GENDER DIFFERENCES IN TRUST, REACTIONS TO TRUST VIOLATION, AND TRUST RESTORATION[1]

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Abstract: *This study examined the impact of gender on the propensity to trust, responses to the violation of trust and apologies, and the pace of subsequent trust restoration. It was hypothesized that women would respond more positively to an apology but restore their trust at a slower pace than men. Results revealed no gender differences in level of trust immediately after an apology for trust violation, but there was a significant difference in the pace of trust restoration, with women returning to their pre-violation levels of trust later than men as hypothesized. There were also significant gender differences in levels of trust before trust violation and after an apology.*

Key words: *trust game, apology, trust restoration, gender differences.*

RÓŻNICE MIĘDZY KOBIETAMI I MĘŻCZYZNAMI W ZAUFANIU, REAKCJACH NA NARUSZENIE ZAUFANIA I ODBUDOWIE ZAUFANIA

Streszczenie: *Przedmiotem badania był wpływ płci na skłonność do zaufania, reakcje na naruszenie zaufania i przeprosiny oraz tempo odbudowywania naruszonego zaufania. Postawiona została hipoteza, że kobiety będą reagowały pozytywniej na przeprosiny, ale będą odbudowywały zaufanie w wolniejszym tempie niż mężczyźni. Wyniki ujawniły brak różnic między płciami w poziomie zaufania ujawnianego w odpowiedzi na przeprosiny za naruszenie zaufania, ale znaczące różnice w tempie przywrócenia zaufania. Kobiety wracały do poziomu zaufania sprzed naruszenia później niż mężczyźni. Ponadto ujawniły się także różnice między płciami w poziomie zaufania przed jego naruszeniem oraz po przeprosinach.*

Słowa kluczowe: *gra zaufania, przeprosiny, odbudowa zaufania, różnice między kobietami i mężczyznami.*

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Introduction

1. What is trust and why is it important?

Trust is essential in all human relationships. It affects the nature and quality of personal relationships (Deutsch, 1958; Koranyi & Rothermund, 2012; Simpson, 2007), organizational functioning (Kramer, 1998), and economic exchanges (Knack & Keefer, 1997; Zak & Knack, 2001). Trust in others is associated with greater happiness (Oishi, Kesebir, & Deiner, 2011), better health (Kawachi, 2018) and a higher income (Stavrova & Ehlebracht, 2016).

Not surprisingly, trust has been an object of interest in many fields: philosophy, sociology, psychology, anthropology, and economics (Uslaner, 2018). Different attempts at its definition draw attention to uncertainty, vulnerability, and possible benefits as components of trust. One of the most commonly cited definitions of trust defines it as *''a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behaviour of another''* (Rousseau et al., 1998, p. 395). Another useful definition is that of Dunning, Fetchenhauer and Schloesser (2016), who define trust as "*allowing oneself to be vulnerable to exploitation by another person in order to achieve some benefit or reward*" (p. 5).

To measure trust, researchers either rely on people self-reporting their trust or try to infer it from people's reactions and decisions in experimental games. Self-report measures of trust predate behavioral, experimental measures and appear to have emerged in the 1940s. Probably the best known, "standard" question used to measure trust in surveys - "*Generally speaking, do you believe that most people can be trusted or can't you be too careful in dealing with people*?" – was first used in the 1940s in Germany (Bauer & Freitag, 2018). Later, this formulation was used by Rosenberg in the 1950s, who combined the question with two others to construct the Faith in People Scale in studies involving Cornell University students (Rosenberg, 1956). Since then the question has been asked in many studies and surveys.

Measuring trust with this standard question has, however, been criticized for confounding trust and caution (Yamagishi et al., 1999), these two concepts not being mutually exclusive. Moreover, the question's interpretation can differ significantly among different societies. Consequently, measuring trust with the standard question or two separate questions can give different results. For example, Miller and Mitamura (2003) found that when using the traditional version of the question, Japanese students were more trusting than American students. However, when trust and caution were measured separately American students were found to be more trusting than Japanese students, but they were also more cautious.

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Other self-report measures of trust include The Interpersonal Trust Scale developed in the late 1960s by Rotter (1967) and Yamagishi's (1994) General Trust Scale. Rotter's scale consists of two types of item: first, items asking participants about their trust towards specific groups (such as friends, parents, teachers, and public officials), and, second, items measuring trust in general, i.e. "general optimism" towards society. Yamagishi's General Trust Scale is much shorter, being a six-item measure of declarative trust.

A way of measuring trust with experimental games was paved by Deutsch (1960), who used the Prisoner's Dilemma in his studies. The Prisoner's Dilemma is a game where, without communicating, two players decide whether to cooperate or defect. The joint outcome for both is the best if they both cooperate, however, if one cooperates and the other defects, the one who cooperates is much worse off than if they defect. If both defect, they are worse-off than if they cooperate but better-off than if they are the person who cooperates while the other defects.

However, since the 1990s a trust game (initially considered an investment game) designed by Berg, Dickhaut and McCabe (1995) has been the most frequently used behavioral measure of trust. This is a game between two players: the trustor and the trustee. In the standard version of the game, both players are endowed with some money. The trustor can send any amount of their endowment to the trustee. During transmission of the money this amount is (usually) tripled. The trustee decides whether to send anything back to the trustor. Both players have full knowledge of the rules of the game. The amount sent to the trustee constitutes a measure of trust, since the decision to send the money stems from "a willingness to bet that another person will reciprocate a risky move (at a cost to themselves)" (Camerer, 2003, p. 85), while the amount sent back to the trustor constitutes a measure of trustworthiness, since trustee's decision to transfer back something stems from the desire to reciprocate rather than from the threat of being punished. The trustor is better off if the trustee reciprocates but if the trustee does not reciprocate he/she is worse than if he/she didn't trust. Often a binary version of the game is used. In this version, the trustor faces the choice of either keeping the endowment or entrusting everything. The trustee can then return a fixed amount to the trustor or keep everything for themselves. Figure 1 presents an example of a binary version of the trust game used by Espin et al. (2016), where the trustor is endowed with €10. The trustor must decide between keeping the endowment (€10) or sending it to the trustee. If the trustor decides to send their endowment, the money is quadrupled on the way to the trustee. The trustee must decide between reciprocating the trustor's trust and sending €22 back to the trustor or abusing the trust placed in them and keeping everything for themselves, acquiring a total of €40.

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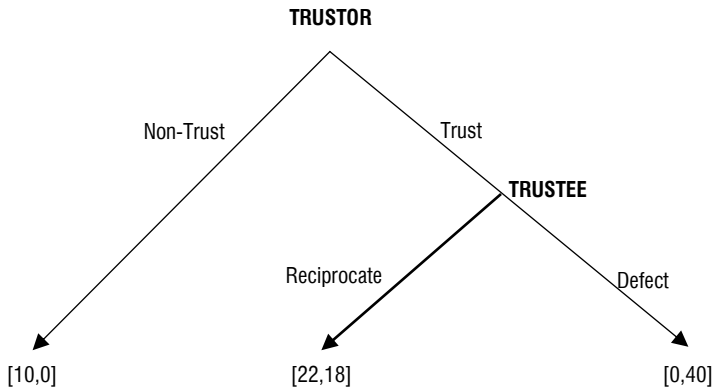

Figure 1. **A binary version of the trust game**

Research on relationships between declarative, attitudinal and behavioral trust has produced inconsistent results. The standard "*Most people can be trusted…*" question does not seem to be a good predictor of behavioral trust as measured by the trust game. In many studies, attitudinal trust measured using this question has not predicted trust game behavior (e.g., Ashraf et al., 2003; Ermish et al., 2009; Gaechter et al., 2004; Glaeser et al., 2000; Holm & Nysted, 2008, Kuźminska, 2016; Lazzarini et al., 2004) or prisoner's dilemma behavior (Gaechter et al., 2004). Also, responses on Rotter's interpersonal measure of trust have been found not to correlate with actions observed using behavioral measures such as the Prisoner's Dilemma (Rotter, 1971, cf. Evans & Ravelle, 2008).

However, some studies have identified correlations (e.g., Askoy et al., 2018; Bellmare & Kroeger, 2007; Fehr et al., 2002; Sapienza et al., 2013; Vyrasekova & Garikipati, 2005). Also, when Naef and Schupp (2009) split the standard question "*Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?*" into two separate statements ("*In general, you can trust people*" and "*Nowadays, you can't rely on anybody*"), attitudinal trust correlated with trusting behavior in a simplified trust game. There is also evidence that responses to direct questions about people's trust, and particularly questions concerning past trusting behavior, are sometimes positively correlated with decisions in experimental games measuring trust (Fehr et al., 2002). Similarly, when measuring declarative, generalized trust with a multi-item scale, Yamagishi et al. (2015) found attitudinal trust to be correlated with behavioral trust, although such a correlation is not always found (e.g., Kuźmińska, 2016).

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2. Are women less trusting than men?

A substantial amount of research using the standard question *"Would you say that most people can be trusted, or you can't be too careful in dealing with others?"* has found women to be less trusting than men (e.g., Alesina & LaFerrara, 2002; Glaeser et al., 2000; Irwin & Berigan, 2013; Terrell & Barrett, 1979). But other research using the Faith in People Scale as a measure of trust has yielded opposite results, showing women to be more trusting than men (e.g., Demaris & Yang, 1994; Rahn & Transue, 1998).

A substantial number of studies using behavioral measures of trust tend to agree with the research above using the standard question, and suggest that women are less trusting than men (Chaudhuri & Gangadharan, 2007; Buchan, Croson, & Solnick, 2008; Garbarino & Slonim, 2009; Kuźmińska, 2016; Slonim & Guillen, 2010; Snijders & Keren, 2001; Rau, 2011; Van den Akker et al., 2018). But there are also studies, using both continuous (Bellemare & Kroeger, 2003; Chaudhuri, Paichayontvijit & Shen, 2013; Croson & Buchan, 1999; Schwierin & Sutter, 2008) and binary (Cox & Deck, 2006) versions of the trust game that have not found any difference in the amounts that men and women send in the game, and very rarely women are found to be more trusting than men. A study by Bellemare and Kroeger (2007) is one of the latter studies. In their study, two groups of participants – a large representative sample drawn from the Dutch population and a sample of Dutch students – played a computerized version of the trust game where a trustor could send part of their endowment to an anonymous trustee. The entrusted amount was doubled and added to the trustee's initial endowment, and the trustee then decided how much of this to return to the trustor. In both samples, women behaved in a different manner to that which is usually observed, entrusting less and reciprocating less than men.

The opposite pattern is usually found in the case of trustworthiness, where a substantial amount of research shows that women are more trustworthy than men (e.g., Chaudhuri & Gangadharan, 2007; Buchan, Croson, & Solnick, 2008; Kuźmińska, 2016; Schwierin & Sutter, 2008).

Evolutionary psychology offers an interesting explanation of gender differences in social behavior, including trust and trustworthiness: differences in parental investment costs (Trivers, 1972). Parental investment theory draws attention to differences in the investments which men and women make in producing and raising their offspring. Women, spending larger amounts of time and energy raising children, and being able to raise only a limited number of children during their reproductive lifecycle, must be more careful and selective when choosing a partner. In turn, the higher selectivity of women requires men to engage in intense competition and to take risks to obtain the best mate. Thus, differences in parental investment select traits in men that will make them more successful in competitive situations and enable them

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to acquire more resources than other men. Women, however, benefit from making cooperative arrangements with other people, both men (the fathers of their children) and other women, that will assure mutual aid in the raising of their children. Such aid is based on a reciprocity principle. In line with such reasoning, anthropological studies confirm that women engage in reciprocal relationships with other women, both kin and non-kin, to raise their children (Kramer, 2010).

Complementary to the above, sociocultural explanations assume that certain evolved differences between men and women may be intensified or undermined by socialization practices. Social role theory states that men and women internalize cultural expectations about appropriate behavior and behave accordingly (Eagly, 1987; Wood & Eagly, 2012). Women are expected to demonstrate communal qualities, i.e., to be sympathetic, supportive, caring, friendly, etc. In contrast, men's behavior is expected to exhibit agentic qualities, i.e., confidence, ambition, dominance, and assertiveness (Eagly & Karau, 2002). Gender role expectations therefore predispose men to take higher risks, including social risks, such as trusting strangers, while predisposing women to care more about social harmony and, as such, to be receptive to attempts to restore broken relationships.

3. Trust violation and trust restoration

As previously mentioned, trust is indispensable for building and maintaining relationships, and for effective cooperation. However, trust is fragile and, despite its importance, violations of trust are common, their negative effects being easily observed in everyday life and well documented in research. Violations of trust occur when positive expectations of other people's behavior are not met due to disregard for ethical principles or lack of competence (Haselhuhn et al., 2015). Among other negative effects, trust violations evoke negative affect and provoke retaliation (Bies & Tripp, 1996), harm cooperation and bargaining outcomes (Bottom et al., 2002; Lount et al., 2008), and lower organizational commitment (Robinson, 1996). Thus, since trust violations are so harmful and at the same time so common and inevitable in life, it is particularly important to understand how trust can be rebuilt after it is lost.

Lewicki and Brinsfield (2017) discuss the effectiveness of trust repair strategies, considering the nature of the trust violated and the types of strategies implemented when attempting to restore trust. Specifically, they analyze how trust restoration is affected by the type of trustworthiness being violated, whether the violation is central (or "core") to a relationship, its severity and frequency, perceived intentionality, and the violation's timing. They also look at the effectiveness of short and long term strategies to restore trust.

 DOI: 10.7206/DEC.1733-0092.140

Among short term strategies, Lewicki and Brinsfield (ibid.) name: verbal statements, apologies, compensation, and denial. Verbal statements refer to "an effort to verbally address the violation and 'move on' in the relationship" (p. 296), and include statements such as accounts, excuses, explanations, apologies, and denial. Apologies are such a specific type of verbal statement that Lewicki and Brinsfield treat them as a separate category of trust repair strategy. They offer a very broad definition of an apology – "a specific type of statement that explains the violation and may also add 'emotional content' such as intent behind the violation, regret, and promise of changed behavior" (p. 296). An apology can thus signal a transgressor's commitment to a relationship, concern for a victim's feelings, and a desire to avoid further offences (Lewicki & Bunker, 1996; Exline, Deshea, & Holeman, 2007). Compensation refers to a tangible form of "compensating the victim for the cost of the violation, with or without any verbal statement" (p.296). Finally, denial is defined as "denial of the violation or its causality by the violator" (p. 296).

Lewicki and Brinsfield name four longer-term strategies: structural arrangements, reframing, forgiveness, and silence. Structural arrangements include policies, procedures and contracts that bind and monitor future interactions. Reframing encompasses all attempts to explain away, shift blame and minimize the perception of damage arising from a violation. As a trust repair strategy, forgiveness refers to "shifting from negative to positive thoughts and feelings about a transgressor" (Lewicki & Brinsfield, 2017, p. 301). Finally, as a tactic to restore trust, silence is a refusal to address allegations of trust violation.

Different trust repair strategies vary in their frequency use and effectiveness, these depending on many factors, e.g., the nature of a violation (i.e. disregard for ethical principles or lack of competence), irrefutability of evidence, and the individual characteristics of the trusting party (see Lewicki & Bernstein, 2017; Haselhuhn et al., 2010, 2015). Restoration of trust is particularly difficult after violations which can be attributed to lack of integrity or character (such violations are likely to involve disregard for ethical principles). Here, the most common tactic, an apology, is rather ineffective, although denial and silence can be effective depending on the evidence available. When evidence is irrefutable, structural arrangements, e.g., monitoring or the making of a contract (especially if these are offered by the violator), can be effective. If evidence is highly refutable, denial can be an effective solution (Kim et al., 2004). And when evidence concerning the seriousness and causation of an event is ambiguous (i.e. refutability is at an intermediate level), silence is the most effective strategy, this also enabling the violator to reframe the relevant interaction, hide evidence, and/or concoct an alibi. Restoring trust after competence based violations is easier, and in such cases apologies can be quite effective.

 DOI: 10.7206/DEC.1733-0092.140

Trust repair tactics lose their effectiveness as violations become more severe and/or more frequent. Severe trust violations, especially if a relationship has a long history, can be very damaging because of the greater emotional investment involved and a concomitant greater sense of betrayal. Moreover, it is difficult to restore trust after violations which occur in the early stages of a relationship, since trust during such periods is highly fragile. Also, unsurprisingly, trust is very difficult to repair where violations are intentional because such intentionality calls into question a violator's integrity, and thus their perceived trustworthiness. Trust restoration also depends upon the individual characteristics of the person whose trust has been violated. Implicit beliefs about people's moral character have been found to be one such factor. People with incremental views on moral character, who believe that people can change, respond more favorably to trust-repair efforts, e.g., an apology or a promise to change (Haselhuhn et al., 2010).

4. Do women and men differ in the way they rebuild trust?

Given the evidence that women are generally less trusting than men discussed in Section 2, it is reasonable to speculate that gender might also influence the process of trust restoration. Indeed, Haselhuhun et al. (2015) found that more women than men exhibited trust after apologies for trust violations. However, such an observation is incompatible with findings that women are less trusting than men, these suggesting that apologies should be less effective in rebuilding women's trust than men's trust.

There are at least two reasons why the issue of gender is interesting in the context of efforts to repair broken trust in general, and in context of the making of apologies specifically. First, the two genders display differences in their attitudes towards apologies and their responses to apologies. Women apologize more frequently (Schumann & Ross, 2010) and seem to respond more positively to apologies than men (Haselhuhn et al., 2015). Second, the gender of interacting partners is an elementary and salient characteristic in interpersonal relations, having a large impact on information processing and behavior, especially when people are strangers. As previously noted, behavioral expectations tend to differ with gender (Eagly, 1997), these expectations predisposing men to take greater risks, including trusting strangers, and predisposing women to have a greater regard for social harmony and therefore to be more responsive to efforts to restore broken relationships. Female demonstrations of assertiveness and agentic qualities (e.g., in the form of an overt rejection of the attempts of reconciliation) violate gender stereotypical expectations, putting women at risk of a backlash if they engage in such behavior (Freedman et al., 2019). On the other hand, men are expected to be assertive in fighting for their rights. Thus, punishing trust violators is more in line with a male gender role than a

 DOI: 10.7206/DEC.1733-0092.140

female gender role. At the same time, men are more instrumental in their decisions in trust games (Buchan et al., 2008), which might make them more willing to resume cooperation if they assume that a partner who has violated their trust will behave in a trustworthy manner in future. Thus, while men might not respond positively to a (costless) apology, they might be more responsive than women to behavioral changes of a trustee who has previously violated their trust if these are signaled by the trustee's willingness to pay some type of cost, this denoting the trustee's desire to engage in trustworthy behavior in the future.

The present study

The present study examined the impact of gender on the dynamics of relationships involving trust after trust violation and a violator's attempt to repair trust by apologizing. More specifically, the study sought to ascertain whether women respond more positively to apologies when their trust is violated but at the same time restore their trust at a slower pace than men.

Participants played 19 rounds of the trust game divided into the 7 stages presented in Table 1. This division recognizes the stages in Lewicki and Brinsfield's (2017)[2] cycle of trust violation and repair but adapts their model to give a more detailed picture of the process of trust building, violation, and repair. Therefore trust before the violation phase of an interaction is divided into Stage 1 (initial trust) and Stage 2 (trust building) to capture a trustor's generalized trust (before any interaction with the trustee) and trust developed in trustworthy interactions with the trustee. Then, after trust violation (Stage 3), a round where an apology is offered and a subsequent round where a trustee exhibits greater reciprocity than was previously the case (behaviorally confirming their change in attitude), are listed as separate stages: Stage 4 (Apology) and Stage 5 (Immediate Repair). Stage 6 (Short-term repair) and Stage 7 (long-term repair) are the last two stages and correspond to the last two stages in Lewicki and Brinsfield's (2017) description of the cycle of trust violation and repair.

As can be seen in Table 1, the Apology stage (Stage 4: Ap) captures trust displayed in response to a mere act of apology, which bears no cost for the trustee, while the Immediate Repair stage (Stage 5: IR) captures trust displayed after a trustee has supported their apology with costly trustworthy behavior (returning ≈ 60% of an obtained amount). As previously mentioned, women often feel under pressure to present themselves as warm and agreeable (Bowles, Babcock, & Lai, 2007), and,

[2] These authors divided the cycle of trust violation and repair into four stages: Stage 1 (Pre-existing level of trust), Stage 2 (Trustee recognizes violation), Stage 3 (Short-term repair) and Stage 4 (Longer-term repair).

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construing themselves as placing a high value on relationships, are motivated to maintain social connections (Cross & Madson, 1997). In general, all this inclines them to respond positively to apologies, even where these are costless, since such responses signal concern for relationships. However, their greater risk aversion and prevention-focus orientation should incline them to be cautious in the amount of trust they show after their trust is violated in an effort to protect themselves from further exploitation.

Table 1
Stages of the trust repair cycle

Stage	Description	Index of trust level
Stage 1 (initial trust: IT)	Trust before any interaction with the partner	Money entrusted in Round 1
Stage 2 (trust building: TB)	Trust building phase – response to trustworthy behavior in a previous round	Average of the money entrusted in Rounds 2-5
Stage 3 (trust violation: TV)	Trust violation phase – response to untrustworthy behavior in a previous round	Average of the money entrusted in Rounds 6-7
Stage 4 (apology: Ap)	Trust in a round preceded by an apology for the trustee's previous untrustworthy behavior	Money entrusted in Round 8
Stage 5 (immediate repair: IR)	Trust in an immediate repair round – after Round 8 (with an apology and trustworthy behavior of the trustee)	Money entrusted in Round 9
Stage 6 (short-term repair: STR)	Trust in the short-term phase of trust repair – trust after an apology, followed by twice repeated trustworthy behavior of the trustee)	Average of the money entrusted in Rounds 10-14
Stage 7 (long-term repair: LTR)	Trust in the long-term phase of trust repair – trust after an apology, followed by lasting trustworthy behavior of the trustee)	Average of the money entrusted in Rounds 15-19

In contrast, men are not expected to be sympathetic and, in general, they should respond less favorably than women to a costless signal of attitude change such as an apology. But, since they are more instrumental in their decisions (Buchan et al., 2008), they should respond more positively than women to a costly behavioral signal of behavior change: high reciprocity accompanying an apology. Costly apologies are a more efficient means of communicating conciliatory intentions than costless apologies (Ohtsubo et al., 2018). Thus, it was hypothesized that: (H1) women will respond more positively than men to an apology (Stage 4), but (H2) they will restore trust (Stages 5-7) to its pre-violation level (Stage 2) at a slower pace than men.

METHOD

Participants

There were 160 participants, with an equal gender division. Mean ages were 22.56 years for women (SD = 2.39) and 22.21 years for men (SD = 1.85).

 DOI: 10.7206/DEC.1733-0092.140

Materials and procedure

Participants were students who registered to take part in the study in a laboratory in the Flow Research Center in Lublin for monetary compensation. During registration, participants were grouped into groups of equal numbers so that when arriving at the laboratory they could be split into two even groups and sent to two separate rooms to increase their belief that decisions would be made by real people rather than being preprogrammed (as was actually the case). They played 19 rounds of a trust game (without knowing beforehand how many rounds they would play), then completed two questionnaires[3], and, finally, they were debriefed and paid. On average, participants earned around 65 PLN (equivalent to around €15) for their participation in the trust game part of the study.

The trust game. A sequence of 19 rounds of the trust game was programmed in OpenSesame. The game had the structure of a standard trust game (Berg et al., 1995), where both players are endowed with the same amount of money. The game was preprogrammed in such a way that participants believed that their partners and their roles in the game were randomly chosen. Gender-stylized avatars were used to cue participants about the gender of the person they were paired with. Half of the participants were (supposedly) paired with a female partner and half with a male partner. Participants were given the role of the trustor and informed that both they and the trustee would be endowed with 50 PLN (around €12) in each round. Money sent by a trustor was tripled and the preprogrammed trustee sent a certain portion of the tripled amount back. In Rounds 1 to 4 the portion returned was around 50% (with small random variations) of the tripled amount, in Rounds 5 to 7 around 5% to 7% (violating the trust of the trustor), in Round 8 around 60%, and in Rounds 9 to 19 around 50% again (with small random variations). Participants saw both the exact amount of money returned (in monetary units) and the percentage this amount constituted with respect to the endowment the trustee had received because of their (the trustor's) decision to send money. This provided participants with information about the trustee's trustworthiness while controlling for the endowment the trustee had at their disposal. Participants knew that it was possible for the trustee to send them a message, which would be delivered before their choice in a round. Before making a decision in Round 8 (after three rounds of trust violation)[4], participants received an apology from their trustee. The apology took the form of a simple statement: "Sorry :(…."[5].

[3] This aspect of the research project is not reported in detail here.

[4] Three rounds of trust violation were chosen to ensure applicability of subsequent apologies. Only data for participants who entrusted at least once in these rounds, and therefore experienced a very low rate of return, were suitable for analysis.

[5] A pilot study found this to be the most natural way of expressing an apology to the group of potential respondents concerned.

 DOI: 10.7206/DEC.1733-0092.140

Results

Of the 160 participants, four were excluded from data analysis for entrusting nothing in rounds involving trust violation, thus making an apology for violating trust inapplicable. A series of 2 (participant gender) x 2 (trustee gender) between-groups ANOVAs on trust levels in all seven stages of the trust repair cycle revealed no interaction effects. Thus, groups with male and female trustees were pooled for further analyses.

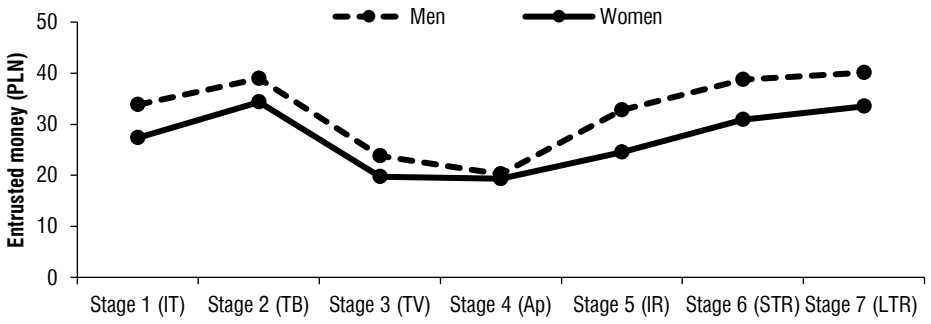

Figure 2. **Trust at all stages of the trust repair cycle (IT – initial trust, TB – trust building, V – trust violation, Ap – apology, IR – immediate repair, STR – short-term repair, LTR – long-term repair)**

As can be seen from Figure 2, women were less trusting at all stages except the trust violation (3: TV) and apology (4: Ap) stages. They were less trusting before trust violation: for Stage 1 (IT), $t(154) = 2.87$, $p = .005$, $d = 0.46$; for Stage 2 (TB), $t(154) = 2.55$, $p = .012$, $d = 0.41$, – and less trusting after an apology: for Stage 5 (IR), $t(154) = 2.71$, $p = .007$, $d = 0.43$; for Stage 6 (STR), $t(149{,}18) = 3.24$, $p = .001$, $d = 0.52$; for Stage 7 (LTR), $t(154) = 2.87$, $p = .005$, $d = 0.46$. There was no significant difference between men and women at the apology stage (4: Ap; $p = .932$), and a marginally nonsignificant difference at the trust violation stage (3: TV), $t(149.41) = 1.71$, $p = .089$, $d = .27$.

Both men and women reacted with a significant drop in trust after experiencing a large change in the reciprocation rate (a decrease from ≈ 50% to ≈ 5% of the resources the trustee obtained due to their [the trustor's] decision). After receiving an apology, neither men nor women increased their trust in the subsequent round. However, there was a difference in men and women's reactions. In comparison to Stage 3 (TV), men's trust was lower in Stage 4 (Ap), $t(77) = 2.20$, $p = .031$, $d = .25$, while women's trust remained the same as in Stage 3 (TV; $p = .837$).

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A comparison of trust occurring at the apology (4: Ap) and immediate repair (5: IR) stages provided some insight into reactions to a costless apology reinforced by generous (≈ 60%) reciprocation of trust. A mixed model repeated measures ANOVA, with gender as a between-subjects variable and trust levels at the apology stage (Stage 4: Ap) and the immediate repair stage (Stage 5: IR) as a within-subjects measure, revealed a significant stage by gender interaction, $F(1, 154) = 9.91$, $p = .002$, $\eta^2 = 0.06$. Even though for both genders trust was significantly higher at Stage 5 (IR) than Stage 4 (Ap), paired-samples t tests revealed that the increase in trust was stronger for men, $t(154) = 8.94$, $p < .001$, $d = .78$, than for women, $t(154) = 3.57$, $p = .001$, $d = 0.40$.

Further paired-samples t tests comparing trust levels for post-apology stages (5-7) with trust existing before trust violation (Stage 2; BT) revealed that men's trust at Stage 5 (IR) remained lower than at Stage 2 (BT), $t(154) = 4.31$, $p < .001$, $d = 0.49$, but returned to its Stage 2 (BT) level at Stage 6 (STR; $p = .540$). Women's trust at Stages 5 (IR) and 6 (STR) was still lower than at Stage 2 (BT), $t(154) = 12.60$, $p < .001$, $d = 0.79$, and $t(154) = 3.027$, $p = .003$, $d = 0.34$, respectively, but returned to its pre-violation Stage 2 (BT) level at Stage 7 (LTR; $p = .456$).

Summarizing, H1 was not supported: rather than women responding more positively than men to an apology as hypothesized, they behaved similarly to men and did not react with an increase in trust after an apology. However, there was support for H2: women restored trust at a slower pace than men.

Discussion

This study contributes to the existing literature by extending our understanding of gender effects concerning the effectiveness of apologies for trust violation and speed of trust restoration.

In line with a substantial number of studies (e.g., Derks et al., 2014; Ben-Ner & Halldorsson, 2010; Buchan et al., 2008; Chaudhuri & Gangadharan, 2007; Snijders, 1996) women were less trusting initially (before they had any experience of a trustee), immediately after trust violation, and upon a trustees' return to trustworthy behavior. However, contrary to previous findings (Haselhuhn et al., 2015), women's trust after receiving an apology was not greater than men's. Also, women restored trust to its pre-violation levels at a significantly slower pace than men.

One possible explanation of the difference between the current results and those of Haselhuhn et al. (2015) lies in the type of trust game used in the studies. Haselhuhn

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et al. (2015) used a binary version while the present study used a continuous version. As noted by Schniter et al. (2013), people behave differently depending on which version is used (one involving binary responses or one involving discrete responses), even though both versions aim to measure the same phenomenon. The binary version enforces either full trust or no trust, this making it impossible to distinguish between willingness to show trust and a wish to avoid showing distrust when a trustor decides to send their endowment during a game. Thus, in the binary version of the game, women might only appear to display more trust than men after an apology because, they wish to avoid the hostility inherent in the act of showing distrust and not because their propensity to trust really increases after the apology . This problem disappears when the range of possible responses is more nuanced, as in the case of the continuous version of the trust game: decisions in this version of the game might provide a more accurate picture of people's responses to an apology after trust violation.

Still, despite the lack of an increase in trust after an apology, such a conciliatory gesture did have some positive impact: an apology prevented a further trust decrease in females but not in males. Men's trust in the round after receiving an apology was lower than that in the trust violation stage of interactions.

Compared to women, men reacted more positively when they observed a behavioral change in a trustee's behavior concurrently with an apology. Although both genders reacted positively (with a significant increase in trust) to an apology which was followed by trustworthy behavior, the increase for men was greater, and they returned to their pre-violation levels of trust faster than women. Such results support previous studies showing greater male instrumental and profit-oriented behavior in trust games (e.g., Buchan et al., 2008) and are in line with gender role expectations that encourage men to behave in a hostile manner when their interests are endangered, but at the same time to take risks and strive for profits (Eagly, 1997; Eagly & Karau, 2002).

Trust violations are inevitable, and effective means of restoring trust are indispensable. The present study has shown that gender has a significant influence on the process of trust restoration. More studies are needed to better understand the causes of differences in men's and women's patterns of responses to attempts to restore trust. Is women's slower pace in returning to pre-violation levels of trust caused by gender differences in the evaluation of trustworthiness or by gender differences in emotional reactions to trust violation? Thus, it is useful to note that the current study was limited in that neither participants' expectations/beliefs concerning trustees' behavior nor their emotional reactions as trustors were measured. Future studies considering whether evaluations of trustworthiness or emotional responses are responsible for women's slower trust restoration would be highly useful.

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