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Truth-Default Theory (TDT): A Theory of Human Deception and Deception Detection

Timothy R. Levine[1]

Abstract

Truth-Default Theory (TDT) is a new theory of deception and deception detection. This article offers an initial sketch of, and brief introduction to, TDT. The theory seeks to provide an elegant explanation of previous findings as well as point to new directions for future research. Unlike previous theories of deception detection, TDT emphasizes contextualized communication content in deception detection over nonverbal behaviors associated with emotions, arousal, strategic self-presentation, or cognitive effort. The central premises of TDT are that people tend to believe others and that this "truth-default" is adaptive. Key definitions are provided. TDT modules and propositions are briefly explicated. Finally, research consistent with TDT is summarized.

Keywords

truth-bias, deception, lying

Truth-Default Theory (TDT) is a new theory of deception and deception detection. As the name of the theory implies, the key idea is that when humans communicate with other humans, we tend to operate on a default presumption that what the other person says is basically honest. The idea that people are typically "truth-biased" is far from new (cf. McCornack & Parks, 1986; Zuckerman, DePaulo, & Rosenthal, 1981). What is new is that this presumption of honesty is seen as highly adaptive both for the individual and the species. The truth-default enables efficient communication and

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cooperation, and the presumption of honesty typically leads to correct belief states because most communication is honest most of the time. However, the presumption of honesty makes humans vulnerable to occasional deceit. There are times and situations when people abandon the presumption of honesty, and the theory describes when people are expected to suspect a lie, when people conclude that a lie was told, and the conditions under which people make truth and lie judgments correctly and incorrectly. The theory also specifies the conditions under which people are typically honest and the conditions under which people are likely to engage in deception. TDT is logically compatible with Information Manipulation Theory 2 (IMT2; McCornack, Morrison, Paik, Wiser, & Zhu, 2014). However, whereas IMT2 is primarily a theory of deceptive discourse production, TDT is focused more on credibility assessment and deception detection accuracy and inaccuracy.

The approach guiding the formation of TDT might be described as abductive science. The propositions are all data based, and the explanations were initially articulated so as to offer a coherent account of the existing scientific data. The theory was not made public until original research supported and replicated every major claim. Theory-data correspondence is considered paramount, and the theory strives for a high degree of verisimilitude.

TDT is not only about accurate prediction and post hoc explanation. Good theory must also be generative. A theory needs to lead to new predictions that no one would think to make absent the theory. In line with Imre Lakatos (1980), TDT aims to be out in front of the data, not always chasing data from behind and trying to catch up.

A final notable feature of TDT theory is that it is modular. TDT is a collection of quasi-independent mini-theories, models, or effects that are joined by an overarching logic.

This article offers an article-length sketch of TDT. First, key concepts are defined. Next, TDT modules are briefly explicated. TDT propositions are then explained. Finally, data consistent with TDT is briefly summarized.

Definitions

Table 1 provides a full listing of the key constructs which populate TDT and a conceptual definition for each construct. Several of the key definitions are briefly discussed here.

Deception is defined as intentionally, knowingly, and/or purposely misleading another person. Consistent with IMT2 (McCornack et al., 2014), McNally and Jackson (2013), and Trivers (2011), deception need not require conscious forethought. While some deception clearly involves preplanning, a sender may only recognize the deceptive nature of their communication after completing the deceptive utterance (see IMT2, Proposition IS2). In line with Trivers, TDT does not preclude other deception that also involves self-deception so long as the message has a deception purpose or function, even if the purpose is unconscious. Thus, deceptive messages involve intent, awareness, and/or purpose to mislead. Absent deceptive intent, awareness, or purpose, a message is considered honest.

Table 1. Key TDT Concepts and Definitions.

- *Deception* is intentionally, knowingly, or purposefully misleading another person.
- A *lie* is a subtype of deception that involves outright falsehood, which is consciously known to be false by the teller, and is not signaled as false to the message recipient.
- *Honest communication* lacks deceptive purpose, intent, or awareness. Honest communication need not be fully accurate, true, or involve full disclosure.
- The *Truth-Lie Base-rate* refers to the proportion of any set of messages that are honest and deceptive. It is the relative prevalence of deception and nondeception in some defined environment.
- *Truth-Bias* is the tendency to actively believe or passively presume that another person's communication is honest independent of actual honesty.
- The *Truth-default* involves a passive presumption of honesty due to a failure to actively consider the possibility of deceit at all or as a fall back cognitive state after a failure to obtain sufficient affirmative evidence for deception.
- *Honesty judgment* involves the belief state that a communication is honest. Honesty judgments can be passive (truth-default) stemming from a failure to consider the possibility of deceit, a reversion to truth-default stemming from a failure to meet the threshold for a deception judgment, or active decisions based on exculpatory evidence.
- *Deception judgment* is an inference that a communication is deceptive or a lie. Unlike honesty judgments, most deception judgments are active and have an evidentiary basis.
- *Demeanor* refers to a constellation of inter-correlated behaviors that function as a gestalt, relating to how people present themselves, the image they convey to others, and how they are perceived by others.
- *Honest demeanor*, a subtype of demeanor, is the tendency to be seen as honest independent of actual honesty. People vary in the extent to which they have an honest demeanor.
- *Suspicion* is a state of suspended judgment and uncertainty regarding the honesty or deceptive nature of a communication. It is an intermediate cognitive state between the passive truth-default and a firm judgment of deceit.
- *Communication content* refers to the substance of what is said, and can be contrasted with demeanor which involves how something is said.
- *Communication context* refers to the situation in which the communication occurs, the situation(s) relevant to the communication content, and to the communication as a whole. Understanding communication content often requires knowledge of context and communication content presented without its context can be misleading or uninformative.
- *Transparency* refers to the extent to which the honest and/or deceptive nature of some communication is apparent to others.
- *Diagnostically useful information* is the extent to some information can be used to arrive at a correct inference about the honest and/or deceptive nature of some communication.
- *Coherence* involves the logical consistency of communication content.
- *Correspondence* involves the consistency between communication content and external evidence or knowledge.
- *Deception detection accuracy* refers to correctly distinguishing honest and deceptive communication.

Lies are a subtype of deception that involves deceiving though saying information known to be false. Other forms of deception include omission, evasion, equivocation,

and generating false conclusions with objectively true information. The specific linguistic structure of deceptive utterances is considered under the purview of IMT (McCornack, 1992) and IMT2 (McCornack et al., 2014), and not critical to TDT. Thus, while it is recognized that lying and deception are not synonymous, different forms of deception are functionally transposable in TDT and therefore the words lying and deception are sometimes used interchangeably.

The theory's namesake and most central idea is the truth-default state. The truth-default involves a passive presumption of honesty due either to (a) a failure to actively consider the possibility of deceit at all or (b) as a fallback cognitive state after a failure to obtain sufficient affirmative evidence for deception. The idea is that as a default, people presume without conscious reflection that others' communication is honest. Because it is a default, it is a passive starting place for making inferences about communication. The possibility that a message might be deception often does not come to mind unless suspicion is actively triggered. The idea of the truth-default is consistent with Dan Gilbert's (1991) Spinozan model of belief in which incoming information is believed unless subsequently and actively disbelieved. The truth-default is also consistent with Grice's (1989) logic of conversation wherein people generally presume communication as fundamentally cooperative. That is, people typically make sense of what others say based on the premise that they are trying to be understood.

A closely related idea is truth-bias, which is defined as the tendency to believe that another person's communication is honest independent of its actual honesty (Levine, Park, & McCornack, 1999; McCornack & Parks, 1986). Truth-bias is empirically quantified as the proportion of messages judged as honest in some defined setting. The truth-default offers one explanation for the empirical observation of truth-bias, but the concepts are not interchangeable since truth-bias need not be a cognitive default, and at least as measured in deception detection experiments, it typically involves a prompted, active assessment of honesty. In fact, if TDT is correct, truth-bias rates (i.e., the proportion of messages believed) would be much higher in research if the possibility of deception was not primed by the research setting and measurement instruments. Knowing that one is in a deception detection experiment and requiring truth-deception assessments as part of the research protocol should create an active assessment of honesty and deceit that may often not occur in communication outside the deception lab.

While most prior theoretical perspectives acknowledge the empirical existence of truth-bias, truth-bias in pre-TDT theory is typically viewed as an error or bias reflecting flawed judgment. Truth-bias is often depicted as a distorted perceptual state that is maladaptive and interferes with deception detection accuracy (e.g., Buller & Burgoon, 1996; McCornack & Levine, 1990; McCornack & Parks, 1986). What is new in TDT is the argument that both the truth-default and the truth-bias that results are functional, adaptive, and facilitate accuracy in most nonresearch settings.

The reason that the truth-default and truth-bias typically lead to improved accuracy involves the truth-lie base-rate. The truth-lie base-rate is a key variable that is currently unique to TDT. The base-rate refers to the relative prevalence of deception and honesty in some defined environment. In most deception detection experiments, message judges are equally likely to be exposed to an honest message as a lie. In TDT, the

base-rate matters and accuracy of judgments vary predictably based on base-rates as modeled by the Park–Levine Probability Model (Park & Levine, 2001). TDT specifies that outside the deception lab, the prevalence of deception is much lower than the prevalence of honest communication and therefore presuming honesty leads to belief states that are typically correct.

A third noteworthy departure of TDT from most prior deception theory regards the relative utility of observable nonverbal behaviors and communication content in deception detection accuracy. Most prior deception theories (e.g., Buller & Burgoon, 1996; Ekman, 2009; Ekman & Friesen, 1969; Vrij, Granhag, & Porter, 2010; Zuckerman et al., 1981) specify that deception can be detected, at least under some conditions (e.g., high stakes), through the observation of sender demeanor. That is, prior theories specify that liars leak emotional states through facial expressions, liars exhibit or can be induced to exhibit various nonverbal indications of cognitive effort or arousal, and/or liars engage in various other strategic and nonstrategic behaviors indicative of lying. Careful attention to these behaviors provides a path to lie detection. TDT, in contrast, specifies that reliance on demeanor and nonverbal performance tends to push detection accuracy down toward chance, and that improved accuracy rests on attention to contextualized communication content. Most lies are detected either through comparing what is said to what is or what can be known, or thorough solicitation of a confession.

Demeanor refers to a constellation of intercorrelated behaviors that function as a gestalt, relating to how people presents themselves, the image they convey to others, and how they are perceived by others. Honest demeanor, a subtype of demeanor, is the tendency to be seen as honest independent of actual honesty. People vary in the extent to which they have an honest demeanor, and honest demeanor is often unrelated to actual honesty. Communication content refers to the substance of what is said, and can be contrasted with demeanor which involves how something is said. Communication context refers to the situation in which the communication occurs, the situation(s) relevant to the communication content, and to the communication event as a whole. Understanding communication content often requires knowledge of context; and communication content presented without its context can be misleading or uninformative. Diagnostically useful information is the extent to which some information can be used to arrive at a correct inference about the honest and/or deceptive nature of some communication. Honest demeanor is specified to have little diagnostic utility. Alternatively, correspondence information is highly diagnostic. Correspondence involves the consistency between communication content and external evidence or message receiver knowledge.

TDT Modules

As previously mentioned, TDT is composed of several free-standing but logically consistent effects, models, and mini-theories. TDT modules are listed in Table 2. Each of the modules is (or will be) described in detail in published journal articles or chapters. Here, each module is briefly summarized and the reader is directed to the work containing the full explication.

Table 2. TDT Modules.

- *A Few Prolific Liars* (or "Outliars," Serota, Levine, & Boster, 2010)—The prevalence of lying is not normally or evenly distributed across the population. Most people are honest most of time. There are a few people, however, that lie often. Most lies are told by a few prolific liars.
- *Deception Motives* (Levine, Kim, & Hamel, 2010)—People lie for a reason, but the motives behind truthful and deceptive communication are the same. When the truth is consistent with a person's goals, they will almost always communicate honestly. Deception becomes probable when the truth makes honest communication difficult or inefficient.
- *The Projected Motive Model* (Levine, Kim, & Blair, 2010)—People know that others lie for a reason and are more likely to suspect deception when they think a person has a reason to lie.
- *The Veracity Effect* (Levine et al., 1999)—People tend to be truth-biased and are more likely to believe people than to think that others are lying. Because of this bias, accuracy is usually higher for truths than lies. Consequently, the honesty (i.e., veracity) of communication predicts if the message will be judged correctly. Honest messages produce higher accuracy than lies.
- *The Park–Levine Probability Model* (Park & Levine, 2001)—Because honest messages yield higher accuracy than lies (i.e., the veracity effect), the proportion of truths and lies affects accuracy. So long as people are truth-biased, as the proportion of messages that is honest increases, so does average detection accuracy. This relationship is linear and predicted as the accuracy for truths times the proportion of messages that are true plus the accuracy for lies times the proportion of messages that are lies.
- *How People Really Detect Lies* (Park, Levine, McCornack, Morrison, & Ferrerra, 2002)—Outside the deception lab in everyday life, most lies are detected after-the-fact based on either confessions or the discovery of some evidence showing that what was said was false. Very few lies are detected in real time based only on the passive observation of sender nonverbal behavior.
- *A Few Transparent Liars* (Levine, 2010)—The reason that accuracy in typical deception detection experiments is slightly above chance is that some small proportion of the population are really bad liars who usually give themselves away. The reason accuracy is not higher is that most people are pretty good liars and that honest demeanor is uncorrelated with actual honesty for most people.
- *Sender Honest Demeanor* (Levine, Serota, et al., 2011)—There are large individual differences in believability. Some people come off as honest. Other people are doubted more often. These differences in how honest different people are the result of a combination of 11 different behaviors and impressions that function together. Honest demeanor has little to do with actual honesty, and this explains poor accuracy in deception detection experiments.
- *Content in Context* (Blair, Levine, & Shaw, 2010)—Understanding communication requires listening to what is said and taking that in context. Knowing about the context in which the communication occurs can help detect lies.
- *Diagnostic Utility* (Levine, Blair, & Clare, 2014)—Some aspects of communication are more useful than others in detecting deception and some aspects of communication can be misleading producing systematic errors. Diagnostic utility involves prompting and using useful information while avoiding useless and misleading behaviors.
- *Correspondence and Coherence* (Reimer, Blair, & Levine, 2014)—Correspondence and coherence are two types of consistency information that may be used in deception detection. Correspondence has to do with comparing what is said to known facts and evidence. It involves fact checking. Coherence involves the logical consistency of communication. Generally speaking, correspondence is more useful than coherence in deception detection.
- *Question Effects* (Levine, Blair, & Clare, 2014; Levine, Shaw, & Shulman, 2010)—Question effects involves asking the right questions to yield diagnostically useful information that improves deception detection accuracy.
- *Expert Questioning* (Levine, Clare, et al., 2014)—Expertise in deception is highly context dependent and involves knowing how to prompt diagnostically useful information rather than detection by passive observation of nonverbal communication.

The Few Prolific Liars Model (Serota et al., 2010) makes two key claims. The first is that deception, relative to honesty, is infrequent. That is, most people are honest most of the time. Second, the prevalence of lying is not normally or evenly distributed across the population. The prevalence of lying is positively skewed. Most lies are told by a few prolific liars.

A second module focuses when and why people lie. The Deception Motives Module (Levine, Kim, & Hamel, 2010) specifies that people lie for a reason, but the motives behind truthful and deceptive communication are the same. When the truth is consistent with people's goals, they will almost always communicate honesty. Deception becomes probable when the truth makes honest communication difficult or inefficient. TDT's view of deception motives is an area of theoretical overlap with IMT2 (McCornack et al., 2014).

On the message recipient side, the Projected Motive Model (Levine, Kim, & Blair, 2010) specifies that people know that others lie for a reason and are more likely to suspect deception when they think a person has a reason to lie. A projected motive provides a trigger that can kick people out of the truth-default state.

The Veracity Effect (Levine et al., 1999) refers to the empirical finding that the veracity of the message judged predicts the accuracy of the judgment. In most deception detection experiments, accuracy is higher for truths than lies. The veracity effect stems from truth-bias, and when the truth-default is in place, the veracity effect is predicted to be especially large. The passive presumption of honesty leads people to correctly believe honest communication, but lies go unnoticed as long as no trigger event leads to the abandonment of the truth-default.

The Park–Levine Probability Model (Park & Levine, 2001) allows for predicting the implications of the veracity effect on deception detection accuracy for different truth-lie base-rates. So long as people are truth-biased, as the proportion of messages that is honest increases, so does average detection accuracy. This relationship is linear and predicted as the accuracy for truths times the proportion of messages that are true plus the accuracy for lies times the proportion of messages that are lies.

Prior deception detection research has found that people are statistically better than chance at distinguishing truths from lies, but are seldom much better than chance (Bond & DePaulo, 2006). This is demonstrated by the well-known and often-cited 54% accuracy level reported by meta-analysis (Bond & DePaulo, 2006). Three modules in TDT seek to explain the slightly-better-than-chance accuracy findings that are so well documented in the literature.

The A Few Transparent Liars (Levine, 2010) module speculates that the reason that accuracy in typical deception detection experiments is slightly above chance is that some small proportion of the population are really bad liars who usually give themselves away. That is, most people are good liars and people generally cannot tell if they are honest or not. But, a few people cannot lie well. The transparent liars ensure that accuracy is just above chance because people tend to catch the lies of these poor liars.

Alternatively, the Sender Honest Demeanor module (Levine, Serota, et al., 2011) explains the accuracy ceiling observed in the literature (i.e., why accuracy is not much

better than chance). There are large individual differences in believability. Some people come off as honest. Other people are doubted more often. These differences in honesty impressions are a function of a combination of 11 different behaviors that function as a gestalt. Honest demeanor has little to do with actual honesty, and this explains poor accuracy in deception detection experiments. In short, reliance on demeanor ensures a small signal-to-noise ratio, and near-chance detection accuracy.

Third, the How People Really Detect Lies module (Park et al., 2002) holds that outside the deception lab in everyday life, most lies are detected well after-the-fact—based on either confessions or the discovery of some evidence showing that what was said was false. Very few lies are detected in real time based only on the passive observation of sender nonverbal behavior. This partially explains poor accuracy in deception detection experiments as being the result of requiring subjects to detect deception in ways other than how lies are typically detected. Park et al. (2002) also point to how deception detection accuracy might be improved, namely, the solicitation of confessions and the application of evidence.

Five additional modules focus on how deception can be accurately detected. These include Content in Context (Blair et al., 2010), Diagnostic Utility (Levine, Blair, et al., 2014), Correspondence and Coherence (Reimer et al., 2014), Question Effects (Levine, Blair, et al., 2014; Levine, Shaw, et al., 2010), and Expert Questioning (Levine, Clare, et al., 2014). These modules emphasize the use of evidence, the reliance on contextualized communication content, and the active prompting of diagnostic communication content through strategic questioning of a potential liar.

Logical Structure

TDT provides an overarching logical structure that ties together the various models into a coherent theoretical package. Table 3 provides the 14 propositions that reflect the key predictions of the theory and the theory's logical flow. This section provides a brief narrative description of the logical structure of TDT.

Humans are a social species, and our individual and collective survival requires coordination, cooperation, and communication (at least within important in-groups). Efficient communication requires a presumption of honesty. If the veracity of all incoming messages need be scrutinized and questioned, communication would lose efficiency and efficacy for coordination. The presumption of honest communication, however, comes at a cost. It makes us vulnerable, at least in the short term, to deception and exploitation. But, at the core of TDT is the view that the tradeoff between efficient communication and vulnerability to occasional deceit is more than worth it. That is, the benefits gained through efficient communication and in-group cooperation vastly outweigh the costs of occasional deception both for the individual and the collective.

Many evolutionary perspectives on human deception assert that because humans have evolved the ability to deceive others, humans also must have evolved the ability to detect lies. There is, however, a more efficient solution—deterrence. It is proposed that all human cultures develop prohibitions against deception, at least within

Table 3. TDT Propositions.

1. Most communication by most people is honest most of the time. While deception can and does occur, in comparison to honest messages, deception is relatively infrequent, and outright lies are more infrequent still. In fact, deception must be infrequent to be effective.
2. The prevalence of deception is not normally distributed across the population. Most lies are told by a few prolific liars.
3. Most people believe most of what is said by most other people most of the time. That is, most people can be said to be truth-biased most of the time. Truth-bias results from, in part, a default cognitive state. The truth-default state is pervasive but it is not an inescapable cognitive state. Truth-bias and the truth-default are adaptive both for the individual and the species. They enable efficient communication.
4. Furthermore, because of Proposition 1, the presumption of honesty specified in Proposition 3 is usually correct. Truth bias, however, makes people vulnerable to occasional deception.
5. Deception is purposive. Absent psychopathology, people lie for a reason. Deception, however, is usually not the ultimate goal, but instead a means to some other ends. That is, deception is typically tactical. Specifically, most people are honest unless the truth thwarts some desired goal or goals. The motives or desired goals achieved through communication are the same for honest and deceptive communications, and deception is reserved for situations where honesty would be ineffectual, inefficient, and/or counterproductive in goal attainment.
6. People understand that other's deception is usually purposive, and are more likely to consider a message as potentially or actually deceptive under conditions where the truth may be inconsistent with a communicator's desired outcomes. That is, people project motive states on others and this affects suspicion and judgments of honesty and deceit.
7. The truth-default state requires a trigger event to abandon it. Trigger events include, but are not limited to (a) a projected motive for deception, (b) behavioral displays associated with dishonest demeanor, (c) a lack of coherence in message content, (d) a lack of correspondence between communication content and some knowledge of reality, or (e) information from a third party warning of potential deception.
8. If a trigger or set of triggers is sufficiently potent, a threshold is crossed, suspicion is generated, the truth-default is at least temporarily abandoned, the communication is scrutinized, and evidence is cognitively retrieved and/or sought to assess honesty-deceit.
9. Based on information of a variety of types, an evidentiary threshold may be crossed and a message may be actively judged to be deceptive. The information used to assess honesty and deceit includes, but is not limited to (a) communication context and motive, (b) sender demeanor, (c) information from third parties, (d) communication coherence, and (e) correspondence information. If the evidentiary threshold for a lie judgment is not crossed, an individual will may continue to harbor suspicion or revert to the truth-default. If exculpatory evidence emerges, active judgments of honesty are made.
10. Triggers and deception judgments need not occur at the time of the deception. Many deceptions are suspected and detected well after the fact.
11. With the exception of a few transparent liars, deception is not accurately detected, at the time in which it occurs, through the passive observation of sender demeanor. Honest-looking and deceptive-looking communication performances are largely independent of actual honesty and deceit for most people and hence usually do not provide diagnostically useful information. Consequently, demeanor based deception detection is, on average, only slightly better than chance due to a few transparent liars, but typically not much above chance due to the fallible nature of demeanor-based judgments.
12. In contrast, deception is most accurately detected through either (a) subsequent confession by the deceiver or (b) by comparison of the contextualized communication content to some external evidence or preexisting knowledge.
13. Both confessions and diagnostically informative communication content can be produced by effective context-sensitive questioning of a potentially deceptive sender. Ill-conceived questioning, however, can backfire and produce below-chance accuracy.
14. Expertise in deception detection rests on knowing how to prompt diagnostically useful information rather than skill in the passive observation of sender behavior.

important in-groups. Parents everywhere teach their children not to lie. Every major world religion prohibits deception; as do most legal systems. Furthermore, recent evolutionary perspectives on the development of human deception note that deception must be infrequent to evolve (McNally & Jackson, 2013; Trivers, 2011) and that deception coevolves with cooperation (McNally & Jackson, 2013).

This line of reasoning leads to the first four propositions. These propositions hold that lying is much less prevalent than honesty, that most lies are told by a few prolific liars, that people tend to believe others, and that presuming honesty makes sense because most communication is honest. The catch is that the presumption of honesty makes humans vulnerable to occasional deceit.

Because deception is discouraged, people need a reason to lie (Proposition 5). People are generally honest unless the truth thwarts a goal state. Others know that people lie for a reason (Proposition 6) and thus a projected motive for deceit is one type of trigger event that can lead people to abandon the truth-default.

So, people tend to presume that others are honest. However, the truth-default state is not inescapable. Proposition 7 holds that trigger events of various sorts can lead people to abandon the truth-default state. Trigger events include, but are not limited to, (a) a projected motive for deception, (b) behavioral displays associated with dishonest demeanor, (c) a lack of coherence in message content, (d) a lack of correspondence between communication content and some knowledge of reality, or (e) information from a third party warning of potential deception. Proposition 8 specifies that if a trigger or set of triggers is sufficiently potent, a threshold is crossed, suspicion is generated, the truth-default is at least temporarily abandoned, the communication is scrutinized, and evidence is cognitively retrieved and/or sought to assess honesty-deceit. Proposition 9 states that based on information of a variety of types, an evidentiary threshold may be crossed and a message may be actively judged to be deceptive. The information used to assess honesty and deceit includes, but is not limited to, (a) communication context and motive, (b) sender demeanor, (c) information from third parties, (d) communication coherence, and (e) correspondence information. If the evidentiary threshold for a lie judgment is not crossed, an individual may continue to harbor suspicion or revert to the truth-default. If exculpatory evidence emerges, active judgments of honesty are made.

Propositions 8 and 9 specify two thresholds: one for abandoning the truth-default and the second for actively inferring deception. It is presumed that the threshold for triggering the abandonment of the truth-default is more sensitive than the threshold for inferring deceit. In between the two thresholds, suspicion of deception exists. Suspicion is viewed as a state of uncertainty where the possibility of deception is entertained. It is a state of suspended belief. The suspicion state will not be retained indefinitely, and either evidence is obtained sufficient to cross the second threshold and infer deceit, or the person will eventually revert to the truth-default.

In line with Park et al. (2002), Proposition 10 adds the qualification that triggers and deception judgments need not occur at the time of the deception. Many deceptions are suspected and detected well after-the-fact.

Based on Park et al. (2002), Levine (2010), and Levine, Serota, et al. (2011), Proposition 11 states that with the exception of a few transparent liars, deception is not accurately detected, at the time at which it occurs, through the passive observation of sender demeanor. Honest-looking and deceptive-looking communication performances are largely independent of actual honesty and deceit for most people, and hence usually do not provide diagnostically useful information. Consequently, demeanor based deception detection is, on average, only slightly better than chance due to a few transparent liars, but typically not much above chance due to the fallible nature of demeanor-based judgments.

The final set of three propositions specifies the conditions under which deception can be detected accurately. According to Proposition 12, deception is most accurately detected through either (a) subsequent confession by the deceiver or (b) by comparison of the contextualized communication content to some external evidence or preexisting knowledge. Proposition 13 extends this line of thinking by specifying that both confessions and diagnostically informative communication content can be produced by effective context-sensitive questioning of a potentially deceptive sender. Ill-conceived questioning, however, can backfire and produce below-chance accuracy. Finally, the last proposition holds that expertise in deception detection rests on knowing how to prompt diagnostically useful information; rather than skill in the passive observation of sender behavior.

Summary of Empirical Evidence

Clare (2013; Clare & Levine, 2014) provided evidence consistent with core premises of TDT regarding the existence and pervasiveness of a truth-default state. Clare exposed participants to true and false, plausible and implausible message content in either face-to-face interaction or videotaped interviews. At times participants were asked to make explicit veracity judgments as is typical in deception detection experiments. Other times participants were asked to thought-list what they were thinking. Order was experimentally varied, so that some participants did the thought listing first, while others were asked about veracity first, priming the possibility of deceit. Although participants demonstrated truth-bias in all experimental conditions, unprimed participants were substantially less likely to explicitly mention honesty or deception in the unprimed conditions. In the unprimed conditions, less than 5% of participants explicitly mentioned considering veracity or deception. These findings are consistent with Proposition 3 specifying the existence of truth-bias and the truth-default state and Proposition 7 stating that a trigger event is required to abandon the truth-default.

Serota et al. (2010) reported three studies consistent with Propositions 1 and 2. In a $N = 1{,}000$ representative nation-wide sample, the distribution of reported lies was highly positively skewed with most people reporting few lies (mode was zero in past 24 hours) and a few prolific liars telling the most lies. These findings were replicated with a college student sample and a reanalysis of previously published diary studies. The results have subsequently been further replicated in the United Kingdom (Serota

& Levine, 2014), The Netherlands (Halevy, Shalvi, & Verschuere, 2014), and with a sample of U.S. high school students (Levine, Serota, Carey, & Messer, 2013).

Truth-bias (Proposition 3) is very well established. It is evidenced in meta-analysis (Bond & DePaulo, 2006) as well as in primary experimental evidence (Levine et al., 1999). Consistent with Proposition 4, research also shows that as the proportion of messages that are honest increases, detection accuracy increases proportionally (Levine et al., 1999; Levine, Kim, Park, & Hughes, 2006; Levine, Clare, Green, Serota, & Park, 2014).

Data consistent with Proposition 5 are provided in three experiments reported by Levine, Kim, and Hamel (2010). When the truth is in line with communicative goals, honesty is nearly universal. Deception occurs frequently, but is not universal, when the truth makes goal attainment difficult. Levine, Kim, and Hamel (2010) also show that the pursuit of the same communicative goals guide both honest and deceptive messages. People are honest when the truth aligns with a speaker's goals and deceptive when the truth interferes with goal attainment. Thus, deceptive message production does not arise for goals unique to honesty or deception.

Levine, Kim, and Blair (2010) provide evidence from three experiments that are in line with Proposition 6. Operating from a projected motive model, it was predicted and found that confessions tend to be almost universally believed, whereas denials of transgression are more often doubted. There is no obvious motive to falsely confess to a transgression, but there is motive to lie when denying a transgression.

A series of studies provide evidence consistent with Propositions 7 to 9. McCornack and Levine (1990) and Kim and Levine (2011) show that third party prompting of suspicion reduces truth-bias. Levine, Kim, and Blair (2010) show that truth-bias is exceptionally strong in the absence of apparent motive but is reduced substantially when a motive is apparent. Levine, Serota, et al. (2011) show that honest-dishonest demeanor is strongly and predictably related to the attribution of truth and honesty. Park et al. (2002) find that outside the lab, most discovered deception involves confessions or comparison of communication content with external evidence.

Consistent with Proposition 10, Park et al. (2002) found that lies are frequently detected well after the fact. Circumstantial evidence for the few transparent liars claim in Proposition 10 is summarized in Levine (2010). Evidence for slightly-better-than-chance demeanor-based detection is well documented in meta-analysis (e.g., Bond & DePaulo, 2006). Evidence for the rest of Proposition 11 was consistently obtained in a series of eight experiments reported by Levine, Serota, et al. (2011). Sender demeanor was found to vary substantially across individuals, to be highly predictive of honesty-deception judgments across student, nonstudent, and cross-cultural replications, and to be largely independent of actual honesty.

Evidence for Proposition 12 was initially obtained by Park et al. (2002) who reported that the vast majority of lies are detected either though confession or through the application of evidence. Experimental evidence was produced in a series of 10 studies by Blair et al. (2010), documenting substantially improved accuracy using the content in context approach to lie detection.

Initial experimental evidence for Proposition 13 was reported by Levine, Shaw, et al. (2010). Those findings were subsequently replicated and extended in a series of six experiments by Levine, Blair, et al. (2014).

Data consistent with Proposition 14 are reported by Levine, Clare, et al. (2014). When experts were allowed to freely question potential cheaters, the experts obtained accuracy of more than 90%.

Conclusion

The central idea behind truth-default theory is that people tend to presume that other people communicate honestly most of the time. The presumption of honesty enables efficient communication and cooperation. Furthermore, since most people are honest most of time, believing others usually results in correct belief states. However, people sometimes try to deceive others. People may become suspicious of others when others have an obvious motive for deception, when they lack an honest demeanor, when they are primed to expect deception by third parties, or when the communication content appears either self-contradictory or inconsistent with known facts. When people rely on demeanor to infer deception, accuracy is typically poor and slightly better than chance. However, reliance on content in context improves accuracy substantially. Accuracy can be further improved with strategic questioning that prompts diagnostically useful information.

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