaningful existence mediated the difference between strategies. No other significant indirect effects were found.

Our analyses of social needs and rapport revealed no mediation effects for the accept strategy, but a significant indirect effect via belongingness, $b = .10, SE = .04, 95\%CI [.03, .19]$, when comparing apologize with contradict. When modeling this effect, the direct effect of strategy on rapport, $b = .48, SE = .11, t(180) = 4.45, p < .001, 95\%CI [.27, .69]$, was reduced but not eliminated, $b = .30, SE = .09, t(176) = 3.25, p = .001$, suggesting belongingness mediated the difference observed across strategy. No other significant indirect effects were found.

Our analyses of social needs and the quality of information provision found no significant indirect effects across any of the response strategies. The total and direct effects of all three mediation models can be found in our online Supplementary Materials.

Additional explorative analysis

To explore any interaction effects between the communication error and response strategies, we conducted a two-way MANOVA with type of communication error and response strategies as the Independent Variables and the seven effectiveness measures as the Dependent Variables. There was no significant multivariate interaction effect, $F(14, 278) = 1.05, p = .404$.

General discussion

This research is the first to consider communication error management in law enforcement interactions by focusing on both the impact of different types of errors and responses to the error once it has occurred. Our studies seem to suggest that the direct negative effects of errors are dependent on the type of interaction. In a suspect interview, the making of errors, particularly judgment errors, appears to undermine the relationship by decreasing affective trust and rapport, irrespective of the response strategy used (Study 1). In contrast, in a crisis negotiation, it is not the error *per se*, but the response that is used afterwards that determines the effect of errors on the relationship (Study 2). In both studies, we found that using accept re-establishes rapport, while contradict decreases rapport. The effectiveness of the use of accept in terms of willingness to provide information was only found in the suspect interview setting (Study 1), while the effectiveness of the use of apologize in terms of affective trust and rapport was only found in the expressive crisis negotiation setting (Study 2).

The finding that both apologize and accept response strategies are effective suggests that accepting responsibility is important to the efficacy of error recovery (Fukono & Ohbuchi, 1998). This is consistent with the general position, as argued by experienced interrogators, that treating the suspect in a humane manner is most effective in establishing rapport (Russano et al., 2014). However, the more interesting finding is the differing result for the effectiveness of the response strategy per type of interaction, which may be explained by the different needs of the suspect. In a police interview, a suspect wants to provide information that is 'correct', and an accept response facilitates this need. This result corroborates Alison et al.'s (2013) finding that interviewers who allowed suspects to correct what they had said reduced the subsequent resistance from the suspect. By contrast, in a crisis negotiation, the perpetrator may want to call attention to him or herself (Hammer & Rogan, 1997). Thus, as our mediation findings in relation to meaningful existence support, the effectiveness of apologize in crisis negotiation is that it addresses the perpetrators' personal need. If a negotiator shows that he/she determines the person as meaningful, their need for attention is addressed. To further unravel whether it is this instrumental and expressive focus of these type of interactions that explains these results, future research should manipulate these foci in the same context in one study. For example, in the interview setting a good starting point would be to differentiate in the type of crime of which the person is suspected of (theft of money vs. violence to a family member), while in the crisis negotiation setting, a good starting point would be to differentiate between a suicide and kidnapping situation.

We also found a set of counterintuitive relationships. First, our findings consistently show that the making of errors has a positive effect on the quantity of information provision and that the use of a contradict response positively influences the quality of

information provision in crisis negotiations. Why might this happen? One possibility may be that the suspect perceives the judgment error and contradict response as an ego threat that must be corrected, in this case by providing more (deceitful) information or circumventing. This explanation is consistent with Ren and Gray (2009), who argue that once someone feels a threat to their integrity they call attention to the offense as it symbolically shows that someone deserves respect. Although it may not be wise to advise law enforcement personnel to often make mistakes or deny them, it may prove to be a useful approach in a situation where the other party is not willing to talk at all (cf. Taylor & Donald, 2007).

Second, we found that the quality of information provision was higher after the use of an apologize response in the crisis negotiation setting in comparison to the situation in where no error was made. A possible explanation for this effect may be a phenomenon known within the service recovery literature as the 'recovery paradox' (Michel, 2001). This paradox shows that it is possible to have a higher overall satisfaction of a customer after a service problem in comparison to the situation in which no problem occurred. This paradoxical effect is present only when the customer perceives a more than appropriate response after a service problem has occurred. For example, in the crisis negotiation data, while not significant, similar patterns were evident across all effectiveness measures for apologize responses in comparison to the no error situation. This again underlines the positive aspect of erring when using an appropriate response.

There are four areas that should be prioritized in following up our initial explorations of communication error management. The first relates to the online nature of the experiment. We decided to assess online interactions so that subtle differences such as the tone and nonverbal cues or the gender of the interviewer could not confound our results. Moreover, the rapid development of new technologies increases the chance of law enforcement interactions being online (McGinn & Croson, 2004). However, research suggests that social behaviors such as cooperation, truth-telling and rapport building are more likely to occur in face-to-face interaction in comparison to online interactions (McGinn & Croson, 2004). This implies that ours is a conservative test of what might occur in face-to-face interactions, but such an inference might be neglecting other dynamics that mediate this effect. Thus, future research should consider whether the interaction medium modifies the effects of errors and response messages.

The second relates to the fact that the participants had to imagine that they had committed the exam fraud and committed a theft, which may raise questions about whether or not our outcomes are generalizable to real suspect interviews and crisis negotiations. It could be argued that the participants did not feel genuinely guilty, as they had not committed any crime. Although we understand this concern and recognize that other experimental paradigms better address this point (e.g. Russano et al., 2005), we have reasons to believe that our participants engaged with the experiment fully. For example, they addressed the signs of being nervous in their responses, and asked in their feedback forms whether or not the conversation would have any real consequences. Nonetheless, future research on communication errors and response strategies in real suspect interviews is needed to strengthen the ecological validity of this study.

The third relates to the response tactics that we examined in this study. They need deconstruction if we are to understand fully how and when such communication devices will work. For example, Kirchoff, Wagner, and Strack (2012) have shown that an

apology consists of different components, while we only considered it in the most basic form. Similarly, we used quite an extreme form of a contradiction, whereas a subtler denial might have resulted in different responses (Dutta & Pullig, 2011). Both of these examples are further compounded by the fact that we only used one strategy in each condition. Some research in service recoveries shows that a combination of strategies may be most effective in terms of satisfaction with the response (Hocutt, Bowers, & Donavan, 2006). Using these basic forms was necessary to make a first inquiry into the field and to ensure that we could compare our findings to studies of errors in other settings. However, future work will need to examine these subtleties.

Finally, we only considered people living in the Netherlands, but Patterson, Cowley, and Prasongsukarn (2006) have shown that the cultural value orientation of a person influences how a response is perceived. For example, people scoring high on collectivism perceive a higher fairness of how they are treated when the response is initiated by the offending organization, while such an effect is not found by people scoring high on individualism. Consequently, it would be fruitful to test whether and how the current findings alternate when a law enforcement officer encounters a suspect from another cultural background. Not least, because the cultural diversity of the encountered suspects has increased dramatically over the past few years (Giebels & Taylor, 2009; Taylor & Donohue, 2006).

This is the first study that examines communication error management in law enforcement interactions from a receiver's perspective and focuses more on the individual by making sense of their needs. We believe our work is important from an academic perspective in that it opens avenues for future error response research by using a method that can measure actual behavior instead of intentions and by establishing the mediating role of intrapersonal social needs. It also supports the already existing notion among law enforcement personnel that errors can provide a form of (negative) feedback. Yet, this notion needs refinement in that the response of the law enforcement officer towards the error made should not be underestimated, as this ultimately determines how an error is received.

Notes

1. An initial coding of messages post-response led to poor agreement (Cohen's $\kappa = .15$), which we determined was the result of disagreement in interpretation of the answers 'ok' and 'no problem'. Agreement and re-categorization on how to code these answers resolved this problem.
2. 'Anne' is a name used in the Netherlands for both males and females.
3. Since the sample sizes varied per condition, we have decided to take the Welch's *t*-test instead of the Students *t*-test throughout the paper (Delacre, Lakens, & Leys, 2017).
4. To calculate the effect size and their associated Confidence Intervals from the Welch's *t*-test, we have used the SPSS file of Wuensch (2012) throughout the paper.
5. We specified two items of the cognitive trust scale that after usage in Study 1 appeared to be asking about the University system in general instead of the interviewer.

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References

- Alison, L. J., Alison, E., Noone, G., Eltib, S., & Christiansen, P. (2013). Why tough tactics fail and rapport get results: Observing rapport-based interpersonal techniques (ORBIT) to generate useful information from terrorists. *Psychology, Public Policy, and Law*, 19(4), 411–431. doi:10.1037/a0034564
- Beune, K., Giebels, E., Adair, W. L., Fennis, B. M., & Van der Zee, K. I. (2011). Strategic sequences in police interviews and the importance of order and cultural fit. *Criminal Justice and Behavior*, 38(9), 934–954. doi:10.1177/0093854811412170
- Beune, K., Giebels, E., & Sanders, K. (2009). Are you talking to me? Influencing behaviour and culture in police interviews. *Psychology, Crime and Law*, 15(7), 597–617. doi:10.1080/10683160802442835
- Beune, K., Giebels, E., & Taylor, P. J. (2010). Patterns of interaction in police interviews: The role of cultural dependency. *Criminal Justice and Behavior*, 37, 904–925. doi:10.1177/0093854810369623
- Colquitt, J. A., LePine, J. A., Piccolo, R. F., Zapata, C. P., & Rich, B. L. (2012). Explaining the justice-performance relationship: Trust as exchange deepener or trust as uncertainty reducer? *Journal of Applied Psychology*, 97(1), 1–15. doi:10.1037/a0025208
- Conchie, S. M., Taylor, P. J., & Donald, I. J. (2012). Promoting safety voice with safety-specific transformational leadership: The mediating role of two dimensions of trust. *Journal of Occupational Health Psychology*, 17(1), 105–115. doi:10.1037/a0025101
- Delacore, M., Lakens, D., & Leys, C. (2017). Why psychologists should by default use Welch's *t*-test instead of student's *t*-test. *International Review of Social Psychology*, 30(1), 92–101. doi:10.5334/irsp.82
- Donker, A. G., & Slotboom, A. (2008). Adolescentie en delinquentie [Adolescence and delinquency]. In I. Weijers & C. Elliaerts (Eds.), *Jeugdcriminologie. Achtergronden van jeugdcriminaliteit* [Youth criminology. Backgrounds of juvenile delinquency] (pp. 109–124). The Hague, NL: Boom Juridische uitgevers.
- Drolet, A. L., & Morris, M. W. (2000). Rapport in conflict resolution: Accounting for how face-to-face contact fosters mutual cooperation in mixed-motive conflicts. *Journal of Experimental Social Psychology*, 36(1), 26–50. doi:10.1006/jesp.1999.1395
- Dutta, S., & Pullig, C. (2011). Effectiveness of corporate responses to brand crises: The role of crisis type and response strategies. *Journal of Business Research*, 64(12), 1281–1287. doi:10.1016/j.jbusres.2011.01.013
- Evans, J., Meissner, C., Brandon, S., Russano, M., & Kleinman, S. (2010). Criminal versus HUMINT interrogations: The importance of psychological science to improving interrogative practice. *Journal of Psychiatry and Law*, 38(1-2), 215–249. doi:10.1177/009318531003800110
- Fukono, M., & Ohbuchi, K. (1998). How effective are different accounts of harm-doing in softening victims' reactions? A scenario investigation of the effects of severity, relationship, and culture. *Asian Journal of Social Psychology*, 1(2), 167–178. doi:10.1111/1467-839X.00011
- Giebels, E., Oostinga, M. S. D., Taylor, P. J., & Curtis, J. L. (2017). The cultural dimension of uncertainty avoidance impacts police-civilian interaction. Advance online publication. *Law and Human Behavior*, 41(1), 93–102. doi:10.1037/lhb0000227
- Giebels, E., & Taylor, P. J. (2009). Interaction patterns in crisis negotiations: Persuasive arguments and cultural differences. *Journal of Applied Psychology*, 94(1), 5–19. doi:10.1037/a0012953

- Hammer, M. R., & Rogan, R. G. (1997). Negotiation models in crisis situations: The value of a communication-based approach. In R. G. Rogan, M. R. Hammer, & C. Van Zandt (Eds.), *Dynamic processes of crisis negotiation* (pp. 9–24). Westport, CT: Praeger.
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling* [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hilverda, F., Kuttuschreuter, M., & Giebels, E. (2017). Social media mediated interaction with peers, experts and anonymous authors: Conversation partner and message framing effects on risk perception and sense-making of organic food. *Food Quality and Preference*, *56*(A), 107–118. doi:10.1016/j.foodqual.2016.09.003
- Hocutt, M., Bowers, M. R., & Donovan, D. T. (2006). The art of service recovery: Fact or fiction? *Journal of Services Marketing*, *20*(3), 199–207. doi:10.1108/08876040610665652
- Kardes, F. R. (1996). In defense of experimental consumer psychology. *Journal of Consumer Psychology*, *5*(3), 279–296. doi:10.1207/s15327663jcp0503_04
- Kirchoff, J., Wagner, U., & Strack, M. (2012). Apologies: Words of magic? The role of verbal components, anger reduction, and offence severity. *Peace and Conflict: Journal of Peace Psychology*, *18*(2), 109–130. doi:10.1037/a0028092
- Kleinman, S. M. (2006). Barriers to success: Critical challenges in developing a new educating information paradigm. In Intelligence Science Board (Ed.), *Educating information: Interrogation science and art: Foundations for the future* (pp. 235–266). Washington, DC: National Defence Intelligence College.
- McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, *38*(1), 24–59. doi:10.2307/256727
- McGinn, K. L., & Croson, R. (2004). What do communication media mean for negotiations? A question of social awareness. In M. J. Gelfland & J. M. Brett (Eds.), *The handbook of negotiation and culture* (pp. 334–349). Palo Alto, CA: Stanford University Press.
- Memon, A., Fraser, J., Colwell, K., Odinet, G., & Mastroberardino, S. (2010). Distinguishing truthful from invented accounts using reality monitoring criteria. *Legal and Criminological Psychology*, *15*(2), 177–194. doi:10.1348/135532508X401382
- Michel, S. (2001). Analyzing service failures and recoveries: A process approach. *International Journal of Service Industry Management*, *12*(1), 20–33. doi:10.1108/09564230110382754
- Nadler, A., & Schnabel, N. (2015). Intergroup reconciliation: Instrumental and socio-emotional processes and the needs-based model. *European Review of Social Psychology*, *26*(1), 93–125. doi:10.1080/10463283.2015.1106712
- Oostinga, M. S. D., Giebels, E., & Taylor, P. J. (in press). 'An error is feedback': The experience of communication error management in crisis negotiations. *Police Practice and Research*. doi:10.1080/15614263.2017.1326007
- Patterson, P. G., Cowley, E., & Prasongsukarn, K. (2006). Service failure recovery: The moderating impact of individual-level cultural value orientation on perceptions of justice. *International Journal of Research in Marketing*, *23*(3), 263–277. doi:10.1016/j.ijresmar.2006.02.004
- Petty, R. E., & Cacioppo, J. T. (1996). Addressing disturbing and disturbed consumer behavior: Is it necessary to change the way we conduct behavioral science? *Journal of Marketing Research*, *33*(1), 1–8. doi:10.2307/3152008
- Reb, J., Goldman, B. M., Kray, L. J., & Cropanzano, R. (2006). Different wrongs, different remedies? Reactions to organizational remedies after procedural and interactional injustice. *Personnel Psychology*, *59*(1), 31–64. doi:10.1111/j.1744-6570.2006.00773.x
- Ren, H., & Gray, B. (2009). Repairing relationship conflict: How violation types and culture influence the effectiveness of restoration rituals. *Academy of Management Review*, *34*(1), 105–126. doi:10.5465/AMR.2009.35713307
- Roschk, H., & Kaiser, S. (2013). The nature of an apology: An experimental study on how to apologize after a service failure. *Marketing Letters*, *24*(3), 293–309. doi:10.1007/s11002-012-9218-x
- Ross, W. H., & Wieland, C. (1996). Effects of interpersonal trust and time pressure on managerial mediation strategy in a simulated organizational dispute. *Journal of Applied Psychology*, *81*(3), 228–248. doi:10.1037/0021-9010.81.3.228

- Russano, M. B., Meissner, C. A., Narchet, F. M., & Kassin, S. M. (2005). Investigating true and false confessions within a novel experimental paradigm. *Psychological Science*, *16*(6), 481–486. doi:10.1111/j.0956-7976.2005.01560.x
- Russano, M. B., Narchet, F. M., Kleinman, S. M., & Meissner, C. A. (2014). Structured interviews of experienced HUMINT interrogators. *Applied Cognitive Psychology*, *28*(6), 847–859. doi:10.1002/acp.3069
- Smith, A. K., Bolton, R. N., & Wagner, J. (1999). A model of customer satisfaction with service encounters involving failure and recovery. *Journal of Marketing Research*, *36*(3), 356–372. doi:10.2307/3152082
- Taylor, P. J., & Donald, I. J. (2007). Testing the relationship between local cue-response patterns and the global structure of communication behaviour. *British Journal of Social Psychology*, *46*(2), 273–298. doi:10.1348/014466606X112454
- Taylor, P. J., & Donohue, W. A. (2006). Hostage negotiation opens up. In A. Schneider & C. Honeymoon (Eds.), *The negotiator's fieldbook* (pp. 667–674). New York, NY: ABA Press.
- Thoroughgood, C. N., Sawyer, K. B., & Hunter, S. T. (2013). Real men don't make mistakes: Investigating the effects of leader gender, error type, and the occupational context on leader error perceptions. *Journal of Business and Psychology*, *28*(1), 31–48. doi:10.1007/s10869-012-9263-8
- Vallano, J. P., & Schreiber Compo, N. (2011). A comfortable witness is a good witness: Rapport-building and susceptibility to misinformation in an investigative mock-crime interview. *Applied Cognitive Psychology*, *25*(6), 960–970. doi:10.1002/acp.1789
- Van Beest, I., & Williams, K. D. (2006). When inclusion costs and ostracism pays, ostracism still hurts. *Journal of Personality and Social Psychology*, *91*(5), 918–928. doi:10.1037/0022-3514.91.5.918
- Vecchi, G. M., Van Hasselt, V. B., & Romano, S. J. (2005). Crisis (hostage) negotiation: Current strategies and issues in high-risk conflict resolution. *Aggression and Violent Behavior*, *10*(5), 533–551. doi:10.1016/j.avb.2004.10.001
- Vignovic, J. A., & Thompson, L. F. (2010). Computer-mediated cross-cultural collaboration: Attributing communication errors to the person versus the situation. *Journal of Applied Psychology*, *95*(2), 265–276. doi:10.1037/a0018628
- Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the positive and negative affect schedule - expanded form* (revised 8/1999). Unpublished manuscript, University of Iowa.
- Williams, K. D., Govan, C. L., Croker, V., Tynan, D., Cruickshank, M., & Lam, A. (2002). Investigations into differences between social and cyberostracism. *Group Dynamics: Theory, Research, and Practice*, *6*(1), 65–77. doi:10.1037//1089-2699.6.1.65
- Wuensch, K. L. (2012). *Using SPSS to obtain a confidence interval for Cohen's d*. Retrieved from <http://core.ecu.edu/psyc/wuenschk/SPSS/CI-d-SPSS.pdf>