Channel Choice, Justification of Deception, and Detection

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Using Truth Default Theory, we assess whether senders choose to communicate through anonymous text chat or face-to-face when they deceive, and differences in receiver ability to detect deception in the 2 channels. Participants were randomly assigned as distributor or receiver in an ultimatum game. Distributors received $8 to divide between self and receiver. Receivers did not know the amount distributors had received, so distributors could deceive. Distributors used text chat more for deceptive offers; receivers were more accurate at detecting deception through text chat than face-to-face. When part of the distributor’s allocation appeared to be won through luck, distributors were more deceptive. Distributors with more dishonest demeanors increased suspicion, but demeanor was not significantly related to detection accuracy.

Keywords: Deception, Lies, Omission, Detection, Demeanor, Nonverbal Cues.

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People are often tempted to deceive their partner in monetary interactions in order to maximize their gain (Wang & Murnighan, 2012). Therefore, understanding the conditions under which people are more likely to deceive and when their deception is more easily detected are salient concerns for people engaging in monetary interactions with others. This article uses an ultimatum game in which the distributor can deceive about the amount of money received from the experimenter when they make an offer to divide the money with the receiver, and we analyze two factors related to whether the distributor uses deception: the communication channel the distributor decides to use to communicate and conditions that increase the ability to justify deception. Further, we analyze whether the communication channel the distributor chooses affects detection accuracy of the receiver and test if demeanor cues help detection accuracy for truths and deceptions.

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Communication channel decisions
In an ultimatum game, in which the distributor has the power to divide a pot of money between herself and the receiver, offers of less than 50% to the receiver are often considered unfair (Huck, 1999; Kim, Schnall, Yi, & White, 2013; Straub & Murnighan, 1995; Valenzuela & Srivastava, 2012). If a distributor wanted to keep more than 50% of the money and possibly deceive their partner about the actual amount of the pot of money, would the distributor be more likely to communicate with the receiver through online text chat or face-to-face? On one hand, previous research has found that people often expect high amounts of deception online (Caspi & Gorsky, 2006; Whitty & Carville, 2008), so if a sender expected to use deception, a rational strategy would be to communicate face-to-face to reduce suspicion. However, we hypothesize that communication channel decisions are made more on the basis of face concerns. There is a greater amount of threat to face if one's deception is detected in face-to-face communication than through online text chat, and therefore, image management concerns make deception through face-to-face communication less desirable (Burgoon & Buller, 2004). According to the Social Distance Hypothesis (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; Hancock, 2007) people are uncomfortable about engaging in deception and prefer more social distance from the receiver when they deceive. Further, senders overestimate people's ability to detect deception face-to-face and may harbor perceptions that deception is easily detected face-to-face through nonverbal cues (Vrij, Granhag, & Porter, 2011) and can more easily go undetected online (George, Marett, & Tilley, 2004; Keyes, 2004). Therefore, we hypothesize that participants who keep more money for themselves and who may intend to deceive their partner about it will be more likely to choose to communicate through text chat (Hypothesis 1).

Are those who decide to deceive online less likely to be detected or more likely? Using Truth Default Theory (Levine, 2014) as a theoretical framework, we hypothesize that online deception is more likely to be detected than face-to-face deception due to Truth Default Theory's proposition about the effect of demeanor cues on deception detection and its proposition on the projected motive model (Levine, Kim, & Blair, 2010). First, senders vary in their honest and dishonest demeanor, but these demeanor cues are often unrelated to actual honesty or deception. Demeanor cues are more numerous and salient face-to-face and, therefore, can impair accurate detection more in face-to-face interactions (Levine et al., 2011; Van Swol, Braun, & Kolb, 2014). Levine et al. (2011) categorize demeanor cues as honest or dishonest cues. Honest cues include being composed and confident; friendly, involved, and engaged; and giving credible explanations. Dishonest cues include avoiding eye contact, being slow and cautious when answering questions, exhibiting uncertain vocal tone, displaying a lot of fidgeting, appearing nervous and tense, having inconsistent demeanor, and conveying uncertainty with words. Levine et al. (2011) found that demeanor cues have a strong effect on perceiving an interaction as a truth or lie but are not strongly related to actual truth or deception of the interaction. Thus “some people come off as sincere while others do not and, for most people, this has little or nothing to do with whether
or not they are actually honest or actually lying” (p. 379). A sender’s demeanor can increase the amount of nondiagnostic cues and make it more difficult to accurately determine truth or deception. Further, Truth Default Theory (Levine, 2014) predicts that when receivers can contextualize a message, detection accuracy increases. If there is content, like inconsistencies, which can aid detection accuracy, this content should aid detection more in text chat than face-to-face because there are fewer demeanor cues to lower accuracy and to distract the receiver from the utility of content. With demeanor cues, we expect to replicate previous research on the receiver’s perception of the distributor’s demeanor. Demeanor cues will significantly predict receivers’ suspicion (Hypothesis 2A). Demeanor cues will not significantly predict correct detection of truths and deception (Hypothesis 2B).

However, a small minority of people display dishonest demeanor cues when they lie. Levine (2010) labels these people as Transparent Liars. Transparent Liars may be less able to manufacture deceptions from long-term memory possibly due to reduced aptitude for creative and associative cognition (Gino & Ariely, 2012). Therefore, they may have more delayed and disrupted processing when drawing upon memory to create deceptions, which results in hesitations, pauses, and other dishonest demeanor cues stereotypically linked to deception (McCornack, Morrison, Paik, Wisner, & Zhu, 2014). However, Transparent Liars probably have experience with their lack of deceptive skill and may avoid face-to-face deception. Therefore, if the unskilled liar chooses to deceive, she may select reduced cue channels if available; the availability of the channel may also shape her decision of whether to lie. Much previous research on deception has compelled senders to lie or tell the truth usually with 50% lies and 50% truths (Burgoon & Levine, 2009), and therefore, Transparent Liars could not avoid deception. Levine (2010) argues that the common finding that people are able to detect deception somewhat above what would be expected by chance (Bond & DePaulo, 2006) is driven by Transparent Liars being compelled to lie. However, in this experiment, participants can decide to engage in truth-telling or to lie and decide what channel to use to communicate. Therefore, demeanor cues may be even less diagnostic of deception or truth than previous research that compelled half the participants to lie and half to tell the truth because people who know they can display honest demeanor cues when deceiving may be tempted to do so. Further, Transparent Liars can avoid deception, especially for face-to-face communication.

Another reason receivers may be better at detecting deception online is due to the projected motive model (Levine et al., 2010). People generally assume others are truthful by default and only suspect deception if there is a trigger or reason for it. People expect more deception online (Caspi & Gorsky, 2006; Whitty & Carville, 2008) because they perceive that it is easier to deceive online (George et al., 2004). Interacting in a monetary negotiation with the ability to lie about the money certainly poses a reason for a sender to lie. However, when that sender then chooses to interact through text chat rather than face-to-face, this may act as a trigger or projected motive and heighten suspicion. While previous research comparing detection accuracy in online and face-to-face communication (Van Swol et al., 2014)
found that receivers did not have a lie bias for online communication in comparison to face-to-face communication, the study assigned distributors to communication channel; thus there was no inferred intent for the sender who was communicating online. In this study, because the sender chooses which communication channel to make an offer, the receiver may attach meaning to the choice of communication channel (Sitkin, Sutcliffe, & Barrios-Choplin, 1992) and be more suspicious of online communication. Deception will be detected more easily online than face-to-face (Hypothesis 3).

**Bonus condition and rationalization**

Understanding when and in which contexts people are more likely to deceive is of interest to researchers and the lay public. We hypothesize an increased amount of deception occurring over text chat, but researchers have examined other factors related to more deception. We investigate how the ability to rationalize deception can increase deception. By increasing the distributor's perception that the role of distributor's luck plays in the amount the distributor is given by the experimenter to allocate, the distributor may feel more entitled to keep more money. After all, they think they won the money. This can help rationalize deceiving the receiver about it. Making decisions about deception is subject to bounded rationality, and when a situation is structured so people are less likely to view it as an ethical situation, it makes it easier to rationalize deception (Wang & Murnighan, 2012). Bazerman and Tenbrunsel (2011) discuss how ethical fading and moral blind spots can cause us to fail to see unethical and deceptive behavior, especially when more ambiguity is introduced in the situation. Ariely (2012) labels the cognitive flexibility with which people can rationalize deception as “the fudge factor.” For example, he reports that people were more likely to lie about their performance on a task when they were paid for their performance with tokens than with cash and that golfers were more likely to cheat by moving the ball with their club than their hand because increasing the psychological distance from the deception increased the ability to rationalize the deception (Ariely, 2012).

In this study in the bonus condition, we increase the perceived role of distributor’s luck in the distribution of money by distributing the money in a two-step process. In the second step, the distribution of additional money is contingent upon a coin toss that is rigged to always allow the distributor to win. When the distributor wins the toss, they receive an additional “bonus” dollar. In both conditions (bonus; no bonus), the distributors are actually receiving the same amount of money (eight dollars total), but in the bonus condition receiving this eight dollars appears to be more dependent on the distributor’s luck. Because their luck may increase feelings of entitlement to the money, there will be more deception in the bonus condition than in the no-bonus condition because the distributor will be able to rationalize deception more in the bonus condition (Hypothesis 4). Further, because distributors can rationalize deception more in the bonus condition, deceivers will have less guilt in the bonus condition than in the no-bonus condition (Hypothesis 5).
Method

Participants and design
Two hundred and four undergraduates (102 dyads) at a large, public university in the Midwestern United States were participants in the experiment. They were compensated with extra credit in communication classes. We manipulated Bonus condition (explained in next paragraph), and participants were randomly assigned into one of two levels of this condition: Fifty dyads interacted in the bonus condition and 52 in the no-bonus condition.

Participants were also assigned randomly to either the distributor role (which required participants to decide how to divide an amount of money between themselves and their partner and to decide how to interact with their partner, either over the computer using text chat [CMC] or face-to-face [FTF]) or the receiver role (which required participants to decide whether to accept the amount of money being offered them by their partner and to ask any questions that would help them make that decision).

Procedure
In the lab, two rooms were used to keep participants separated when not interacting. A short hallway connected the two small rooms, and the lab area was part of an isolated set of soundproofed rooms. In the rooms, participants had access to a networked Apple computer and the program iChat, which was configured to allow chat across a local network. This network was protected such that no one else could communicate with the participants.

Participants underwent random assignment upon arrival, were brought to their room, and completed informed consent. The researchers made efforts to prevent participants from communicating to each other before the experiment, but this was not always possible. In the posttask questionnaire, participants were asked if they saw the other participant, and 26 dyads reported having seen each other before the experiment. Once both participants had arrived, the distributor received an amount of money. The experimenter used a deck of cards (without face cards), placed the four top cards facing down onto the table, and said, “Go ahead and select a card.” The top four cards of the deck were always eights (seven in the bonus condition). Thus the participant always picked an eight (seven). After the distributor made her selection, the experimenter removed the remaining three cards without allowing the participant to see them and said, “That card represents the amount of money in dollars you will have to divide between yourself and your partner.” Then, the experimenter took the chosen card and left to get the money. The experimenter brought back an envelope with seven 1-dollar bills (six in the bonus condition) and four quarters. In the bonus condition, after handing the envelope to the participant, the experimenter then flipped a coin and asked the participant to call heads or tails. Without showing the coin to the participant, the experimenter exclaimed, “Heads (tails), you win! That puts you in the bonus condition, so you receive an extra dollar for your distribution amount. You have eight dollars total to distribute.” The experimenter left and quickly returned
with another dollar. Thus, in both conditions distributors ended up with seven dollar bills and four quarters as their distribution amount.

After receiving the money, the distributor was then told:

You have been given an amount of money. You will now decide how to distribute that money between you and player 2. That is, you will decide how much of the money you keep and how much of the money is given to player 2. Player 2 will not be told the amount of money that you were given. Player 2 knows only that you were given a “small amount of money.” That is, only you know exactly how much money you have to distribute. Once you have decided how much to give to player 2 (and how much to keep for yourself), you will write down your decision on a form. You will then interact with player 2 for 2 minutes and announce to them your decision. The only thing that you have to tell them is the amount of money you are offering to them. You can tell them an amount of money that the experimenter gave you, but you are not required to tell them the total amount of money you were given. Once you have told player 2 how much they are being offered, the two of you are free to talk about whatever it is that you wish. Player 2 is allowed to ask you questions. After the two minutes are over, you will return to your own (separate) rooms. You can decide if you would like to meet with your partner (Player 2) face to face, or anonymously through text chat. Once you are separated, player 2 will choose whether to “accept” or “reject” your offer. If player 2 accepts your offer, then the money will be distributed between the two of you according to the distribution you specified. If player 2 rejects your offer, player 2 will receive $1.75, and you will receive $0. The amount of money that you and player 2 receive will depend on how much you have distributed to each person and whether your distribution was accepted or rejected. Thus, it is important that you make your decisions carefully.

The experimenter then said, “Remove the money you will keep for yourself and place it in your pocket or bag. Leave the rest of the money in the envelope. When you are ready to interact with your partner, open the door and let me know.” The experimenter left a written copy of the instructions for the distributor to read.

The experimenter met with the receiver and gave similar instructions about the distributor’s role and their role as receiver. Receivers were instructed about the distributor receiving a small amount of money and were also told, “They will tell you how much money they are offering you. They can tell you how much money they had been given by the experimenter, but we do not require them to tell you. However, if they do not tell you, you are free to ask them how much money the experimenter gave them.” Receivers were told they could reject the offer and would then receive the default sum of $1.75. Receivers were given a written instruction sheet to read before interacting with their partner.

Once the distributor had made a decision about distribution amount and communication channel, the experimenter facilitated the interaction between the participants using the channel selected by the distributor. For FTF, the experimenter brought the receiver to the distributor’s room and instructed the receiver to sit at the table with the distributor. A commercial-grade video camera in full view of the participants was turned on, and participants were told they had about 2 minutes to discuss the decision and that the receiver should leave the room when they had finished. The experimenter left the room, shutting the door behind her, and the participants began their discussion.
For CMC, the experimenter separately acquainted participants with the chat program and had them move to sit at the computer terminal in their room. The experimenter told each participant, “You will be interacting using a program called iChat. It works just like any other chat program. You type something on the keyboard, hit return, and it sends the message to the other person. Are you familiar with these types of programs?” After this, participants began communicating.

Once the interaction was complete (and in FTF, the receiver brought back to her room), the participants were given several forms to complete. Both participants completed a questionnaire about the interaction. The distributor also filled out a sheet about how she had divided the money, while the receiver completed a form to indicate if she rejected or accepted the distributor’s offer. From this form, the experimenter divided the money for the two participants. Participants were thanked and informed their participation was finished after they completed the questionnaires. If the participants finished at the same time, the experimenter asked one to wait so that the participants did not have an opportunity to interact.

**Measures**

The questionnaire for the distributor had 34 questions (shorter for CMC) and a 20-item emotion PANAS-style scale from Van Swol et al. (2014), originally adapted from Watson, Clark, and Tellegen (1988); when the distributor communicated over the computer, there were no questions that asked about the receiver’s behavior. The distributor was asked about her distribution of money, any deception she used in the interaction, and other items described below. The receiver’s questionnaire contained 33 items (slightly shorter for CMC) and the 20 item PANAS-style scale. The questions were similar to the distributor’s questionnaire, but rephrased from the receiver’s perspective.

For both the distributor and receiver, the first seven questions measured how well the participant knew their partner (e.g., “How often have you talked with your partner?”) (see Van Swol et al., 2014). The Cronbach’s alpha was high (.81 for distributor and .84 for receiver), and the mean was used as a measure of partner familiarity. The distributor questionnaire included a 6-item measure of Partner Suspicion (e.g., “My partner did not seem to believe my offer.”) from Van Swol et al. (2014). For these six items (Van Swol et al., 2014), participants responded on a 1 True to 7 False scale. The Cronbach’s alpha for these questions was high (.86); the mean was used (Partner Suspicion) for analysis. The distributor questionnaire included a three-item measure of Honesty (e.g., “I was completely honest with my partner.”) (Van Swol et al., 2014), also on the 1 to 7 scale. The Cronbach’s alpha for the three items was high (.81); the mean was used (Distributor Honesty) for analysis.

Levine et al.’s (2011) “eleven behaviors and impressions linked to honest-dishonest demeanor” were used (with permission from Levine) for a measure of demeanor. Because Levine et al. (2011) found that the 11 behaviors are unidimensional, honest and dishonest demeanor cues will be used in one measure of demeanor. Receiver’s
perception of distributor’s demeanor was measured on the 1-to-7 scale with four questions assessing Levine et al.’s (2011) four cues to an honest demeanor (see Van Swol et al., 2014) and seven questions assessing Levine et al.’s (2011) seven cues to a dishonest demeanor that were reverse coded for analysis (“My partner avoided looking me in the eye while answering” [FTF only]; “My partner was hesitant and slow when providing answers”; “My partner conveyed uncertainty in his/her tone of voice” [FTF]; “My partner was inconsistent in their behavior over the course of the interaction”; “My partner conveyed uncertainty with the words that he/she used when talking”; “My partner seemed tense, nervous, and anxious” [FTF]; “My partner fidgeted excessively with his/her hand and feet” [FTF]). For FTF, the Cronbach’s alpha was high (.90), and the mean was used as a measure of receiver perception of distributor demeanor. For CMC four items were excluded, and the Cronbach’s alpha was high (.86); the mean was calculated (receiver perception of distributor demeanor) for analysis.

The receiver’s questionnaire included a 7-item measure of Receiver Suspicion (e.g., “I found my partner’s answers believable” [reverse coded]; “My partner gave evasive and ambiguous answers to my questions”) adapted from Van Swol et al. (2014) using the 1-to-7 scale. The Cronbach’s alpha was high (.80); the mean was calculated (Receiver Suspicion) for analysis.

Coding
Recorded interactions were transcribed verbatim, for all but two dyads where technical issues prevented the interactions from being recorded. Two undergraduates coded each transcript for several variables; the coders were blind to study hypotheses. First, amount of offer was coded; coders disagreed three times out of 100 interactions. Any disagreements were resolved by the first author examining the transcripts. Coders could not ascertain the offer in some instances because the Distributor did not state it and simply handed the receiver an envelope. Second, coders coded if the distributor changed the amount she offered the receiver as the interaction went on. There were no disagreements on this coded variable. Coders rated on a scale from 1 (Not at all) to 4 (Somewhat) to 7 (Completely) the deceptiveness of the distributor. The coders were told the true amount that distributor had been given. The mean difference score between the average of the two coders was small, \( M = 0.55, SD = 1.30 \), but significant, \( t(99) = 4.19, p < .001 \), and the intra class correlation between the coders, using two-way mixed effects model, was significant, \( ICC = .91, p < .001 \). Thus, reliability was acceptable. The mean average of the two coders was taken (Judged Deception) for analysis.

Coders assigned the distribution amount into one of three categories: amount not stated, amount stated immediately, or amount stated after question. There was coder disagreement for 12 of 100 interactions. Coders assessed the amount the distributor stated she had been given (if stated); there was one disagreement among the coders. Next, coders classified if the amount stated (if stated) was truthful; there were no disagreements. Coders assessed if the total amount the distributor had stated they were given changed as the interaction progressed; they disagreed once for this
category. Coders grouped the interaction into one of six classifications: (1) truth; (2) deception; (3) omission (did not state any distribution amount); (4) omission, then truth after questioning; (5) omission, then lie after questioning; (6) lie, then truth. Coders disagreed 24 times for this item. Most disagreements were between categories 1 and 4 and categories 1 and 3. The first author examined for consistency among the above variables. For example, if the total amount was stated after the receiver asked about it, then the interaction could only be classified as (4) omission, then truth after questioning or (5) omission, then lie after questioning. The first author relied on the original transcripts to resolve all inconsistencies.

Results

Deception
Coded offers were categorized as truth, deceptive commission (lie), or deceptive omission. Truth ($n = 68, 66.7\%$) was when the distributor either stated their correct distribution amount of $8$ ($n = 55$) or did not state the distribution amount but gave the receiver half or more of the $8$ distribution amount ($n = 11$). Of the distributors who had a truthful distribution amount, 30 stated it immediately, 25 after being questioned by the receiver about the distribution, and for two truthful interactions the video was missing. Lies ($n = 18, 17.6\%$) were defined as the distributor stating a different distribution quantity than given by the experimenter (e.g., said they were given $5$ when they really received $8$). Eight distributors lied immediately, and 10 lied only after being questioned by the receiver about the amount given by the experimenter. One distributor lied about the distribution amount at first but then told the truth after being questioned by the receiver; this was classified as truth. Deceptive omission ($n = 16, 15.7\%$) was defined as the distributor not telling the receiver their distribution amount and giving the receiver less than half of the distribution amount (less than $4$). Table 1 contains frequencies of offer type between face-to-face and text chat and between bonus and no-bonus conditions.

When the distributor gave the receiver less than half the distribution amount and omitted information about the distribution amount, this was categorized deceptive because past research on ultimatum games has found that receivers often view offers of less than half as inequitable and punish their partner as a result (Huck, 1999; Kim et al., 2013; Straub & Murnighan, 1995; Valenzuela & Srivastava, 2012). Therefore, omitting information about the offer being less than half the distribution amount was advantageous to the distributor and deceptive (McCornack, 1992). However, previous research has found that deceptive omission is often viewed as less deceptive than lies but more deceptive than truths (Ritov & Baron, 1990; Spranca, Minsk, & Baron, 1991; Tenbrunsel & Messick, 2004; Van Swol et al., 2014; Van Swol, Malhotra, & Braun, 2012; for an alternative perspective see Levine, 2001). A one-way analysis of variance on the factor of Distributor Honesty found a significant difference between lies ($M = 3.43, SD = 1.47$), truth ($M = 6.71, SD = 0.58$), and deceptive omission ($M = 4.09$, $SD = 1.03$).
Table 1 Offers by Communication Channel and Condition

<table>
<thead>
<tr>
<th>Communication Channel</th>
<th>Offer Type</th>
<th>Truth</th>
<th>Lie</th>
<th>Omission</th>
<th>Truth- Omission</th>
<th>Truth After Question</th>
<th>Lie After Question</th>
<th>Total</th>
</tr>
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<tr>
<td>CMC</td>
<td>Truth</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>29</td>
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<td></td>
<td>Lie</td>
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<tr>
<td>FTF (^a)</td>
<td>Truth</td>
<td>27</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>20</td>
<td>4</td>
<td>71</td>
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<td>Total</td>
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<td>8</td>
<td>16</td>
<td>11</td>
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<td>2</td>
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\(^a\)Two FTF interactions had no video and are not included in this table.

SD = 1.48), \(F(2, 99) = 108.97, p < .001\), partial \(\eta^2 = 0.69\). Post hoc tests using Fisher’s LSD revealed that truth differed significantly from lies \((p < .001; \text{Cohen’s } d = 2.93)\) and deceptive omission \((p < .001, \text{Cohen’s } d = 2.33)\). Deceptive omission and lies significantly differed \((p = .047, \text{Cohen’s } d = 0.45)\). Therefore, distributors perceived their deceptive omission as less honest than truths but more honest than lies. The coders rated interactions on deceptiveness on a 1 (Not at all) to 7 (Completely deceptive) scale, and they also perceived deceptive omission \((M = 4.25, SD = 1.45)\) as more deceptive than truths \((M = 1.36, SD = 0.74; \text{Cohen’s } d = 1.07)\) but less deceptive than lies \((M = 5.88, SD = 1.59; \text{Cohen’s } d = 0.45)\), \(F(2, 99) = 146.23, \text{partial } \eta^2 = 0.75, p < .001\). Distributors had been asked “Did you lie to your partner?” and circled Yes (Truth = 0, Lies = 13, Deceptive omission = 1) or No (Truth = 68, Lies = 5, Deceptive omission = 15). Distributors were asked “Did you tell the whole truth?” and circled Yes (Truth = 61, Lies = 0, Deceptive omission = 4) or No (Truth = 7, Lies = 18, Deceptive omission = 12).

We tested frequency of truths, lies, and deceptive omission between the Bonus (Truth = 27, Lies = 15, Deceptive omission = 8) and No-Bonus condition (Truth = 41, Lies = 3, Deceptive omission = 8). Differences in overall rate of deception were found between the two conditions, \(\chi^2(df = 2) = 10.85, \phi = .33, p = .004\). Distributors lied significantly more in the bonus condition in support of Hypothesis 4. Distributors also gave less on average to the receiver in the bonus condition ($3.48) than in the no-bonus condition ($3.73), \(F(1, 100) = 3.82, \text{partial } \eta^2 = 0.04, p = .05\). We tested rate of truths, lies, and deceptive omission when communicating face-to-face (Truth = 59, Lies = 8, Deceptive omission = 6) compared to text chat (Truth = 9, Lies = 10, Deceptive omission = 10). There were significant differences in rate of deception and truth between the two channels, \(\chi^2(df = 2) = 23.35, \phi = .48, p < .001\). Interactions occurring over CMC were more likely to be deceptive in support of Hypothesis 1. Distributors also gave less to the receiver when they chose to communicate online ($3.31) than FTF ($3.73), \(F(1, 100) = 9.55, \text{partial } \eta^2 = 0.09, p = .003\). No receivers chose to reject their offer.
Relationship and interaction
Participants had been asked whether they saw their partner before the experiment, and 26 dyads answered Yes. We found no differences in lies, truths, and omission between dyads that saw each other or did not see each other, $\chi^2(df = 2) = 0.39, \phi = .06, p = .82$. Participants were also asked about their relationship with their partner in the postquestionnaire and responded on a scale from 1—Don’t know at all, complete strangers, never worked together … to 7—Know very well, very good friends, worked together a lot. Overall, distributors did not know their partner ($M = 1.09, SD = 0.33$). Also, there was no significant difference between offer type (lie, deceptive omission, truth) for closeness of relationship, $F(2, 99) = 0.18$, partial $\eta^2 = 0.001$, $p = .84$. Receivers did not know their partner well ($M = 1.16, SD = 0.48$), and there was no significant difference between offer types, $F(2, 99) = 0.91$, partial $\eta^2 = 0.02$, $p = .40$.

Suspicion and detection of deception
Receivers were asked, “Did your partner tell you how much money he or she was given by the experimenter to distribute?” and circled No or Yes. If the receiver circled Yes, then they were asked, “If yes, do you think your partner lied to you about the amount of money they were given by the experimenter?”; if they circled No, they were asked, “If no, do you think your partner avoided telling you the amount of money the experimenter gave them so that they could keep more of the money?” No Suspicion was defined as the receiver either stating that the distributor did not lie or the distributor did not avoid stating a total amount to keep more money. Suspicion was defined as the receiver stating that the distributor lied about the money received from the experimenter or that the distributor avoided stating the total amount in order to take more money. Receivers classified as suspicious ($M = 3.99, SD = 0.91$) significantly differed from receivers classified as not suspicious ($M = 5.58, SD = 0.93$) in the Receiver suspicion factor from the postquestionnaire, $F(1, 99) = 50.89$, partial $\eta^2 = 0.34$, $p < .001$. The classification of suspicion (Yes = 1, No = 0) also significantly negatively correlated with the amount of the offer ($r = -.26, p = .009$).

We created the variable Correct Detection by considering offer type with suspicion. The receiver either was Correct in her judgment of the interaction (the receiver was not suspicious and was not deceived or the receiver was suspicious and was deceived) or Incorrect in her judgment (the receiver was suspicious and was not deceived or the receiver was not suspicious and was deceived). Table 2 presents correct detection by type of offer for type of condition and communication channel. For truths, lies, and omission, there was not a significant difference in correct detection between the bonus and no-bonus condition, $\chi^2(df = 1) = 3.28, \phi = -.22, p = .07$; $\chi^2(df = 1) = 0.26, \phi = -.12, p = .61$; and $\chi^2(df = 1) = 0.29, \phi = .14, p = .59$, respectively.

For truths and omission, there was not a significant difference in correct detection between when the distributor chose to communicate FTF or CMC, $\chi^2(df = 1) = 0.01, \phi = -.01, p = .93$, and $\chi^2(df = 1) = 1.57, \phi = -.31, p = .21$, respectively. However,
Table 2 Correct and Incorrect Detection by Offer Type and Condition and Communication Channel

<table>
<thead>
<tr>
<th>Offer Type</th>
<th>Truth</th>
<th>Lie</th>
<th>Omission</th>
<th>Total</th>
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<tbody>
<tr>
<td>Correct detection n (%)</td>
<td>63 (88.7)</td>
<td>3 (18.75)</td>
<td>10 (66.7)</td>
<td>76 (74.5)</td>
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<tr>
<td>Incorrect detection n (%)</td>
<td>8 (11.3)</td>
<td>13 (81.25)</td>
<td>5 (33.3)</td>
<td>26 (25.5)</td>
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<tr>
<td>Total</td>
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<td>16</td>
<td>15</td>
<td>102</td>
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<th>Lie</th>
<th>Omission</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMC</td>
<td>FTF</td>
<td>CMC</td>
</tr>
<tr>
<td>Correct detection n (%)</td>
<td>10 (83.3)</td>
<td>53 (89.8)</td>
</tr>
<tr>
<td>Incorrect detection n (%)</td>
<td>2 (16.7)</td>
<td>6 (10.2)</td>
</tr>
<tr>
<td>Total</td>
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<tr>
<td>Bonus</td>
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<td>Bonus</td>
</tr>
<tr>
<td>Correct detection n (%)</td>
<td>23 (79.3)</td>
<td>40 (95.2)</td>
</tr>
<tr>
<td>Incorrect detection n (%)</td>
<td>6 (20.7)</td>
<td>2 (4.8)</td>
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<tr>
<td>Total</td>
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<td>42</td>
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</table>

<table>
<thead>
<tr>
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<th>Lie</th>
<th>Omission</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMC</td>
<td>FTF</td>
<td>CMC</td>
</tr>
<tr>
<td>Correct detection n (%)</td>
<td>9 (100)</td>
<td>1 (33.3)</td>
</tr>
<tr>
<td>Incorrect detection n (%)</td>
<td>0 (0)</td>
<td>2 (66.7)</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>3</td>
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</tbody>
</table>
receivers were significantly more likely to detect lies when the distributor chose to communicate CMC than FTF, $\chi^2(df = 1) = 4.11, \phi = -.48, p = .04$. This supports Hypothesis 3 for lies, but not for deceptive omission. Receivers did not detect any lies in FTF interactions.

Receivers correctly classified 61 of 68 truths as truthful (89.71%; CMC = 88.89%, FTF = 89.83%). In a one-sample $t$-test comparing correct detection of truths against the base rate of truths (66.7%), the mean difference (.23) was significantly different than zero, $t(67) = 6.20, Cohen's d = .80, p < .001$. Therefore, receivers had a truth bias and were more likely to detect truths above the actual base rate. Also, the almost identical rate of correctly classifying truths between CMC and FTF communication indicates that receivers did not have more of a truth bias when the distributor communicated FTF. This fails to support our reasoning about the projected motive model. Given the low base rate of truths for CMC (31% of interactions were truths) vs. FTF (80.8% of interactions were truths) the truth bias was much higher than the base rate of truths for CMC.

For lies, 22.22% of receivers correctly detected lies when they occurred (CMC = 40%, FTF = 0%). Distributors lied in 18 of 102 interactions (17.65%; CMC = 34.48%, FTF = 10.96%). When the distributor communicated with CMC, receivers were not able to detect lies above chance (the base rate of lying of 34.48%), $t(9) = .26, Cohen's d = .13, p = .79$.

For deceptive omission, 68.75% of receivers correctly detected the deception (CMC = 80%, FTF = 50%). Distributors used omission in 16 interactions (15.68%; CMC = 34.48%, FTF = 8.22%). For CMC, receivers were able to detect omission above the base rate, $t(9) = 3.41, Cohen's d = 1.24, p = .008$, but not FTF, $t(5) = 1.87$, Cohen's $d = .91, p = .12$.

**Demeanor**

The relationship between receiver’s perception of the distributor’s demeanor was analyzed with suspicion (1 = suspicious; 0 = not suspicious) and detection accuracy (1 = correct; 0 = not correct). For FTF and CMC, demeanor correlated with suspicion, $r = .36, p = .002$; $r = .54, p = .002$, respectively. Receivers were suspicious of distributors who had more dishonest demeanors. Therefore, Hypothesis 2A, that demeanor cues will be related to suspicion, was supported. We examined how perception of demeanor was related to correct detection of deception and truth. For FTF and CMC, demeanor did not correlate with correct detection, $r = -.20, p = .093; r = -.05, p = .798$, respectively. Therefore, in support of Hypotheses 2A and 2B, demeanor cues were not significantly related to correct detection of deception and truth, but demeanor cues were strongly related to suspicion.

Finally, we wanted to see if there were perceived differences in demeanor of the distributor for lies, omission, and truth. For FTF, we conducted a one-way (offer type: lie, truth, and omission) analysis of variance. There was not a main effect of offer type ($Truth = 2.11, SD = 1.05; Lie = 2.38, SD = 1.25; Omission = 2.55, SD = 1.28$), $F(2, 69) = 0.59$, partial $\eta^2 = 0.02, p = .56$. For CMC, we also conducted a one-way analysis.
of variance on offer type. There was not a main effect of offer type (Truth = 2.13, SD = 1.18; Lie = 3.39, SD = 1.13; Omission = 2.87, SD = 1.05), \( F(2, 26) = 3.01 \), partial \( \eta^2 = 0.19 \), \( p = .067 \). Although, there was a marginal tendency to perceive liars in the computer text condition as having a more dishonest demeanor. Overall, participants did not perceive the demeanor of the distributor to be significantly different if the distributor was deceiving or telling the truth.

### Negative emotions

Participants rated the extent to which they were feeling 20 emotions on a PANAS-style scale from 1 (Very slightly or Not at all) to 5 (Extremely). Seven adjectives (interested, determined, inspired, alert, active, strong, and attentive) were removed from the original scale (Watson et al., 1988) and replaced with seven more pertinent adjectives (Van Swol et al., 2014) (depressed, happy, sad, nervous, tense, uncomfortable, and angry). Exploratory factor analysis for the distributor emotion items found four factors accounting for 68.5% of the variance. The first factor was labeled Tension (Eigen value = 8.07) and included items anxious, distressed, upset, scared, hostile, irritable, nervous, tense, jittery, uncomfortable, and afraid. Sad and angry also loaded high on this factor but also cross-loaded high on the fourth factor. Since sad and angry did not fit conceptually, they were not included for this factor. The items showed a good Cronbach’s \( \alpha \) (.90), and a mean (Tension) was created for use in analysis. The second factor was positive emotions (Eigen value = 2.94) and was not used for analysis. The third factor was labeled Guilt (Eigen value = 1.56) and contained items guilty and ashamed, Cronbach’s \( \alpha = .84 \). The fourth factor (Eigen value = 1.14) was not used for analysis.

For the Tension factor there were no significant differences between offer type in how much distributors reported feeling this emotion (Truth = 1.57, SD = 0.57; Lie = 1.91, SD = 0.97; Omission = 1.97, SD = 1.20), \( F(2, 97) = 2.53 \), partial \( \eta^2 = 0.05 \), \( p = .09 \). For distributor Guilt, there was a significant difference between offer type (Truth = 1.12, SD = 0.39; Lie = 2.06, SD = 1.10; Omission = 2.09, SD = 1.04), \( F(2, 96) = 21.02 \), partial \( \eta^2 = 0.31 \), \( p < .001 \). Of the participants who deceived, there was not enough evidence to conclude differences in guilt between the bonus and no-bonus conditions, \( F(1, 32) = 0.34 \), partial \( \eta^2 = 0.01 \), \( p = .56 \). Therefore, Hypothesis 5, deceivers in the bonus condition would feel less guilt, was not supported.

### Discussion

In summary, participants chose to communicate face-to-face more often when they were truthful and through text chat more when deceptive. Participants were more deceptive in the bonus condition in which one dollar of the distribution amount was “won” in a coin toss, but contrary to what we predicted, deceivers in the bonus condition did not feel less guilt. Receivers were better able to detect lies through text chat, but there were no differences between face-to-face and text chat in ability to detect truths and deceptive omission. For truthful interactions, there was no difference in the truth bias between face-to-face and text chat communication. A more dishonest
demeanor led to increased suspicion, but demeanor cues were not significantly related to ability to correctly detect truths and deception. Finally, receivers did not perceive a significantly more dishonest demeanor for lies or omission than truth. We discuss these results in depth below.

**Deception and communication channel**

Most distributors were truthful, even though the receiver could not verify their distribution amount. Further, almost 90% of receivers were able to correctly identify truths when the distributor was truthful. This offers strong evidence of the central proposition of Truth Default Theory that assuming an interaction is truthful by default is a useful strategy that usually leads to accurate inferences about the sender because naturally occurring base rates of deception are low (Levine, 2014). There was more deception in text chat than face-to-face, but the most striking difference was between truths. When participants told the truth, they were much more likely to communicate face-to-face. For truths, participants may have reasoned that communicating through text chat could heighten suspicion, and participants had little reason to want to increase social distance due to face concerns and feeling uncomfortable. However, for deception, in terms of frequencies, slightly more distributors were communicating through text chat. Distributors may have been torn between the uncomfortableness of deceiving someone to their face and the possibility that choosing to communicate over text chat could increase suspicion. Possibly, participants who have more skill at deception and a history of successful deception were able to overcome face concerns and decide to deceive face-to-face, whereas less skilled deceivers chose the social distance of text chat. Thus, there are several reasons why the distributor would choose to deceive through text chat rather than face-to-face. These include perceptions that deception is easily detected in face-to-face exchanges, image management and face concerns about being accused of deception in a face-to-face exchange, a preference for more social distance when deceiving, and perceptions that one is not skilled at nonverbally deceiving others. Of course, these multiple reasons are not mutually exclusive and affect each other. If a sender perceives that they are a bad liar, then their fear of detection face-to-face and their level of preferred social distance should also increase.

We cannot be sure if participants who decided to give offers of less than 50% made an a priori decision to deceive or entered the interaction and realized that it would be problematic to tell the receiver that they took more than half the money and then decided that deception would be more efficient. In short, we do not have evidence that speaks to the thought process behind a lie or a truth. McCormack et al. (2014) argue that deception is often not planned a priori and, rather, is made in the moment as people realize that the truth could be problematic. Therefore, we cannot state if people who decide to deceive are more likely to interact through text chat or people who are acting unfairly are more likely to interact online, but then deceive as a way to cover up their unfair offer. Most likely, it is a combination of both.
Previous research on naturally occurring deception found lower rates of deception online (Hancock, Thom-Santelli, & Ritchie, 2004). Hancock (2007) notes that e-mail and text chat are recordable, which may make face-to-face a more desirable channel for deception because of deniability. In our experiment, both channels were recorded. Therefore, our results may not generalize when there are differences between channels for this facet. However, our results are consistent with Hancock’s (2007) feature-based model of deception, which predicts more deception in synchronous, recordless, and distributed channels. Both communication channels in the experiment were synchronous and recorded, but text chat was distributed and face-to-face was not. Therefore, where the two communication channels differed, results supported the features-based model of deception.

**Detection and demeanor**

The perception that it is easier to deceive undetected online (George et al., 2004) was not borne out in this study. Receivers were better able to detect lies through text chat than face-to-face, though they still were unable to detect lies above chance in text chat. Not one receiver was able to detect a lie told face-to-face. These results are almost identical to Van Swol et al. (2014), who found that only one receiver correctly detected a lie face-to-face when senders could decide whether to lie or tell the truth. Although Van Swol et al. (2014) assigned participants to communicate either face-to-face or online, they also found that lies were detected at a higher rate online than face-to-face. For deceptive omission, there was a trend for omission to be detected more online, but it was not significant. A comparison of the ability to detect omission above the baseline of its frequency found that receivers were able to detect deceptive omission significantly above chance when they communicated online but not when they communicated face-to-face.

Why were lies more detectable through text chat? Results do not support our reasoning about the projected motive model (Levine et al., 2010), which states that there would be less of a truth bias for communication through text chat. We hypothesized that because participants were interacting about money, the decision to communicate over text chat could indicate that the distributor had something to hide and heighten suspicion. This was not supported. For truths, receivers had a similar level of truth bias whether distributors decided to communicate through face-to-face or text chat, so the larger detection of lies through text chat cannot be attributed to an across the board reduction in the truth bias and increased suspicion for communicating over text chat. Therefore, demeanor cues may be a more plausible explanation.

Honest and dishonest demeanor cues were not strongly related to correct detection of truths and deception. These results are consistent with research on deception detection training in which meta-analyses have found few nonverbal and paraverbal cues that reliably serve as cues to deception and have found that the effects of these few cues are small in magnitude (DePaulo et al., 2003; Sporer & Schwandt, 2006,
2007). A more dishonest demeanor was strongly related to suspicion regardless of what channel the distributor used to communicate. This supports research that people may overestimate the usefulness of demeanor cues for deception detection (George et al., 2004; Keyes, 2004).

One reason for the lack of a relationship between demeanor cues and correct detection of truth and deception when the distributor communicated face-to-face is that Transparent Liars (Levine, 2010) were theorized to avoid face-to-face communication. Much of the past research in deception has used a 50/50 base rate in which the senders were compelled to lie for half the interactions and could not avoid deception or face-to-face deception if they knew they were bad liars (Burgoon & Levine, 2009). Most people have learned if they are good liars and have especially honest demeanors. Those people may have decided to deceive face-to-face. Further, skilled liars may be more believable in face-to-face communication because they have more cues available to them to appear truthful (Marett & George, 2004). Therefore, demeanor cues, which are especially salient face-to-face, did not have a significant relationship to actual deception and truth. Serota, Levine, and Boster (2010) hypothesized that rates of detecting lies would be lower for naturally occurring deception because Transparent Liars are not being compelled to lie and good liars aren’t being compelled to tell the truth, and therefore, demeanor cues become even less diagnostic of deception and truth (also see Levine et al., 2011).

**Bonus condition**

Distributors deceived more and gave their partner less in the bonus condition. Although the distribution amount appeared to be due to chance in both the bonus and nonbonus condition, the participants may have viewed the extra dollar as their own winnings won through making the right call in the coin toss in the bonus condition; they felt more justified to separate it out from the total distribution, despite the experimenter stating they had eight dollars total to distribute. Introducing a second method to increase the distribution amount through chance may have made the distributor feel more responsible for getting a high amount of money to distribute, and this may have increased their “fudge factor” to rationalize deception (Ariely, 2012). People have flexible boundaries of where they draw the line for moral and immoral behavior. By making the last dollar of the distribution amount dependent on their call, participants were able to move that boundary a bit and take more money. Contrary to what we expected, participants who deceived in the bonus condition did not feel less guilt. We had hypothesized that they would feel less guilt because they were able to rationalize the deception to themselves. However, the comparison group of deceivers in the no-bonus condition was small. Therefore, caution should be exercised in theorizing from this nonsignificant result and future research should try to test this hypothesis with larger samples.

Future research also could provide other opportunities for the distributor to feel responsible for the distribution amount to see if deception increases as a result.
We hypothesize anything that would increase the distributor’s perception that they are responsible for the money would increase deception. For example, rather than using chance, the distributor could earn the distribution money through skill, such as making the distribution amount dependent on answering general knowledge questions, even questions that almost any literate adult could answer correctly (e.g., Name one state that borders the Mississippi River; Name another country, besides the United States, where the majority of citizens speak English, etc.).

**Limitations and conclusion**

The Internet is an extremely flexible communication environment (Grazioli & Jarvenpaa, 2000) and results from text chat certainly cannot be said to generalize to all computer-based forms of communication. As we discussed previously, online communication is more recordable than face-to-face communication, and this could increase face-to-face deception in naturally occurring situations, at least for lies that are subject to verifiability, where fear of creating a written record outweighs impression management concerns of lying to someone’s face. Another limitation is that our interactions were fairly low stakes, and none of the receivers chose to punish distributors they suspected of deception. Therefore, the motivation to successfully deceive undetected may not have been that strong.

A large concern for the nonsignificant results in this study is that sample size was quite low in some cells. By allowing participants to self-select to lie or tell the truth, we hoped to increase generalizability and overcome some of the problems of studies that compel a 50/50 base rate of lies and truths (Bond & DePaulo, 2006). However, most people do not deceive (Serota et al., 2010), and this is illustrated in thin sample sizes in some of the deception cells. For example, the number of lies in the bonus condition is quite low. Although power was strong enough to support several of the key hypotheses, future research is needed to test some of our nonsignificant findings with a more powerful sample.

In conclusion, our results found that in short interpersonal interactions over money, liars were detected more online, but this was not due to a reduced truth bias online. Rather, in support of the Truth Default Theory’s propositions, demeanor cues were not useful toward detecting deception face-to-face, and we suspect that Transparent Liars avoid face-to-face communication and opted to deceive online. Further, our results demonstrate how small changes can increase people’s ability to rationalize deception.

**Acknowledgments**

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