Language and Consumer Dishonesty: A Self-Diagnosticity Theory

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How does foreign language influence consumer dishonesty? We propose a self-diagnosticity theory arguing that compared to one's native language, using a foreign language makes lying appear less self-diagnostic, thereby increasing or decreasing lying depending on which aspect of the self is salient. In situations where lying reflects an undesirable, dishonest self, using a foreign language increases lying. In contrast, in situations where lying primarily reflects a desirable (e.g., competent or compassionate) self, using a foreign language decreases lying. Ten studies, spanning various languages, consumer contexts, and experimental paradigms, support the theory. The studies establish that the effect of language on lying jointly depends on the self-diagnosticity of lying and on whether lying is diagnostic of a positive or a negative aspect of the self. The findings highlight self-diagnosticity as a valuable lens to understand the behavior of bilingual consumers and offer practical guidance for addressing dishonesty in the marketplace.

Keywords: language, self-signaling, dishonesty, unethical decision-making, self-diagnosticity

Consumers lie and cheat, in contexts as diverse as insurance claims, product returns, dating profiles, and tax declarations. When signing up for online services, for example, they often lie about their birthday to be eligible for discounts (Johnson 2015). Consumer dishonesty produces substantial costs: automobile insurance fraud costs US companies more than $5 billion annually and prompts significantly higher premiums for all drivers (Insurance Research Council 2012). Although most consumers lie in their native language (hereafter, L1), they can also lie in their second language (L2): travelers misreport information when they fill out lost-luggage forms; immigrants fail to disclose medical conditions to health insurers; overseas consumers claim discounts by faking their online identities; and foreign customers post inaccurate reviews in English to attract a wider audience. Most people in the world speak more than one language, and the number of multilingual people is increasing (Grosjean 2010), so it is important for consumer researchers to understand how language shapes lying behavior.

In this paper, we develop a theory to predict when L2 increases or decreases lying. Our self-diagnosticity theory of how language influences dishonesty connects three prominent streams of research: on self-diagnosticity (Bodner and Prelec 2003; Touré-TIllery and Kouchaki 2020; Touré-Tillery and Light 2018), on bilingualism (Hayakawa *et al*. 2016; Luna and Peracchio 2005; Zhang and Schmitt 2004), and on dishonesty (Argo, White, and Dahl 2006; Cowley and Anthony 2019; Nikolova, Lamberton, and Coleman 2018). The theory's main

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proposition is that relative to L1, L2, increases lying by making actions in L2 appear less diagnostic of dishonesty. Critically, the same mechanism can reverse the effect of language when lying is diagnostic of a desirable aspect of the self. As such, our theory provides a way to resolve inconsistent predictions and findings in recent psychological research (Alempaki, Dogan, and Yang 2020; Bereby-Meyer *et al.* 2020; Suchotzki and Gamer 2018). By studying dishonesty, we also provide novel insights into phenomena that are of great relevance to managers and policy makers. Lying occurs in countless occasions, for myriad reasons. In this research, we primarily focus on selfish lying that is motivated by a desire to gain (or avoid losing) resources such as money or time. Selfish lying is especially relevant to business and society, given its costs to organizations, governments, and honest consumers. In addition, we examine prosocial lying that frequently occurs between consumers, with the purpose of providing a more complete picture of how language influences dishonesty.

Next, we review research on lying and bilingualism and develop a theory of the role of language in dishonesty. We then present the results of ten studies. The studies span several languages and consumer contexts, establishing the effect of language on both real and imagined behaviors. We conclude with theoretical implications and future research directions.

THEORETICAL BACKGROUND

Past Research on Lying and Bilingualism

Consumer research has examined both consumer lying and bilingualism extensively but separately. Researchers have investigated how much people lie (Mazar, Amir, and Ariely 2008), the content of lies (e.g., emotions) (Andrade and Ho 2009; Sengupta, Dahl, and Gorn 2002), the motivation to lie (e.g., social comparison) (Argo *et al.* 2006; Goldsmith, Roux, and Ma 2018; Mazar and Zhong 2010), consequences of lying (Anthony and Cowley 2012; Cowley and Anthony 2019), and moral judgment of lies (Argo and Shiv 2012). They also have investigated specific dishonest consumer behaviors, such as purchases of counterfeit products (Wang, Stoner, and John 2019; Wilcox, Kim, and Sen 2009), lying in consumer surveys (de Jong, Fox, and Steenkamp 2015), the influence of social bonds on lying (Nikolova *et al.* 2018), and lying to harmful brands (Rotman, Khamitov, and Connors 2018).

Similarly, a great deal of research has been devoted to understanding the role of language in consumer behavior (Carnevale, Luna, and Lerman 2017). Language (L2 vs. L1) influences advertising effectiveness (Krishna and Ahluwalia 2008; Luna and Peracchio 2001, 2005; Puntoni, de Langhe, and van Osselaer 2009) and brand evaluations (Leclerc, Schmitt, and Dube 1994; Shrum *et al.* 2012; Zhang and Schmitt 2004); L2 use can polarize scale ratings (de Langhe *et al.* 2011) and reduce impulsive decision-making (Klesse, Levav, and Goukens 2015). To our knowledge, no previous consumer research has examined how language relates to lying behaviors, though researchers in other fields have.

Prior research linking bilingualism and lying can be divided into three categories. One line of research focuses on the detection of lying and demonstrates that L2 speakers are more likely to be judged as lying, even when they are not (Elliott and Leach 2016; Evans and Michael 2014). Another stream of research, more relevant here, examines the cognitive processing of lies (Caldwell-Harris and Ayçiçeği-Dinn 2009; Duñabeitia and Costa 2015; Suchotzki and Gamer 2018). In these studies, bilinguals generated true and false statements in L1 or L2, and markers of the psychological process, such as skin conductance and response latencies, were recorded. These studies show that using L2, whether for true or false statements, is more cognitively demanding than using L1. However, lies in L2 feel milder to people (Caldwell-Harris and Ayçiçeği-Dinn 2009, Experiment 2), which counteracts the difficulty of using a foreign language for lying (Duñabeitia and Costa 2015; Suchotzki and Gamer 2018). This is consistent with the robust finding that people are less resistant to the idea of murder (e.g., kill one to save five) when reading moral dilemmas in L2 (Corey *et al.* 2017; Hayakawa *et al.* 2017).

Based on these findings, one may expect L2 to increase lying relative to L1. This prediction, nonetheless, contradicts the third line of research on language and incentivized lying behavior. In one set of studies, participants had the opportunity to lie in a paired game (Alempaki *et al.* 2020). Participants first earned points by solving matrices within a time limit and were then matched with another player, to whom they sent an anonymous message about their performance difference. Participants could earn more money by overreporting the performance gap in favor of themselves. Playing the game in English (L2) reduced lying in native Chinese speakers but not in native German speakers. The authors propose that this inconsistency is best explained by cultural accommodation, such that people adjusted their honesty level according to the perceived cultural gap between L1 and L2. Yet, causal evidence for this speculation is lacking. In another set of studies, participants were asked to roll a six-sided die three times and report their first roll by selecting a number from one to six (Bereby-Meyer *et al.* 2020). The higher the reported number, the larger the reward. Participants' reports were compared against the chance-level distribution of outcomes. Greater deviation from chance indicates more lying. Different from the findings by Alempaki *et al.* (2020), administering the paradigm in L2 reduced lying across language pairs. However, the psychological underpinning of these findings remains unclear.

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We suggest that part of the difficulty to derive theoretical insights from these behavioral studies stems from the paradigms used for lie detection. In the performance difference reporting (Alempaki *et al.* 2020), participants were not only incentivized to lie, but motivated to outperform their counterparts. Indeed, recent research shows that the motive to appear competent in an ability test undermines the motive to behave morally (Falk and Szech 2020). Therefore, it is unclear whether the paradigm documents the motive to lie for material benefits, the motive to outperform others, or both. What further complicates the interpretation of the studies is the decisions participants had to make. They had to first decide whether to lie and then how far to stretch the truth (i.e., how much to earn). The second decision is inherently more difficult, as there are a number of lies to choose from, which could deter people from lying. Thus, the paradigm conflates the propensity to lie with the sensitivity to choice overload. The same issue arises with the roll-a-die paradigm. Moreover, since the roll-a-die paradigm requires participants to recall the first die roll out of three, it may not capture intentional lying but memory errors (i.e., misattributing the desirable outcome to the first round).

In sum, the extant literature provides inconsistent predictions and findings about the effect of language on lying behavior. Adding to that, it is unclear how the results from previous studies should be interpreted and whether these results would apply to consumers who lie about personal or product information (vs. task performance or random events), not to mention those who lie for others' benefits (i.e., prosocial lying).

A Self-Diagnosticity Theory of Language and Lying

Self-Diagnosticity and Its Malleability. There is overwhelming evidence that people are inclined to tell the truth, even when the payoff of lying is substantial and the risk of being caught is nonexistent (for a meta-analytic review, see Abeler, Nosenzo, and Raymond 2019). This suggests that lying is intrinsically costly to consumers, that is, lying betrays a valued part of one's identity. Indeed, being honest, and being moral in general, is deemed of the utmost importance to one's identity (Strohminger and Nichols 2014). Lying for undeserved benefits, therefore, constitutes a fundamental threat to one's self-concept. Nevertheless, lying is not uncommon. Mazar *et al.* (2008) explain this contradiction by proposing a theory of self-concept maintenance, according to which people lie when doing so is easy to justify. The reason is that justifications help people flexibly categorize lying behavior as not immoral. Similarly, Gneezy, Kajackaite, and Sobel (2018) propose that the intrinsic cost of lying, or the extent lying is perceived as against the goal to be an honest person, is determined by situational factors, such as the distance between the truth and the lie, and that people lie when the intrinsic cost of lying falls below a threshold.

A common premise underlying these theories is that the extent to which people view lying as diagnostic of dishonesty is context specific. The malleability of the self-diagnosticity of one's choice has been corroborated by empirical research in marketing, economics, and psychology (Dhar and Wertenbroch 2012; Gneezy *et al.* 2012; Touré-Tillery and Fishbach 2012, 2015). In the realm of dishonesty research, one study incentivized students to lie about coin flips by assigning them to an easy or a difficult task based on each flip outcome (Touré-Tillery and Fishbach 2012, study 1). Students tended to avoid lying in more salient, self-diagnostic parts of the study—the beginning and the end (also see Touré-Tillery and Fishbach 2015)—but to lie in the middle to save time and effort. Hence, people avoid lying in contexts where lying is perceived as diagnostic of dishonesty.

Extending these lines of research, we suggest that lying behavior is not simply determined by the diagnosticity of the dishonest self, but in general by the diagnosticity of the self-concept that is situationally salient. Following prior research, we conceptualize the self-concept as a cluster of characteristics that people believe define who they are (Reed *et al.* 2012). The consensus in past research is that the self-concept is multi-dimensional and that which aspect is most self-defining can vary across situations (Markus and Wurf 1987). For instance, as we will discuss later, while selfish lying is deterred by the diagnosticity of the dishonest self, prosocial lying is encouraged by the diagnosticity of the compassionate self, another core trait of moral identity.

L2 Reduces Self-Diagnosticity. We contend that language influences lying behavior by changing its perceived self-diagnosticity. Specifically, compared to L1, L2 furnishes a context in which lying appears less self-diagnostic. This proposition is based on the notion that language is a probe for personal memories (Puntoni *et al.* 2009). Because L1 is the language in which most experiences and knowledge are encoded, it uniquely serves as a cue for self-related memories and values, strengthening the accessibility of the self-concept and its subsumed self-categorizations. Supporting this notion, research shows that cognitive associations between "self" and other concepts are more readily established in L1 than in L2 (Ivaz, Costa, and Duñabeitia 2016). In contrast, L2 is mostly learned for instrumental purposes and less likely to remind people of formative experiences for one's self-concept, such as parent–child interactions (Reese, Bird, and Tripp 2007). As a result, L2 should make core self-aspects less accessible compared to L1. In line with this, qualitative research shows that people tend to describe their thoughts and feelings in L2 from a dramaturgical perspective (Goffman 1959), as if acting a persona that is detached

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from their real self (Pavlenko 2006). For these reasons, we propose that people tend to see their actions as less diagnostic of who they are in L2 than in L1 contexts. By decreasing self-diagnosticity, L2 should reduce the intrinsic costs of lying (betraying a valued part of self), as well as its intrinsic benefits (affirming a core self) of lying. In turn, this reduced self-diagnosticity should increase the occurrence of lying when it is diagnostic of an undesirable self but decrease lying when it is diagnostic of a desirable self. We elaborate on this general prediction and detail our hypotheses in what follows.

When L2 Increases Lying. Based on the reasoning above, we predict that L2 (vs. L1) would increase selfish lying by decreasing the perceived diagnosticity of the dishonest self. This prediction is consistent with the finding that selfish lying is relatively rare (Abeler *et al.* 2019) and that people tend to view honesty as the most important moral trait (Aquino and Reed 2002; we present in appendix a replication of their results conducted outside of the North American context). However, when lying is only weakly diagnostic of the dishonest self, the intrinsic cost of lying should be minimal and there should be little room for L2 to further reduce self-diagnosticity and to increase lying. Hence, we predict that contextual cues that reduce the diagnosticity of the dishonest self (e.g., when the lie is close to the truth and when the lie reflects a common state of the world; Gneezy *et al.* 2018) should make lying in L1 rise to a level similar to L2.

Another prediction from our theory is that lying in L2 would decrease to a level similar to L1 when situational cues make lying in L2 more diagnostic of the dishonest self. Prior research shows that strengthening the link between the self and overt behavior reduces lying in L1 (Bryan, Adams, and Monin 2013). We expect a similar effect in L2, which should reduce lying in L2 and reduce the language effect.

When L2 Decreases Lying. Our theorizing also suggests that L2 can decrease lying when lying primarily reflects a desirable aspect of the self, instead of an undesirable, dishonest self. If behavior is seen as generally less self-diagnostic in L2, that should also be the case for other dimensions of the self that are relevant to a given situation. As a result, L2 should reduce lying that primarily implies a positive self.

We consider two cases where lying can have positive self-implications. First, in situations where people have the opportunity to lie in the pursuit of a performance goal, selfish lying, by claiming goal achievement, can be diagnostic of the competent self. Consistent with this line of reasoning, activating bankers' professional identity increases their lying for financial gains presumably because financial performance is highly valued by their professional self and this identity temporally overrides their moral self (Cohn, Fehr, and Maréchal 2014). In the same vein, we predict that activating a performance goal that competes with the moral self can reverse the effect of language on selfish lying. Specifically, when lying is diagnostic of competence but only weakly of dishonesty, lying becomes intrinsically rewarding and the reward should be larger in L1 than in L2, resulting in *less* lying in L2 than in L1.

Second, lying is considered moral when it is motivated by prosocial considerations, such as protecting others' feelings or saving others' time and effort (Argo *et al.* 2011). Research shows that prosocial lying, such as providing overly positive feedback, is driven by compassion toward others (Lupoli, Jampol, and Oveis 2017). This suggests that prosocial lying should be perceived as weakly diagnostic of dishonesty but as highly of compassion, another key component of moral identity (Aquino and Reed 2002). According to our theorizing, L2 should therefore reduce prosocial lying, and the magnitude of the language effect depends on the extent to which prosocial lying is viewed as diagnostic of the compassionate self.

OVERVIEW OF STUDIES

Table 1 summarizes the nine studies (plus a pilot study) that test our theory. The studies span a variety of consumer settings (time saving, identity-faking, recommendation, insurance, compensation, performance-based rewards, restaurant choice), lies (about random events, private information, possessions, product features, performance, and food preferences), and languages (including Chinese, Dutch, English, French, and Korean). To avoid language bias in subjective ratings (de Langhe *et al.* 2011), we did not inquire people about their intention to lie but elicited real behavior or scenario-based choices.

The pilot study examines our assumption that people see their actions as more self-diagnostic in L1 versus L2 language contexts. Studies 1 and 2 establish the main effect that L2 increases selfish lying. Moreover, study 2 tests our prediction that cueing self-diagnosticity in L2 attenuates the effect. Studies 3 to 5 test the boundary condition that lying in L1 rises to a level similar to L2 when lying becomes less diagnostic of the dishonest self. Studies 6a, 6b, and 6c demonstrate that, when the competence motive overrides the morality motive, the effect of language can reverse. Lastly, study 7 shows that L2 decreases prosocial lying that reflects compassion more than dishonesty and that the magnitude of this language effect depends on how diagnostic of the compassionate self an individual believes prosocial lying to be.

In all studies, there is no risk for participants of being caught lying and the incentive for lying is kept constant between language conditions. Every study includes steps to ensure that participants comprehended the study materials in both L1 and L2. We report results with and without data exclusions in all studies. Web appendix A details how

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TABLE 1

OVERVIEW OF STUDIES AND PREDICTIONS

	Sample size			Relevant self-aspect			
Study (sample size)		L2 (L1)	Content of lies	Dishonesty	Competence	Compassion	Tested predictions
Pilot study	1,146	Various (various)					Actions in L2 are less self-diagnostic than in L1.
Study 1	215	English (Dutch)	Coin flip	−			L2 increases selfish lying relative to L1.
Study 2	300	English (Chinese)	Identity	−			L2 increases selfish lying relative to L1, but not when lying in L2 is made self-diagnostic.
Studies 3, 4, 5	910, 421, 996	English (Chinese, Chinese, various)	Product feature, car mileage, and age	−			L2 increases selfish lying relative to L1, but only when lying is self-diagnostic in L1.
Studies 6a, 6b, 6c	153, 70, 119	English, English, Korean (Chinese, French, Chinese)	Task performance	−	+		When selfish lying is diagnostic of dishonesty, L2 increases lying relative to L1. When selfish lying is diagnostic of competence but weakly of dishonesty, L2 decreases lying relative to L1.
Study 7	511	English (Chinese)	Personal preference			+	L2 decreases prosocial lying relative to L1, but only when lying is self-diagnostic in L1.

NOTE—. +/− means that the occurrence of lying should increase/decrease when lying is diagnostic of the relevant self-aspect. Cells without indicate that the study does not address that self-aspect.

sample sizes were pre-determined. See web appendices E and F for the key measurements in English.

PILOT STUDY: LANGUAGE AND SELF-DIAGNOSTICITY

This pilot study tests the key premise of our theory that L2 reduces self-diagnosticity. To do so, we examine whether people see their actions in L1 contexts as generally more self-diagnostic than their actions in L2 contexts.

Method

To generalize the results across language pairs, we recruited 501 native Chinese speakers who use English as L2 (from Credamo.com, a Chinese survey platform; 232 females, M_{age} = 27.54, SD_{age} = 5.70), 127 native English speakers who speak a second language (from Prolific; 44 females, M_{age} = 29.92, SD_{age} = 10.53), and 518 native speakers of other languages who speak English as L2 (from Prolific; 198 females, M_{age} = 29.69, SD_{age} = 0.49). Participants rated on a 7-point scale from 1 (absolutely in L1) to 7 (absolutely in L2) the extent to which they see their actions in L1 versus L2 contexts as more indicative of who they are. A lower value on the scale means that people see their actions in L1 as more self-diagnostic than their actions in L2. For non-native English speakers, L1 is labeled as their native language and L2 is English. For native English speakers, L1 is English and L2 is the foreign language they are most fluent in.

Results and Discussion

To examine whether people believe their actions in L1 as more self-diagnostic, we compared the ratings against the scale midpoint (4), which indicates that actions in L1 and L2 are equally self-diagnostic, with one-sample t-test. Overall, we find that people see their actions in L1 contexts are more indicative of who they are than their actions in L2 contexts ($M = 3.01$, $SD = 1.63$, $t(1,145) = -20.62$, $p < .001$, Cohen's $d = -0.61$). The effect holds for native Chinese speakers from Credamo ($M = 3.04$, $SD = 1.701$ $t(500) = -12.54$, $p < .001$, $d = -0.56$), native English speakers from Prolific ($M = 2.49$, $SD = 1.56$, $t(126) = -10.90$, $p < .001$, $d = -0.97$), and native speakers of other languages from Prolific ($M = 3.10$, $SD = 1.55$, $t(517) = -13.25$, $p < .001$, $d = -0.58$). These findings corroborate the assumption that L2 reduces self-diagnosticity.

STUDY 1: LYING TO SAVE TIME

Study 1 tests the effect of language on selfish lying using a widely-used coin-toss paradigm. Similar to the roll-a-die task (Bereby-Meyer *et al.* 2020), it allows people to lie about a random event (the outcome of the coin flip).

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However, it does not require remembering the event and simplifies the choice people have to make. Previous research shows that people prefer telling the truth in the coin-toss task (Abeler, Becker, and Falk 2014), suggesting that in this task lying is diagnostic of dishonesty and thus appropriate for testing our hypothesis.

Method

Two hundred and fifteen business-major undergraduates (103 females; $M_{age} = 21$, $SD_{age} = 1.7$) participated in a 30 minute lab session for course credits. Participants were native Dutch speakers who used English as a second language. The session included multiple, unrelated studies. Participants were seated in private cubicles and completed the studies on a computer.

Our study ostensibly served as a break between studies, administered either in Dutch (L1) or in English (L2). We note that the alternation between L1 and L2 was natural to our participants who were enrolled in either a bilingual or English-language program and are very fluent in English (the other studies in the lab session were all in English). This means that students in the L2 condition were unlikely to find language barrier as an excuse for lying.

In the study, we asked participants to flip a coin to determine whether they would enter a short version (2 minutes) or a long version (10 minutes) of the next study. Critically, we told them that getting the short version meant that they could leave the lab earlier. To complete the task, participants were told to use either their own coin or a spare coin under a cup placed next to the computer. After the flip, participants selected the short (head) or the long (tail) study on the screen. In reality, all participants completed the same subsequent studies.

Results and Discussion

In the absence of incentives to lie, the distribution of heads and tails should be roughly equal (50%). However, the time-saving incentive should motivate people to report heads. Indeed, 65% of participants in the L1 condition (70 out of 107) reported head in the coin toss. Supporting our prediction, an even larger proportion did so in the L2 condition (86 out of 108, or 80%) and the increase was significant ($\chi^2(1) = 5.45$, $p = .020$, $d = 0.40$).

Contrary to the findings of previous research, in this study, L2 increased lying behavior. This is especially striking given that, similar to a paradigm used in prior research (Bereby-Meyer *et al.* 2020), we allowed participants to lie about a random event in the lab but eliminated the potential for memory error and choice overload. This suggests that the findings in prior research are at least partially attributable to the paradigms used, as discussed earlier.

STUDY 2: FAKING IDENTITY

Study 2 tests whether dishonesty can be curbed in L2 when situational cues make lying be perceived as more self-diagnostic in L2. As in study 1, we expected that L2 would increase lying relative to L1 in the absence of additional cues for self-diagnosticity. However, this effect should be weaker when one's decision is labeled as self-diagnostic.

Study 2 adds to study 1 in two additional ways. A limitation of study 1 is that in the coin-toss paradigm dishonesty cannot be detected at the individual level. In study 2, we therefore designed a controlled scenario that taps into a consumer-relevant setting: faking identity. With study 2, we also aim to generalize the language effect to lying to save money, instead of time.

Method

We aimed for 300 native Chinese participants from Credamo.com, a Chinese survey company and 413 attempted our study. They were asked to imagine that they were traveling in an English-speaking country and planned to visit several local museums. They could purchase a museum card that would allow them to enter almost any museum in that country and the card would cost them about 500 CNY. A Chinese friend, living in that country, told them that they could use her museum card because the local museums never inspect cardholders. After reading the scenario, people indicated whether they would be caught if they use the friend's card. Among the 413 respondents, 113 who gave the wrong answer "yes" (i.e., non-participants) were directed to the end of the study. The remaining 300 proceeded (163 females; $M_{age} = 28.05$, $SD_{age} = 4.98$). We note that this question guaranteed that the perceived risk of being caught was zero for all participants.

Participants were then randomly assigned to one of three conditions: L1, L2 (English), and self-salient L2. They were shown the friend's museum card and asked to indicate whether they would use the friend's card or buy their own (binary choice). The dishonesty measure was administered either in L1 or L2. In the self-salient L2 condition, we also told participants the following: "We would test whether you are a moral person. The test has been validated across populations. It accurately predicts how honest a person is in real life, such as how likely the person is going to cheat on others, to evade tickets, etc." Afterwards, all participants were asked to translate the focal question from L2 to L1. Most participants translated it correctly (96% in L1 condition, 99% in L2 condition, and 95% in the self-salient L2 condition). The study ended with demographic questions.

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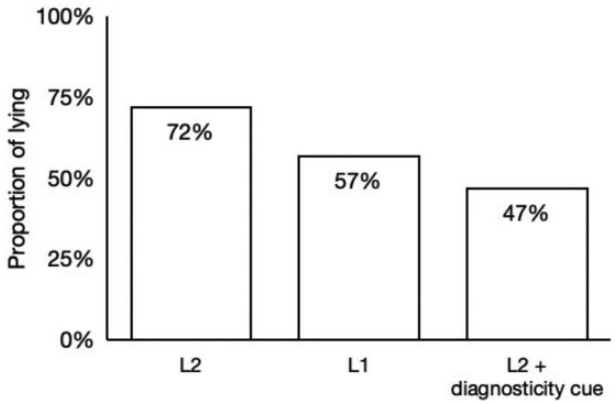
FIGURE 1

RESULTS OF STUDY 2



Results and Discussion

A Chi-square analysis showed a significant difference in the proportion of liars across conditions ($\chi^2(2) = 13.21$, $p = .001$). The results are summarized in figure 1. Consistent with study 1, there was a higher proportion of liars in L2 (69 out of 96, or 72%) than in L1 (56 out of 99, or 57%), $\chi^2(1) = 4.96$, $p = .026$, $d = 0.37$. Moreover, making the dishonest self-salient before L2 usage lowered the proportion of liars (49 out of 105, or 47%, $\chi^2(1) = 13.15$, $p < .001$, $d = -0.53$ compared to the L2 condition) and eliminated the language effect ($\chi^2(1) = 2.00$, $p = .157$, $d = -0.20$ compared to the L1 condition). Excluding cases with incorrect translations of the focal question generated the same pattern of results ($\chi^2(2) = 13.38$, $p = .001$; 73%, 57%, and 47% liars in L2, L1, and self-salient L2 conditions, respectively).

Consistent with study 1, study 2 shows that L2 makes people more willing to lie to save money. Supporting the theory, cueing people to think of the choice in L2 as self-diagnostic reduced lying in L2 to a similar level as in L1. Moreover, underscoring the magnitude of the language effect, a relatively subtle alteration to the stimuli as changing the language of the dependent variable produced a decrease in lying comparable to that of a salient cue for honesty.

STUDY 3: PRODUCT RECOMMENDATION

Study 3 tests another proposed boundary condition: that reducing the self-diagnosticity of lying would shrink the effect of language, in the context of product recommendation. Following prior research, we manipulate self-diagnosticity by varying the magnitude of the difference between the truthful answer and the answer that brings material rewards, that is, the truth-lie gap. Research has established that a larger truth-lie gap makes lying more diagnostic of the dishonest self (Gneezy *et al.* 2018; Hilbig and Hessler 2013). For example, Mazar *et al.*'s (2008) self-concept maintenance model posits that a larger truth-lie gap makes it harder to justify a lie, and hence harder to reconcile it with the desire to see oneself as honest.

Method

Design and Participants. We aimed for 900 native Chinese speakers from the registered users of Baidu.com, the largest search engine in China, and received 910 responses in total (427 females, $M_{age} = 30.6$, $SD_{age} = 7.2$). The study used a 2 (L2 vs. L1) by 2 (truth-lie gap: large vs. small) between-participants design.

Procedure. The first part of the study was administered in L1. Participants completed a series of demographic questions. Then, we asked them to imagine that they could recommend products anonymously on an overseas shopping website. The website invited them to recommend a pair of bluetooth earphones to other customers, based on its battery life. They could recommend either brand A or brand B. If they recommended brand B, they would receive 100 CNY as reward. If they recommend brand A, they would receive no reward. To check whether participants understood the materials, we asked them to select the basis for recommendation ("battery life" or "sound quality") and which brand gave the 100 CNY reward. A non-trivial proportion of participants failed one of the checks (33% in the L1 condition and 33% in the L2 condition, 299 participants in total). To avoid the results being affected by this, we excluded these participants from later analyses. We note that the understanding checks were administered in L1 and people's performance did not differ by condition, suggesting that there was no systematic bias in understanding between L1 and L2 conditions. The elaboration of the scenario in L1 and the understanding checks also ensured that participants could hardly use language barrier in L2 as an excuse for lying.

Participants then proceeded to the second part of the study, which was administered either in L1 or in L2. They viewed a pair of earphones, one of brand A and one of brand B, with the product of brand B having a shorter battery life. We manipulated the diagnosticity of the dishonest self by making the battery life of brand B either very far (large truth-lie gap condition) or very close (small truth-lie gap condition) to that of brand A. In the large truth-lie gap condition, the battery life of brand A was 9 hours, whereas that of brand B only 3 hours. In the small truth-lie gap condition, the battery life of brand A was 9 hours and that of brand B 8.5 hours. We asked participants to select which brand of earphones they would recommend.

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Pretest. To validate the self-diagnosticity manipulation, we conducted a pretest with another sample of 100 native Chinese speakers (53 females, $M_{age} = 30$, $SD_{age} = 5.5$). They were randomly assigned to view the pair of earphones in the large or small truth-lie gap condition and rated how honest would it be if they recommend (the inferior) brand B on a 7-point scale ("How honest would it be if you recommend brand B?" 1 = very dishonest to 7 = very honest). A *t*-test confirms that the lie is less diagnostic of the dishonest self when the battery life of brand B is 8.5 hours (small truth-lie gap; $M = 3.93$, SD = 1.98) instead of 3 hours (large truth-lie gap; $M = 3.42$, SD = 1.85), $t(98) = 3.42$, $p < .001$, $d = 0.69$.

Results and Discussion

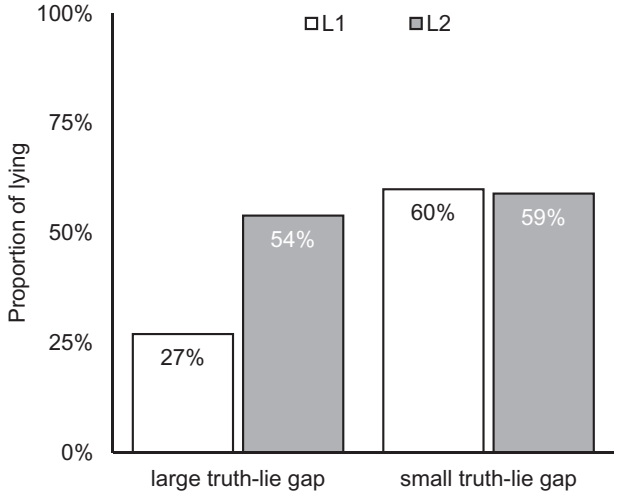
We conducted a logistic regression with the decision to lie as the outcome variable (recommend brand B = 1, recommend brand A = 0). Language (L2 vs. L1), truth-lie gap (large vs. small), and their interaction served as predictors. The interaction was significant ($b = -1.20$, SE = 0.35, $z = -3.48$, $p < .001$, Cohen's $d = 0.66$[1]). The results are presented in figure 2. Confirming the proposed moderation by self-diagnosticity, L2 increased lying when the truth-lie gap was large (54% in L2 vs. 27% in L1, $b = 1.16$, SE = 0.24, $z = 4.76$, $p < .001$, $d = 0.46$), but not when it was small (59% in L2 vs. 60% in L1, $b = -0.04$, SE = 0.24, $z = -0.17$, $p = .863$, $d = -0.02$). The interaction persisted when we included all participants in the analyses (interaction: $b = -0.77$, SE = 0.28, $z = -2.79$, $p = .005$, $d = -0.42$). Study 3 thus replicates our finding that L2 increases selfish lying and supports the boundary condition derived from our theory: the language effect decreased when the decision to lie was less diagnostic of the dishonest self.

STUDY 4: CAR INSURANCE

An alternative explanation for the findings of studies 1–3 is that self-diagnosticity is not undermined by L2 but by the cultural meaning associated with it (Hong *et al*. 2000). Studies 1–3 used English as L2 and prior research shows that English is associated with the rule of law and Calvinistic values (Licht, Goldschmidt, and Schwartz 2007). This suggests that culture-priming is an unlikely explanation for our findings. However, to empirically rule out this possibility, in study 4, we tested the same English-language scenario on native and non-native English speakers. According to the culture-priming account, L1 and L2 speakers should exhibit similar behavioral patterns (because the stimuli are expressed in the same language for all participants) and self-diagnosticity should no longer moderate the language effect. In contrast, our theorizing posits that non-native speakers should exhibit more dishonesty than native speakers when the choice is diagnostic of the dishonest self.

FIGURE 2

RESULTS OF STUDY 3



Another possible explanation for L2 increasing selfish lying relates to code switching. Accordingly, the switch from L1 to L2 (studies 2 and 3, where participants in the L2 condition switched from Chinese to English) reduces self-awareness and increases lying, while the switch from L2 to L1 (study 1, where participants in the L1 condition switched from English to Dutch) increases self-awareness and decreases lying. To rule out this possibility, study 4 features no code switching. Moreover, the study adds to the previous ones by focusing on another common type of consumer dishonesty: insurance fraud.

Method

We recruited 210 native English speakers and 211 non-native English speakers from Prolific, totaling 421 participants (224 females, $M_{age} = 33.1$, $SD_{age} = 10.8$). The non-native English speakers have diverse language backgrounds. As in study 3, the study adopted a 2 (non-native speakers as the L2 group vs. native speaker as the L1group) by 2 (truth-lie gap: large vs. small) between-participants design. Because Prolific prescreened participants by their native language ex ante and the entire study was administered in English, study 4 gives no clue to participants that it is about language.

Participants first completed a series of demographic questions and then read a car insurance scenario adapted from Schweitzer and Hsee (2002). Specifically, they were asked to imagine they acquired a second-hand car about a month earlier. They intended to purchase insurance for the

1 All Cohen's *d*s for logit regressions were obtained by the transformation of log odds ratios (see Borenstein et al. 2009).

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car and had to report the odometer mileage to the insurance company. Importantly, they had to pay 500 UK pounds more (as Prolific is a British platform) if the mileage exceeded 5,000 miles.

In the large truth-lie gap condition, we told participants that the odometer mileage was 6,000 miles when they acquired the car. After a month of driving, the mileage now was 6,500 miles (i.e., 1,500 miles more than the threshold). In the small truth-lie gap condition condition, we told participants that the odometer mileage was 4,600 miles when they acquired the car. After a month of driving, the mileage now was 5,100 miles (i.e., only exceeding the threshold by 100 miles). We told participants that there was no way for the insurance company to find out the actual mileage and asked them to indicate how many miles they would claim to the insurance company, in an open-ended format. A pretest with another 200 participants validated that lying (i.e., claiming 5,000 miles or lower) is more diagnostic of the dishonest self when the truth-lie gap is large as opposed to small (see web appendix B for the pretest results and a replication of study 4).

We ended the study with a comprehension check, by asking participants to indicate when they had to pay a higher premium according to the scenario, by selecting "when you report above 5,000 miles" or "when you report 5,000 miles or below." Most people in the L1 group (99%) and the L2 group (98%) answered correctly, so we do not exclude any participant from analyses.

Results and Discussion

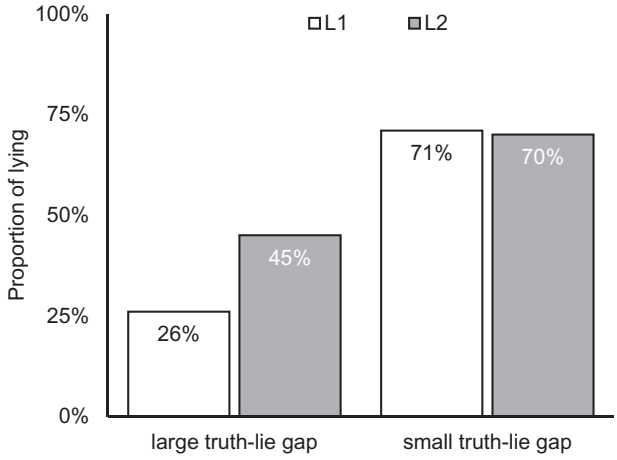
We coded any claim below or equal to 5,000 miles as lying and otherwise honest. A logistic regression revealed a significant interaction between language and self-diagnosticity ($b = -0.93$, SE $= 0.42$, $z = -2.19$, $p = .029$, $d = 0.51$). Figure 3 shows the results. Replicating the findings of study 3, L2 increased lying when the truth-lie gap is large (45% in L2 vs. 26% in L1, $b = 0.85$, SE $= 0.30$, $z = 2.86$, $p = .004$, $d = 0.47$) but not when it is small (70% in L2 vs. 71% in L1, $p = .797$, $d = -0.03$). Thus, study 4 replicates the pattern in study 3 with an insurance-fraud scenario. By distributing the same study to both native and non-native speakers, we ruled out cultural priming and code-switching as alternative explanations.

STUDY 5: LYING ABOUT AGE

The goal of study 5 is to replicate the findings in studies 3 and 4 with real behavior and an individual-level measure of truth-lie gap. We provided participants with an incentive to under-report their age and thereby earn a bonus. We measured the truth-lie gap by calculating the difference between participants' real age and the age threshold for the bonus. To examine whether emotional intensity can explain our findings (Puntoni *et al.* 2009), we also explored the language effect on emotional responses after lying.

FIGURE 3

RESULTS OF STUDY 4



Method

We recruited 1,000 native Chinese speakers from the registered users of Baidu.com and received 996 responses in total (452 females, $M_{age} = 28.5$, $SD_{age} = 6.8$). We offered a bonus payment to younger participants and asked each participant to indicate whether they were qualified for the bonus by stating their age. To ensure participants understood the focal measure, we asked participants to translate the monetary incentive from L1 to L2 ("If you are between 18 and 25 years old, you are qualified for a bonus of 10RMB"). We decided to use 25 as the age threshold because study 3 showed that the majority of respondents on this website were above 25 years old. Most people in the L1 condition (89%) and the L2 condition (89%) translated it correctly. We therefore did not exclude any participant from the analysis.

After the translation task, participants proceeded to a series of questions, either in L1 or L2. The first question was about their gender and the second was the focal measure. Participants had to report their age by choosing "18–25" or "26 or above." Unbeknownst to participants, we obtained their birthdays from Baidu, which allowed us to detect lying and quantify the truth-lie gap at the individual level. The study ended with a question probing how people felt at the moment with a 5-point scale, anchored with five nonverbal emojis from very negative to very positive (see de Langhe *et al.* 2011 for using emoticons to debias the effect of language on scale usage).

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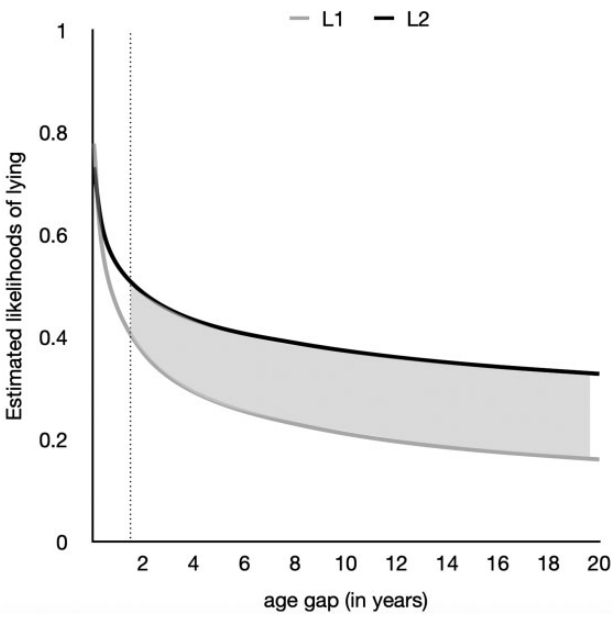
Results

Based on their birthdays, participants were divided into the unincentivized group ($N = 336$, whose ages were between 18 and 25) and the incentivized group ($N = 660$, whose ages were above 25). We first checked the age report by the unincentivized group and found that the majority of them (99% in L1 and 98% in L2) selected "18–25." This confirmed that participants understood the focal measure.

Next, we examined the incentivized group. As a measure of self-diagnosticity, we calculated the gap between their date of birth and the threshold qualifying participants for the bonus (25 years ago from the date of their participation), which ranged from 0.02 to 38.95 in years (median = 5.50). We coded the selection of "18–25" as lying and otherwise honest and regressed the decision to lie on the natural log of age gap (to correct for the positive skew), and their interaction. The logistic regression revealed a significant interaction between language and self-diagnosticity ($b = 0.46$, SE = 0.20, $z = 2.26$, $p = .024$, $d = 0.25$). As shown in figure 4, the likelihood of lying significantly decreased with the log age gap in L2 ($b = -0.66$, SE = 0.13, $z = -5.05$, $p < .001$, $d = -0.36$) but even more in L1 ($b = -1.12$, SE = 0.15, $z = -7.25$, $p < .001$, $d = -0.62$). Moreover, L2 significantly increased lying relative to L1 ($ps < .05$) when the age gap exceeds 1.5 (the shaded area in figure 4); no significant language effect emerged below that point. Overall, L2 made people feel more positive ($M = 3.74$ vs. $M = 3.40$, $t(657) = -3.64$, $p < .001$, $d = 0.29$), and the effect holds for both liars and non-liars (interaction $p = .536$). This suggests that L2 did not attenuate emotional experience of lying.

FIGURE 4

RESULTS OF STUDY 5



NOTE—. The dotted line cuts off at 1.5, above which L2 increased lying at $p < .05$. Curvilinear patterns are due to the natural log transformation of age gap for analyses

Discussion

Study 5 replicated studies 3 and 4 by assessing the truth-lie gap at the individual level and measuring real behavior. We next turn to the case of performance tasks, where lying not only signals one's dishonesty but also competence. We test whether the language effect can reverse when lying is weakly diagnostic of dishonesty but concurrently diagnostic of competence.

STUDIES 6A, 6B, AND 6C: LYING ABOUT PERFORMANCE

In the previous studies, we investigated selfish lying as a function of the diagnosticity of the dishonest self. We documented two boundary conditions: the language effect was reduced when additional cues for self-diagnosticity were attached to L2 (study 2) and when self-diagnosticity in L1 was reduced (studies 3–5). In study 6, we examine another boundary condition, which is predicted to reverse the language effect (i.e., less selfish lying in L2). We consider a performance task, where lying indicates better performance and thus is diagnostic of competence. Past research shows that performance goals constitute a reason to condone dishonest deeds (Cohn *et al.* 2014; Pulfrey and Butera 2013). Accordingly, we predicted that the desire to maintain a competent self could make L2 decrease lying, but only when lying is weakly diagnostic of the dishonest self.

The Paradigm

We created a spot-the-difference task to introduce a performance goal while incentivizing lying. The task required participants to find three differences between two advertising images, ostensibly as a test of visual acuity. Participants observed a pair of ad images for 5 seconds and then indicated whether they found three differences between them, by selecting "yes" (rewarded a bonus) or "no" (no bonus), with no time limit to answer. Importantly, answering "yes" must be a lie when the two images have less than three differences (i.e., a cheatable trial). Building on the notion that motive is manifest in persistent behavior (Bargh, Gollwitzer, and Oettingen 2010; Touré-Tillery and Fishbach 2014), we implement multiple cheatable trials within individuals to identify the dominant self-motive (to be competent or to be moral) and how this is affected by

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TABLE 2

TRIALS IN THE SPOT-THE-DIFFERENCE TASK AND THE INTERPRETATION OF RESPONSE

"Did you find all three differences?"	2-Difference trials (truth-lie gap = 1)	1-Difference trials (truth-lie gap = 2)	0-Difference trials (truth-lie gap = 3)
"Yes" (with reward) "No" (without reward)		Lying Honest	

language. Multiple trials also give people a chance to balance competing motives (Saint Clair and Forehand 2020), allowing us to observe trade-offs between motives. Because prior research shows that too many repetitions can lead to a "slippery slope" of dishonesty (Garrett *et al.* 2016), we chose a moderate number of cheatable trials (9) for this study.

As in preceding studies, the diagnosticity of dishonesty was manipulated via the truth-lie gap, which *increases* as the number of actual differences between the two images *decreases* from two to zero. In two-difference trials, we predict that people would lie more in L1 than in L2 because these lies are intrinsically rewarding (highly diagnostic of the competent self) at little cost (weakly diagnostic of the dishonest self). In zero-difference trials, L2 should increase lying as the lie is highly diagnostic of the dishonest self. Table 2 summarizes the cheatable trials. Two pilot studies (see web appendix C) confirmed that (i) L2 makes lying less diagnostic of both the dishonest and competent selves and (ii) the diagnosticity of the dishonest self is highest in zero-difference trials and lowest in two-difference trials.

Procedure and participants

Studies 6a, 6b, and 6c followed the same procedure. Participants first completed demographic questions and rated their ability to read in L2 (adapted from the Interagency Language Roundtable scale, 2011; "Elementary: I can read a few words and phrases," "Intermediate: I can read simple paragraphs like emails," "Upper-intermediate: I can read long essays," "Advanced: I can read original works"). We randomly assigned those above the elementary level to complete the spot-the-difference task in L1 or L2. It is worth noting that none of the studies were advertised as L2-related and people who failed the L2 screening completed the study in L1 and received proper payment. By doing so, we gave no incentive to participants to inflate their L2 proficiency. L2 proficiency does not moderate the language effects on dishonesty ($ps > .375$).

The spot-the-difference task has 12 trials in random sequences. In addition to the nine cheatable trials, three-difference trials were added to minimize participants' suspicion (participants also completed two practice trials with three differences before the start of the task). A pilot study with no incentive to lie ($N = 67$ native Chinese speakers who passed the English proficiency screening) confirms that people in both L1 and L2 could accurately tell the number of differences between images (see web appendix D for the pilot results and the analyses of three-difference trials).

Study 6a (L1 = Chinese; L2 = English). We recruited 200 participants from witmart.com, a Chinese crowdsourcing platform similar to Amazon Mechanical Turk, and received 234 responses, of which 153 passed the L2 proficiency screening (67 females, $M_{age} = 26.17$, $SD_{age} = 4.48$). The bonus for each successful find in the spot-the-difference task was 0.65 CNY (0.10 USD).

Study 6b (L1 = French; L2 = English). We recruited native French speakers with the help of three assistants who worked in France and stopped data collection after the number of responses ceased to increase for a week. We received 70 responses, all of which passed the L2 proficiency screening (30 females, $M_{age} = 31.28$, $SD = 7.70$). The bonus for each successful find was 0.20 euros (0.23 USD).

Study 6c (L1 = Chinese; L2 = Korean). We hired a Chinese survey company (wjx.cn) to reach 250 Korean learners and received 265 responses. A total of 119 of them passed the L2 proficiency screening (89 females; $M_{age} = 29.82$, $SD = 4.32$). The bonus for each successful find was 1.5 CNY (0.22 USD).

Results

Likelihoods of Lying. Given the nested structure of the data (multiple observations per truth-lie gap within individuals), we constructed a multilevel model to unbiasedly estimate the joint effect of language and truth-lie gap on the likelihood of lying (Raudenbush and Bryk 2002). The outcome variable is binary with a logit link (successful find/lying = 1, unsuccessful find/honest = 0). The truth-lie gap is the trial-level predictor (continuous), and language (L1 vs. L2) is the individual-level predictor (binary). The model allowed random intercepts nested within the type of trials within participants. Table 3 summarizes the model estimates. For conciseness, below we only discuss the statistical results of the zero- and two-difference trials, as the results of one-difference trials fell between the two.

In all three studies, we find significant interactions between the truth-lie gap and language (study 6a: $z = -7.19$; 6b: $z = -3.61$; 6c: $z = -4.35$; $ps < .001$), where the negative signs indicate that the tendencies in the L1 condition were attenuated in the L2 condition. Replicating the results of previous studies, L2 increased lying in zero-difference trials (highly diagnostic of the dishonest self) (study 6a: $z = 3.39$, $p < .001$, $d = 0.74$; 6b: $z = 2.33$, $p = .020$, $d = 1.06$; 6c: $z = 1.92$, $p = .055$, $d = 0.52$). Crucially, L2 *decreased* lying in two-difference trials (diagnostic of the competent self but weakly diagnostic of the dishonest self)

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TABLE 3

ESTIMATED LIKELIHOODS OF LYING ACROSS TRIALS AND LANGUAGES IN STUDIES 6A TO 6C

Study	Language Condition	2-Difference trials (%)	1-Difference trials (%)	0-Difference trials (%)
6a	L1	82[a]	57	35[a]
	L2	59[a]	57	56[a]
6b	L1	47	25	11[a]
	L2	38	35	30[a]
6c	L1	59[b]	49	41[b]
	L2	48[b]	53	55[b]

[a]Significant language effect at $p < .001$.
[b]Language effect at $p < .1$.

in studies 6a ($z = -4.26$, $p < .001$, $d = -0.97$) and 6c ($z = -1.80$, $p = .072$, $d = -0.49$), although not significantly in study 6b ($z = -0.96$, $p = .339$, $d = -0.40$).

Dominant Motives. To better understand the behavioral pattern, we examined persistent lying versus truth-telling, as behavioral indicators for the strength of the motive to maintain a competent versus an honest self (Bargh *et al.* 2010). As shown in table 4, zero-difference trials encouraged persistent truth-telling, suggesting participants' desire to main the honest self. In contrast, two-difference trials induced persistent lying, implying the desire for self-competence. More importantly, in L2, there is less persistent lying in two-difference trials and less persistent truth-telling in zero-difference trials.[2] These support the notion that L2 weakens the dominant motive.

Discussion

Studies 6a, 6b, and 6c show that L2 can reduce lying in the case of performance tasks. When the motive to appear competent competes with the motive to be honest, the precise effect of language on dishonesty becomes dynamic and depends on which motive dominates. Moreover, the fact that L2 proficiency does not moderate the language effects suggests that fluency of information processing (less fluent in L2) cannot explain the results.

STUDY 7: PROSOCIAL LYING

In the preceding studies, we examined selfish lying that benefits oneself at the cost of others. In real life, consumer also lies for others' benefits at their own costs, known as "white lies" or prosocial lying (Argo and Shiv 2012; Erat and Gneezy 2012). Past research shows that prosocial lying is partially driven by people's compassion toward others (Lupoli *et al.* 2017), a key component of moral identity (Aquino and Reed 2002; also see our replication in appendix). If prosocial lying is diagnostic of a positive, compassionate self, our theory predicts that L2 would decrease prosocial lying by reducing self-diagnosticity, hence reversing the effect documented in studies 1–5 for selfish lying. Again, we tested whether the language effect is constrained by self-diagnosticity, such that it becomes weaker when people see lying as less diagnostic of the compassionate self.

Method

Participants and Procedure. We recruited 500 native Chinese speakers from Credamo.com and received 511 complete responses (177 females; $M_{age} = 32.33$, SD = 10.46). Participants read a scenario about prosocial lying. Specifically, they imagined that they were visiting a foreign friend who showed them around the city and took them to various restaurants. Today the friend was planning their dinner and asked them to choose between two cuisines, A and B. They like cuisine A and dislike cuisine B, but the restaurant for cuisine B was much closer (10 minute walk) than the restaurant for cuisine A (30 minute drive), saving the friend time and effort. Participants first completed an understanding check ("which cuisine do you actually like?") and then indicated which cuisine they would tell their friend they like, either in L1 (Chinese) or L2 (English). Telling their friend they like cuisine B is a lie that helps their friend. As a measurement of self-diagnosticity, participants then rated in L1 whether the lying option (tell the friend they like cuisine B) signals that they are compassionate on a 7-point scale (1 = absolutely not, 7 = absolutely yes). Lastly, participants translated the lying option from L2 into L1 and completed demographic questions.

Pretest. We conducted a pretest to verify that (i) people prioritize compassion over honesty in the scenario

2 Consistent with the primacy of the honest self, results of one-difference trials resemble the pattern in zero-difference trials, where L2 primarily decreased persistent truth-telling (6a: 15% vs. 32%, $\chi^2(1) = 6.18$, $p = .013$, $d = -0.54$; 6b: 43% vs. 55%, $\chi^2(1) = 0.89$, $p = .345$, $d = -0.25$; 6c: 13% vs. 33%, $\chi^2(1) = 7.15$, $p = .008$, $d = -0.69$), rather than increased persistent lying (6a: 26% vs. 39%, $p = .089$; 6b: 22% vs. 9%, $p = .150$; 6c: 36% vs. 32%, $p = .647$).

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TABLE 4

THE DYNAMIC OF THE DOMINANT MOTIVE IN STUDIES 6A TO 6C

	2-Difference trials					0-Difference trials				
	L1 (%)	L2 (%)	χ^2	*p*	*d*	L1 (%)	L2 (%)	χ^2	*p*	*d*
Persistent truth-telling										
6a	5	14	3.63	.057	0.31	**44**	**16**	**14.40**	**<.001**	**−0.78**
6b	33	43	0.72	.395	0.19	**82**	**60**	**4.15**	**.042**	**−0.62**
6c	24	21	0.10	.757	−0.06	**49**	**23**	**8.60**	**.003**	**−0.64**
Persistent lying										
6a	**67**	**33**	**17.91**	**<.001**	**−0.79**	26	32	0.75	.388	0.14
6b	24	19	0.29	.588	−0.12	9	16	0.79	.374	0.20
6c	**41**	**16**	**9.07**	**.003**	**−0.72**	33	23	1.49	.223	−0.23

NOTE—. Percentages of individuals who are fully honest or dishonest and the chi-square results of the language effects with two-tailed *p*-values. Statistics in bold are significant effects in predicted directions (*p*s $< .05$). *d* is Cohen's *d*s that contrast L2 against L1.

about prosocial lying and (ii) prosocial lying is viewed as more diagnostic of the compassionate self than the dishonest self. A total of 104 native Chinese speakers (49 females, $M_{age} = 27.82$, SD $= 7.76$) read the scenario in their L1 and indicated which is more important in the scenario, to be compassionate or to be honest, on a 7-point scale (1 = absolutely to be honest, 7 = absolutely to be compassionate). People believe that being compassionate is relatively more important ($M = 5.18$, SD $= 1.87$, significantly above the midpoint, $t(103) = 6.44$, $p < .001$). In addition, participants rated whether they saw lying in this case reflected that they were compassionate and dishonest (two separate questions), on a 7-point scale (1 = absolutely no, 7 = absolutely yes). Results confirm that in this context lying is viewed as more reflective of a compassionate self ($M = 5.15$, SD $= 1.64$) than a dishonest self ($M = 4.27$, SD $= 1.66$), paired $t(103) = 3.57$, $p < .001$.

Results and Discussion

Validating the procedure and confirming the pretest results, participants viewed prosocial lying as reflective of a compassionate self ($M = 4.40$, SD $= 1.96$, significantly above the midpoint 4, $t(510) = 4.61$, $p < .001$, $d = 0.20$; recall that the rating was provided in L1 and thus does not differ by language condition, $p = .454$, $d = 0.07$).

A logistic regression with lying as dependent variable, and language, self-diagnosticity, and their interaction as predictors reveals a significant main effect of language. As predicted, the main effect of language in this study was the opposite of the one found in our studies on selfish lying: on average (at the mean value of self-diagnositicity, 4.40), L2 led to less lying ($b = −0.65$, SE $= 0.19$, $z = −3.41$, $p < .001$, $d = −0.36$). The overall proportion of liars was 42% in L1 and 28% in L2 ($\chi^2(1) = 12.02$, $p < .001$, $d = −0.39$).

Moreover, the interaction between language and self-diagnosticity was significant ($b = −0.22$, SE $= 0.10$, $z = −2.28$, $p = .023$, $d = −0.12$). As shown in figure 5, L2 significantly decreased lying (*p*s $< .05$; the shaded area in figure 5) only when self-diagnosticity scored above 4 on the 7-point scale. Similar to the preceding studies, this is primarily driven by self-diagnosticity in L1 (slope: $b = 0.20$, SE $= 0.07$, $z = 2.99$, $p = .003$, $d = 0.11$) instead of L2 ($b = −0.02$, SE $= 0.07$, $z = −0.30$, $p = .767$, $d = −0.01$). This pattern supports our theory that lying in L2 is less self-diagnostic than in L1.

This supports our prediction that L2 reduces prosocial lying only when it is diagnostic of a positive self in L1. The interaction also shows that lying significantly increased with self-diagnosticity of compassion in the L1 condition, but not in the L2. This pattern validates our theorizing that self-image in L1 is detached from lying decisions in L2. We find similar results when excluding participants who failed the translation task (excluded $n = 64$; $b = −0.23$, SE $= 0.10$, $z = −2.24$, $p = .025$, $d = −0.13$) or the attention check (excluded $n = 68$; $b = −0.21$, SE $= 0.11$, $z = −1.91$, $p = .056$, $d = −0.12$).

GENERAL DISCUSSION

We proposed a novel self-diagnosticity theory to explain how language affects lying behavior. The theory is supported by the finding that L2 increases selfish lying (studies 1–6) and three boundary conditions: (i) the effect is reduced when there is a salient cue of diagnosticity of the dishonest self in L2 (study 2), (ii) the effect weakens when lying appears less diagnostic of the dishonest self in L1 (studies 3–6), and (iii) the effect reverses when lying is weakly diagnostic of the dishonest self but highly diagnostic of the competent self (study 6). Study 7 adds further support to our theory by showing that L2 reduces prosocial lying that is diagnostic of the compassionate self, and the

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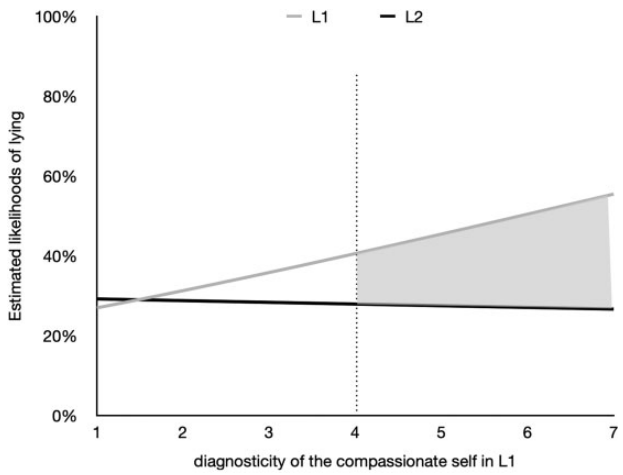
FIGURE 5

ESTIMATED LIKELIHOODS OF LYING IN L2 VERSUS L1 ALONG SELF-DIAGNOSTICITY



NOTE—. The dotted line cuts off at 4, above which L2 decreased lying at $p < .05$

effect weakens as the diagnosticity of compassion decreases.

Our studies address various consumer and language contexts and provide consistent support for our theory with different manipulations and measurements of self-diagnosticity (via explicit self-labeling in studies 2 and 7 as well as the truth-lie gap in the other studies). Importantly, we also exclude several potential alternative explanations. Study 3 rules out code-switching and culture-priming. Study 5 rules out emotional reactions to lying. Study 6 excludes explanations related to language proficiency, like comprehension and fluency. Next, we discuss theoretical and practical implications and outline avenues for future research.

Theoretical Implications

Despite the large literatures on lying behavior and on how language influences decision-making, there is no consensus on how language influences lying behavior. On the one hand, research on moral intentions and cognitive processing of lies suggests that lying is easier in L2 (Duñabeitia and Costa 2015; Suchotzki and Gamer 2018). This conclusion is consistent with the well-established finding that L2 leads to more utilitarian moral responses, which are usually perceived as self-threatening (Corey *et al.* 2017; Hayakawa *et al.* 2017). On the other hand, experiments on incentivized lying show inconsistent results (Alempaki *et al.* 2020; Bereby-Meyer *et al.* 2020). Our research provides clarity by suggesting that the effect of language of lying depends on self-diagnosticity. Joining prior research showing that self-identity can be primed by situational cues such as one's signature (Kettle and Häubl, 2011), we showed that language is an antecedent of self-diagnosticity and, specifically, that L2 reduces it. Accordingly, lying can be easier in L2, if lying is diagnostic of the dishonest self, but it can also be more difficult in L2, if lying is diagnostic of a desirable aspect of the self.

Our self-diagnosticity theory is related to but distinct from several existing theories of bilingualism. One prominent theory is that L2 leads to less intense emotional experiences (Pavlenko 2006; Puntoni *et al.* 2009). Applied to lying behavior, this means that the precise effect of language on lying might depend on whether people anticipate pain or pleasure from lying and the intensity of their feelings in L1. Although we did not find evidence for a role of emotionality in study 5, this emotion-blunting account overlaps with the current self-diagnosticity theory in the sense that people might anticipate specific emotions (e.g., guilt or pride) about enacting a self-diagnostic behavior and the emotional intensity might decrease as self-diagnosticity lessens. Thus, both accounts can explain the heterogeneity of language effects, yet our self-diagnosticity theory identifies why people might anticipate positive or negative feelings about lying in the first place.

Another prominent theory is that L2 weakens automatic processing (Hayakawa *et al.* 2016) and thus reduces intuitive lying or honesty. Similar to our self-diagnosticity theory, this suggests that L2 can either increase or decrease dishonesty depending on the situation and that the magnitude of the language effect would depend on the strength of intuition. What distinguishes our theory from this account, however, is that we pin down self-diagnosticity as a driving force. That is, self-diagnosticity may underlie moral intuitions, and the informational value of one's behavior for self-image is likely a fundamental difference between L1 and L2.

More broadly, our research suggests that self-diagnosticity could drive language effects in various contexts. Early research on bilingualism includes case studies by psychotherapists, who observed that their patients chose to use L2 to detach themselves from self-threatening experiences (Greenson 1950). Similarly, bilingual authors often refer to self-distancing as a primary reason to write in L2 (Grimes 2018). These reinforce the notion that L2 reduces self-diagnosticity in general and suggests the possibility that the self-diagnosticity theory could be extended to explain a wide array of language-related phenomena. Prior research shows that L2 suppresses self-related superstitious beliefs (Hadjichristidis, Geipel, and Surian 2019), attenuates neural responses to self-relevant feedback (Gao *et al.* 2015), and reduces the endowment effect (Karataş 2020). Although these findings have not been interpreted as tied to self-diagnosticity, they are consistent with our proposition that people are less likely to draw self-inferences from their behavior in L2 contexts. Even when people are

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evaluating others' unethical behavior, their leniency in L2 could be attributed to reduced self-awareness in moral situations (Geipel, Hadjichristidis, Surian 2015). Our theory highlights self-diagnosticity as a pivotal construct for understanding the decision-making of bilingual consumers.

Practical Implications

Companies are concerned about consumers' dishonesty and invest heavily in identifying and deterring potential fraud (FRISS 2019; Ma 2018). Our research shows that companies should not assume that consumers behave similarly in L2 and L1 language contexts: consumers are generally more likely to lie in L2 contexts. Our studies address several consumer-relevant situations (e.g., personal details, insurance claims) and rewards (saving time, earning money, saving money) and the results might inform many other contexts. For example, consumers who are filling out a survey in L1 may choose to tell the truth even if that means having to answer more follow-up questions, whereas consumers filling out the same survey in L2 may lie to save time. Moreover, the theory-derived moderators explored in our studies provide clues to the practical contexts where an effect of language is more versus less likely to be an issue for companies.

In particular, our dynamic view of the effect of language suggests that lying will not always be higher in L2. Based on the findings of studies 6a–6c, for example, we predict that online gamers who are motivated to outperform others in the community may not hesitate to lie in L1 when lying gives them an undeserved advantage but might become less opportunistic in L2. More generally, our findings suggest that how consumers behave in one language context may not be predictive of their behavior in the other. Categorizing users as "high risk" or "low risk" in terms of dishonesty could be inappropriate when consumers make decisions across different language contexts and incentives to lie. Thus, our research suggests that the precise effect of language on the propensity to lie depends on the situation. It is when the selfish lie is difficult to justify in L1 that L2 will generally increase lying. An illustrative anecdote is the report of more foreign than domestic students being caught cheating (Jordan and Douglas 2016). Similarly, in the marketplace, we suspect that financial losses sometimes result from the dishonesty of L2 speakers on relatively rare lies, such as faking student accounts to save money on purchases. Paying attention to the effect of language in those cases may prove more fruitful than looking into the languages used by customers for minor lies that are very common (and easily justifiable).

To curb selfish lying in L1, previous research has aimed to enhance peoples' self-awareness (e.g., using a mirror, Batson *et al*., 1999, or mentioning the word "cheater," Bryan *et al*. 2013). In line with this, campaigns against dishonesty have been implemented with a focus on self-awareness (e.g., the monitoring eyes in campaigns against tax evasions). Another commonly used tactic is to remind the people of moral norms, by for example, letting them sign an honor code (Mazar *et al*. 2008). Our self-diagnosticity theory, however, suggests that increasing one's awareness can produce paradoxical effects on dishonesty, given the complexity of the self-concept. Similarly, merely reiterating moral norms against dishonesty might be futile unless people see lying as self-diagnostic. The implication is that, in the design of marketing campaigns, appealing to one's honest self should be a more effective strategy in minimizing selfish lying, in both L1 and L2. Moreover, when lying is prosocial and the goal is to minimize it, appealing to the moral self in general might be counter-productive.

Directions for Future Research

The current research tests the theorizing by manipulating or measuring self-diagnosticity. Building on previous research, we manipulated self-diagnosticity by varying the truth-lie gap. Past research suggests that self-diagnosticity can also be manipulated in other ways, for example, using a mirror (Wicklund 1979), re-framing goal progress (Touré-Tillery and Fishbach 2015), or making people believe they will or will not remember what they did (Touré-TIllery and Kouchaki 2020). Future research can test whether these manipulations effectively alter self-diagnosticity and provide more insights into how to minimize lying in L1 as well as in L2.

The effect of language on cognition and behavior is complex and pervasive. Beyond reducing self-diagnosticity, language may influence dishonesty in other ways. Although we exclude several explanations for our findings, they may operate in other situations. For instance, the sociolinguistic perspective suggests that language communicates a social identity (Luna and Peracchio 2005). It predicts that when L2 represents a social group that people do not want to affiliate with, using L2 may lead to self-affirmation and thus increase people's adherence to the behavior consistent with their self-concept. This is not the case in our studies, where L2 reduces the resistance to selfish lying and the adherence to prosocial lying. However, it might occur when L2 is uniformly associated with an undesirable social identity (e.g., when L2 reminds people of political oppression or societal divisions), such that L2 decreases selfish lying and increases prosocial lying. Future research could test this prediction.

Another way in which language can influence lying is that the lower proficiency in L2 constitutes an excuse for lying (e.g., "I don't understand the question so it doesn't count as lying"). This is unlikely the case in our studies where participants passed understanding checks (studies 2, 3, 5, and 7) or speak L2 very fluently (studies 1 and 4). Nevertheless, L2 may be an excuse for lying when the

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cheatable question appears difficult to understand, especially when it includes jargons such as legal terms. In addition, even when people do not use L2 proficiency to justify lying to themselves, they may find it an appealing excuse when retrospectively inquired about why they have lied. This suggests that liars may be motivated to exhibit lower L2 proficiency for moral disengagement.

None of our studies imposes punishment for lying and the incentive for lying was fixed. In real life, however, there is usually at least some uncertainty in the costs and benefits of lying and language may influence perceived uncertainty. For instance, research shows that L2 lowers the perceived risk and heightens the perceived benefits of social hazards (Hadjichristidis, Geipel, and Savadori 2015). In the same vein, language might influence the perceived risks and benefits of lying. Future research should examine the role of language when extrinsic costs and benefits of lying are uncertain. Our speculation is that, if L2 indeed makes people less vigilant against punishment and more optimistic about gains, it should increase selfish lying to an even greater extent compared to what we have observed in this research.

Most of our studies utilized online panels to reach diverse populations of bilinguals. Similar to other data sources, online panels can suffer from participants' lack of attention and poor understanding of study requirements (Paolacci, Chandler, and Ipeirotis 2010; Thomas and Clifford 2017). To ensure that our findings are not confounded by these factors, we inserted various screenings and excluded participants who failed them (studies 2, 3, 6a, and 6c). In study 2, for instance, we only allowed participants who passed the understanding check to enter the experiment; people who failed the check were blocked from going further. Similarly, in study 6, we randomly assigned participants into L1 and L2 conditions only after they passed the screening of L2 proficiency. Without such screenings, it would be difficult to tell whether our findings result from the usage of language or random responding. On the other hand, these screenings might exclude more participants from one condition than another, potentially biasing the results. This is not the case in our studies where randomization occurs after screenings (studies 2, 6a, and 6c), and where exclusion rates are comparable in L1 and L2 (study 3). However, to fully eliminate the concern over the quality of responses and high attrition rates, it will be necessary for future research to reach highly motivated and proficient bilinguals in offline settings.

Finally, there are other popular types of dishonesty that warrant future research. One example is consumers' reluctance to share personal information for privacy concerns (John, Acquisti, and Loewenstein 2011). Language may influence people's willingness to share personal information by altering the perception that disclosing private information is self-exposing. Another form of dishonesty that has received increasing attention is the sharing of fake news. When are people more likely to share news articles that they know might contain false information? Social identity theory suggests that people may be motivated to share fake news that boost the image of their social group (e.g., fake news portraying the rival group in a negative light; Tajfel and Turner 1986). Based on our theory, L2 might reduce this kind of motivated sharing of fake news. We call for additional research to better understand how language contributes to privacy-related behaviors and the spread of misinformation.

DATA COLLECTION INFORMATION

The data for study 1 were collected at Erasmus Behavioral Lab, Erasmus University, in the winter of 2020. The data for the following studies are from online panelists on various platforms: studies 2 and 7 on credamo.com, in the spring and summer of 2020; studies 3 and 5 on mtc.baidu.com and study 4 on prolific.ac, all in the autumn of 2019; and study 6a on witmart.com in the spring of 2016. The first author collected all these data and supervised the data collection for study 6b by three assistants and for study 6c by a survey company (wjx.cn), both in the summer of 2016. The first author analyzed the data, which are archived at https://osf.io/uj3my/.

APPENDIX

Following the procedure by Aquino and Reed (2002, pilot study 2), we asked 800 native Chinese speakers (415 females, $M_{age} = 30.13$, $SD_{age} = 11.26$) to indicate on a scale ranging from 1 (absolutely unnecessary) to 5 (absolutely necessary) the extent to which they believed it is necessary for someone to possess each of the characteristics listed below to be considered a moral person. We find that participants deemed being honest as highly important and even more important than the other moral traits ($M = 4.63$, $SD = 0.59$ out of 5; scored significantly higher than all other moral traits, $ps < .021$).

Moral traits ($N = 800$)

	Mean	SD
Caring	4.22	0.73
Compassion	4.28	0.75
Fair	4.42	0.73
Friendly	4.48	0.67
Generous	3.63	0.97
Helpful	4.36	0.72
Hardworking	4.33	0.85
Honest	4.63	0.59
Kind	4.57	0.61

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