

# The Impact of Natural and Urban Landscapes on Deception

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### Abstract

Deception is part of our daily life. However, it does not only decrease the quality of our personal relationships but also contributes to the loss of hundreds of millions of dollars due to the deception of citizens and deception at work. In this paper the influence of location on deception was investigated. It was assumed that the urban location would lead to higher scores on self-oriented deception than the natural location due to increased feelings of competition. Participants were asked to imagine themselves either in an urban or a natural environment. Their deception was subsequently measured in social dilemmas in which lying would either represent self-oriented or other-oriented motivations, meaning one lies for oneself or for other people. Additionally, the feelings of competition of the participants were measured. The results of an online questionnaire revealed that location did not influence deception or competitiveness. However, a weak positive relation between competition and deception was found which also revealed that highly competitive individuals lie less than people who are slightly less competitive. It is further proposed to replicate the current study based on the elaborated recommendations as well as to invest research in finding explanations for the relation of competition and deception.

## **Introduction**

### **Deception**

Deception can harm private and professional relationships as well as one's own reputation. Interactions in which lies are told are less intimate and less pleasant than genuine communication (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996). Furthermore, when lies are detected, people can lose trust in their deceiver which can in turn negatively affect their relations to them. Despite these personal consequences, deception seems to be part of our daily lives (Knapp, Griffin, Earnest, & McGlone, 2008).

An even more devastating result of deception is occurring in public affairs. As deceiving others often serves as an opportunity to make more profit in the workplace, companies pursuing financial goals may experience a conflict between morality and acquisition (Mazar & Ariely, 2006). Consequently, names such as Enron, Tyco and WorldCom contributed to the biggest financial scandals in the US history. Additionally, also individual inhabitants betray their government by deceiving their tax payment and as a matter of fact betray each other by illegally downloading music, movies or software (Gino, Ayal, & Ariely, 2009). The consequence of deception is therefore not only the decrease of trust and genuine conversations but additionally the loss of hundreds of millions of dollars that could have been saved or spent more wisely if people made more honest decisions.

But why do people deceive despite the mentioned consequences of these actions? In the following paper, the words deception and dishonesty will be used interchangeably and defined as a deliberate attempt to mislead others (Carrión, Keenan, & Sebanz, 2010). How this deliberate attempt may arise can be explained by the Social Value Orientation (SVO). According to the SVO, “people vary in their motivations or goals when evaluating different resource allocations between themselves and another person” (Murphy, Ackermann, & Handgraaf, 2011, p. 1). Consequently, decision makers can be motivated to maximize their own payoff or to maximize joint payoffs, which is then called prosocial motivation. As a result, people who wish to only maximize their own payoff have an increased tendency to deceive others due to self-centered ambitions, meaning their lies only serve themselves. Consequently, people with prosocial motivations would be more inclined to deceive due to an other-oriented motivation, meaning they lie for others with the aim of protecting the person one is lying to.

Further, Murphy and his colleagues argue that people do not only have different preferences in general but each individual can have different motivations in different

situations and social contexts. But to what extent does context actually influence our tendency to deceive and how might it even influence our underlying motivation?

### **Deception and the Role of Context**

People are not inherently good or bad, but their actions are often driven by contextual pressure (Ross & Nisbett, 2011). The context plays a crucial role in the tendency to deceive and whether the goal of deceiving is based on self-promotion or promotion of others. The following two examples support this influence of context. First, people are more likely to tell self-serving lies to people they do not know well while they are more likely to tell other-oriented lies to people they feel close to (Whitty & Carville, 2008). This implies that the type of deception people make use of depends on the people they are surrounded by.

Second, Mazar, Amir and Ariely (2008) showed that people are more honest when the environment draws their attention to internal moral standards. They compared the level of dishonesty of two groups, one in which attention is drawn to moral standards by exposing participants to the ten commandments, and a control group that was instructed to remember ten books they had read in school, representing a neutral condition. Mazar and her colleagues found that the participants previously primed with the cues of morality cheated less than participants who were not exposed to those standards. This shows that the tendency to deceive can be influenced by cues appearing in a specific location.

If we now go back to the daily deception in our society, such as deception of tax payment and dishonest acts with regard to profit, it seems very likely to occur mainly in an urban environment. Consequently, when having a closer look at the urban location we should be able to find cues influencing this tendency to deceive. The urban incivility hypothesis by Korte and Kerr (1975) supports this assumption and suggests that the interaction between strangers in urban places is less civil, helpful and cooperative than in nonurban places. Based on this theory it is assumed in this paper that people have a more self-oriented motivation in urban locations. It is therefore expected that urban landscapes lead to more self-centered deception.

Furthermore, urban locations do not typically involve reminders of moral standards, for instance, but rather convey an image of intense social competition of all kinds of resources (status, goods and mates) and are inherently unstable (Van der Wal, Schade, Krabbendam, & Van Vugt, 2013). Therefore, whether competition plays a certain role in the tendency to deceive in urban locations is also investigated.

## **The Role of Competition**

As the urban landscape conveys an image of social competition, it is assumed that it contains certain competitive cues. These competitive cues seem to play a mediating role in the relation of urban location and the tendency to deceive in a self-serving manner. Falk and Szech (2013) examined the detrimental general effects that markets, meaning institutions where sellers and buyers interact and can trade items, have on ethical behavior. They conducted an experiment in which subjects had to decide whether or not they would like to receive money for the killing of a mouse. Their experiment included three conditions: first, an individual person could decide between receiving money and the death of a mouse or receiving no money and the mouse survives. Second, in a bilateral condition a buyer and a seller bargained about an amount of money that would later be split for killing the mouse. Finally, the multilateral condition was similar to the bilateral one but simply included several buyers and sellers bargained with each other about the offer for killing the mouse. Their devastating results showed that compared to individual decisions, those made in bilateral and multilateral markets involved an increased willingness to kill the mouse and receive the money. Falk and Szech argue that competition seems to lower moral values and that the wish to be better than others, or receiving more money than others, leads people to ignore their moral standards.

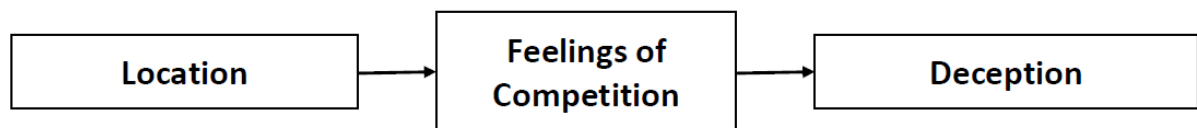
In addition, Cartwright and Menezes (2014) showed in an experiment that medium levels of competition in a workplace lead to high levels of misreporting of information. Consequently, competition induces an internal motivation to be superior and leads to making self-serving decisions. It is therefore assumed that the cues in urban locations do not only increase dishonesty in general but increase self-serving deception mediated by feelings of competitive pressure. This leads us to the following purpose of the current paper.

## **Research Purpose**

The aim of this paper is to have a closer look at the urban landscape with regard to self- and other-oriented deception by comparing it to a typically nonurban landscape: nature. The natural landscape provides cues of “predictability and resource abundance” as well as enjoyable cues (Van der Wal et al., 2013, p.2). In contrast to this, the urban landscape is man-

made and ever changing which makes it unpredictable in comparison to nature which seems more stable and anticipated and thereby provides a calming and uncompetitive impression.

The central question of this paper is whether there is a difference in the degree to which natural and urban landscapes influence self-centered and other-oriented deception in social dilemmas. In this paper it is argued that due to the more competitive cues in the urban landscape, people generally deceive more in a self-centered manner in urban places while deceiving more in an other-oriented manner in natural landscapes due to less competitive cues (Figure 1). This assumption is explained by the idea that competition activates an internal wish to be superior to others which in turn leads to ignoring moral standards and thinking in a more self-serving manner.



*Figure 1.* The theoretical framework that represents the mediating effect of competition in the relation of location and deception.

As deception became part of our lives in society, despite its consequences, this paper is valuable in such a way that it investigates and compares the effects of a very different location. If location indeed affects deception, subsequent measures can be conducted to decrease deception.

## Methods

### Participants and Design

The 240 participants of this study were recruited through Mturk (119 males and 121 females). The majority was American ( $n = 210$ ) while the minority of participants reported being from different countries in Europe and Asia ( $n = 30$ ). The majority of participants, namely 170, stated they were full-time workers, 29 were working part-time, and 18 a home mother or father. The age of participants ranged from 21 to 70, with a mean age of 40.

The location, with 117 participants in the nature condition and 123 participants in the urban condition, is the independent variable and represented a between-subject survey design. The participants were randomly assigned to one of these two conditions. The dependent

variable is 1) the extent to which participants deceived and 2), the type of deception performed by the participant which can further be divided into the two types of deception: self-centered deception and other-oriented deception. In addition, the potential mediator of competition was measured.

### **Procedure and Materials**

Participants received a questionnaire, in which they first received an informed consent which they needed to accept in order to continue the survey. In this consent participants were told that the purpose of the study was to examine behavior occurring in various locations and identify decisions in social dilemmas. Participants were not told that their deception in particular would be measured in order to prevent biased decision making. Furthermore, participants were informed about their anonymity in the study and the fact that they were free to end the study whenever they wished to.

After consenting, the respondents were shown one of two pictures (nature or urban location). They were asked to imagine walking around in this location and write down what they would see and feel in order to strengthen the feelings the specific location would trigger in a real encounter. A small version of this picture was displayed in the upper right corner on each page of the questionnaire in order to maintain the feelings which were evoked by the particular location. Participants subsequently had to fill out the eight scenarios about social dilemmas measuring deception. Eight scenarios were presented to the participants that consisted of four social dilemmas in which a person could lie due to self-centered motivations or tell the truth, and four dilemmas in which a person had the opportunity to lie due to other-oriented motivations or tell the truth. One of the self-oriented dilemmas was for instance: "Imagine, you need to finish a big assignment next week. You have not started yet. The person who gave you the assignment asks you how you are proceeding. What would you do? You would tell him/her:". These scenarios were represented as a multiple choice question and the responses participants could choose from in this example were either, "You did more than you actually did, because you don't want to look bad in his/her eyes." or "You have not started. - With the possibility you look bad in his/her eyes.".

An example of an other-oriented social dilemma was "Imagine, your friend is very happy about her new dress. You don't like it (for example, it's way too tight and looks ugly). What would you do?" The three responses from which the participant could choose were either, "You say you do like it, so you don't hurt her feelings." or "You decide to tell the truth

that you don't like the dress, with the possibility you hurt her feelings." Each lie received a score of one while the honest choice received a score of zero. Consequently, the total score on deception lay between zero and eight. Furthermore, the items can all be found in table A3 (see Appendix A).

The participants then received three statements measuring the potential mediator of feelings of competition and were asked to indicate the extent to which they agreed to those statements. These items of competition were retrieved from the scale of Hypercompetitive Attitude (Menesini, Tassi, & Nocentini, 2018). This scale investigates the need by individuals to not only compete but also win and avoid losses as well as demonstrate superiority. The three items that were used in the present contribution were "Winning in competition makes me feel more powerful as a person.", "It's a dog-eat-dog world. If you don't get the better of others, they will surely get the better of you." and "When my competitors receive reward for their accomplishment, I feel jealousy.". Participants could indicate the extent to which they agreed to these statements on a 5-point likert scale ('not at all', 'not really', 'undecided', 'somewhat', 'very much'). Another variable, named self-control, was measured in this questionnaire. However, it will not be included in any analysis or conclusion in this paper but was simply integrated for the purpose of another research.

Afterwards, the participants were presented with an SVO analysis to measure their underlying motivation that proposes three main orientations: individualistic, prosocial and competitive (Van Lange, De Bruin, Otten, & Joireman, 1997). In the questionnaire, respondents were asked to imagine that they were randomly matched with an anonymous person and could divide points onto themselves and the other person. Three situations were presented to the participant from which he or she could choose (A), (B) or (C). As an example, the first situation included the following possibilities: (A) 'you get 480, the other gets 80', (B) 'you get 540, the other gets 280' and (C) 'you get 480, the other gets 480'.

Following the SVO analysis, respondents were asked the following two questions to understand how seriously the questionnaire had been taken in order to increase the validity of the scenario responses. First, 'How much effort did you put into imagining yourself in the scenarios?' and second, 'How well could you imagine yourself being in the scenarios?'. These questions could be answered on a five-point likert scale ('not at all', 'not really', 'undecided', 'somewhat', 'very much').

Finally, the participants were asked about their demographics including gender, age, education and daily activities. The study then ended with a debriefing explaining the true purpose of the study. Data was collected on 30th of April. The entire questionnaire is

displayed in appendix B. Additionally, the exclusion criteria for the current study was first, incomplete data, second, not consenting the debriefing in the end, and third, reporting that one was not able at all to imagine oneself in the scenarios. Moreover, also the potential mediator names self-control was measured using three items in this questionnaire. This construct however, was part of a separate study and was not taken into consideration in the current paper.

This text data was later analyzed with the help of the Linguistic Inquiry and Word Count (LIWC) 2015 (Pennebaker, Boyd, Jordan, & Blackburn, 2015). LIWC reads one word at a time and searches for dictionary matches and subsequently increments the appropriate word category for that word. In the current two three word categories, namely positive emotions and negative emotions, were used to analyze the text data.

### **Reliability**

The Kuder-Richardson 20 (KR-20) was used to examine the reliability of the eight scenario items measuring deception. The value of the KR-20 can range from 0.00 to 1.00, with .70 representing an acceptable value (Allen, 2017). The eight scenario items together showed a KR-20 value of .70, while the value of only the self-oriented items was .53 and that of only other-oriented items was .56. The KR-20 value of the competition items was at .68. As the three latter measurements all have a value that is below .70 a factor analysis was performed in order to be aware of potential issues in the analysis as well as during its interpretation. This factor analysis is briefly described in the results and can be found in the appendix under 'Validity'. Additionally, Van Lange and his colleagues emphasize the good internal consistency as well as test-retest reliability of the SVO measure over a period of two to six months (1997).

### **Results**

One single respondent who did not consent the debriefing in the end was excluded from the analysis. Additionally, all respondents reported they could at least 'slightly' imagine themselves being in the scenarios, wherefore no further respondent needed to be excluded.

In order to investigate whether the gathered data was normally distributed the spread of the respondents' scores on deception, only self-oriented deception, only other-oriented deception, competition, as well as the score of positive emotions, negative emotions and

social processes from the text analysis, were explored by making use of the Shapiro-Wilk normality test. Each of these examined variables rejected the null-hypothesis of being indifferent from a normal distribution with  $ps < .001$  (Field, 2013). Consequently, the analyses of the data were performed using non-parametric tests.

## Deception

In order to determine the factor structure, especially in consequence of the moderate KR-20 values in the self-oriented deception as well as other-oriented deception, an exploratory factor analysis was performed using a principal-axis factor extraction. Firstly, the factor structure of the eight deception items was investigated. The scree plot indicated a two-factor solution and the varimax orthogonal rotation was used in order to interpret these two factors (Field, 2013). As displayed in the appendix, the loadings make clear that the items of the two variables, namely self- and other-oriented deception, do not divide accordingly into the two factors found in the analysis (Table A1). Especially items 'Self 1', 'Self 2' and 'Other 4' load with a similar strength on both factors. However, even if these three items had been removed, the remaining items would still not have divided appropriately on the two factors. Consequently, the all eight items were kept in the analysis but the loadings were considered in the discussion.

A Mann-Whitney U test was conducted to test whether there were significant differences in deception in general between the conditions. The results of this test showed that there was no significant difference in deception between respondents in the nature condition ( $Mdn = 4$ ) and those on the urban condition ( $Mdn = 4$ ),  $U = -.40$ ,  $p = .69$  (Nachar, 2008). Additionally, a Mann-Whitney U test was conducted to test significant differences of location on self-oriented and other-oriented deception separately. No significant difference was found between the urban condition ( $Mdn = 2$ ) and the nature condition ( $Mdn = 2$ ) in self-oriented deception,  $U = -.22$ ,  $p = .83$ . Moreover, there was no significant difference between the nature condition ( $Mdn = 2$ ) and the urban condition ( $Mdn = 2$ ) in other-oriented deception,  $U = -1.07$ ,  $p = .29$ .

Additionally, a potential significant within-group difference between scores on self-oriented deception and other-oriented deception was tested using the Wilcoxon signed-rank test. The analysis showed that there was no statistical significant difference between these two variables when running the test with all participants,  $Z = -1.01$ ,  $p = .31$  (Field, 2013). Moreover, there was neither a significant difference between self-oriented deception and

other-oriented deception in the nature condition  $Z = -.29, p = .77$ , nor in the urban condition  $Z = -1.70, p = .09$ . An overview of all medians as well as means and standard deviations can be found in table 1.

### Competition

In order to test whether the three condition items indeed represent one construct, a factor analysis was conducted (Field, 2013). This analysis was performed using a principal-axis factor extraction and the factor matrix clearly displayed that there was only one factor with loadings of a minimal strength of .62 in each item (Table A2). Consequently, the three competition items do indeed measure one single construct.

The effects of location on competition were examined with a Mann-Whitney U test. There was no significant difference between the nature condition ( $Mdn = 3$ ) and the urban condition ( $Mdn = 3$ ),  $U = -.93, p = .35$ . An overview of the medians, means and standard deviation is displayed in table 1.

*Table 1*

*Means and Standard Deviations and Medians of Deception in all eight Scenarios (Deception Total), only Self-oriented Dilemmas (Self), Other-oriented Dilemmas (Other) and Competition in the Nature (N=117) and Urban (N =122) Condition*

| Condition       | Nature   |           |            | Urban    |           |            |
|-----------------|----------|-----------|------------|----------|-----------|------------|
|                 | <i>M</i> | <i>SD</i> | <i>Mdn</i> | <i>M</i> | <i>SD</i> | <i>Mdn</i> |
| Deception Total | 3.90     | 2.26      | 4          | 3.73     | 2.22      | 4          |
| Self            | 1.94     | 1.24      | 2          | 1.96     | 1.29      | 2          |
| Other           | 1.96     | 1.32      | 2          | 1.77     | 1.26      | 2          |
| Competition     | 2.74     | 0.94      | 3          | 2.87     | 1.05      | 3          |

<sup>a</sup>The higher the value of deception, the more lying.

### Social Value Orientation

11 participants whose responses did not consistently represent one of the three tendencies in the SVO measure (namely prosocial, individualistic or competitive) were excluded in analyses including the SVO. As the SVO represents a nominal variable, a Chi-square test of independence was conducted comparing the frequencies of the three SVO tendencies in participants of the nature condition with participants of the urban condition. No significant difference was found  $\chi^2(2) = .02, p = .99$  (McHugh, 2013). The percentages of the three tendencies per location are displayed in table 2.

*Table 2*

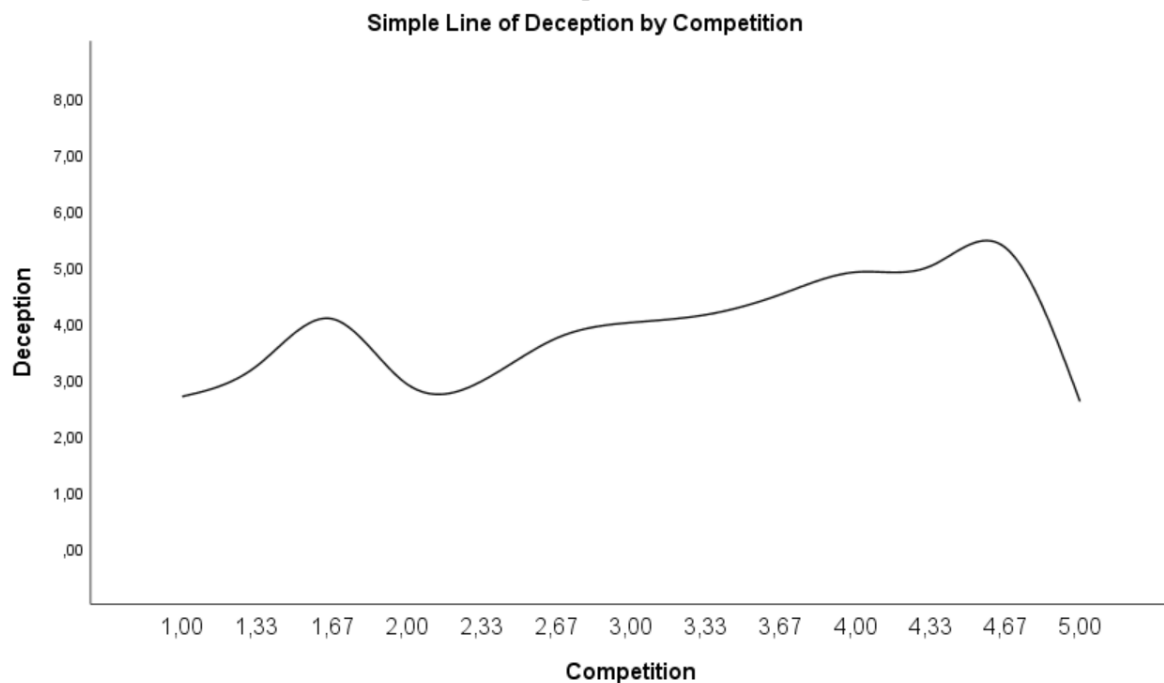
*Percentages of the Three SVO Tendencies in the Nature and Urban Condition (N=228)*

| Condition       | Nature | Urban |
|-----------------|--------|-------|
| Prosocial       | 68.4%  | 67.5% |
| Individualistic | 28.9%  | 29.8% |
| Competitive     | 2.6%   | 2.6%  |

### Additional Analysis

An additional analysis was conducted to better make sense of the relation between competition and deception, independent of the conditions of this study. The Spearman's rank-order correlation was run to examine this relationship (Field, 2013). The results showed that there was a weak positive significant correlation between competition and deception,  $r_s(273) = .251, p < .001$ , which indicated that the more feelings of competition a person had, the more he or she lied. Additionally, when plotting a simple line that represents the relation between competition and deception, the decrease of deception at very high levels of feelings of

competition stands out while the relation from low to high competition is generally increasing (Figure 2).



*Figure 2.* This figure illustrates the relation between competition and deception showing the notable decrease in deception at very high levels of feelings of competition.

### Text Analysis

In order to test for significant differences of location in scores on positive as well as negative emotions obtained from LIWC between the two conditions, a Mann-Whitney U test was conducted. Participants from the nature condition reported significantly more positive emotions ( $Mdn = 6.67$ ) than participants from the urban condition ( $Mdn = 2.67$ ),  $U = -7.08$ ,  $p < .001$ . Moreover, respondents from the urban condition reported significantly more negative emotions ( $Mdn = 0$ ) than respondents from the nature condition ( $Mdn = 0$ ),  $U = -4.74$ ,  $p < .001$ .

### Discussion

With regard to the research question of this study, one can conclude that respondents in the nature and urban condition did not differ in the degree to which they were influenced in their

self-centered and other-oriented deception in social dilemmas. This means that participants in the nature and urban condition neither differed in the amount of lies they would tell for themselves nor in the amount of lies they would tell to protect another person. Additionally, none of these groups was more competitive than the. Since location did not influence competition, no mediating effect of competition could be found.

Besides these insignificant results however, a relation between competition and deception was found: increased levels of competitiveness, up to a certain point, were associated with an increased amount of lies. This shows that people who are more competitive also lie more. Interestingly, a pattern could be observed in this study showing that participants scoring very high on competition deceive less than those who are slightly less competitive compared to them. Consequently, competition did influence deception, while the location did not have an effect. To the question asking why there were no significant differences in deception, the short texts written in the questionnaire provide a few answers.

The short texts the respondents wrote about what it would be like to find themselves in that particular environment, give insights on the feelings evoked in the conditions. Generally, the exposure to nature lead to a more positive valence of words than the urban location did, while the urban condition resulted in words with a more negative valence than the natural location. Based on a more detailed analysis three main complications were detected. Firstly, in the urban condition, many participants felt like they were visiting a new city rather than living and working in the urban area displayed on the picture. Consequently, many respondents were in a vacation-mood, which did not necessarily increase happiness, and their feelings were guided by their interest in discovering new things. Secondly, many respondents spotted the Christmas decoration in this urban area which probably evoked festive feelings and few participants mentioned how they liked spending winter holidays with their beloved ones. Thirdly, many participants mentioned the crowds and amount of people that often lead to anxiety and even claustrophobic feelings. The latter is likely to account for the mainly negative emotions in the urban condition detected with the LIWC. As a consequence of these three anomalies, one can say that the feelings of competition, or an ever-changing and unpredictable environment as Van der Wal and her colleagues described it, that were assumed to be evoked by the urban picture, might not have been center of participants' feelings (2013). In order to improve this, the urban picture should still show people walking around but in a slightly less crowded place. Additionally, it should contain a balanced amount of tourists and people who look like inhabitants, in order to avoid the vacation-like impression to be stronger.

Moreover, any decoration or clothing easily reminding people of festive seasons should be avoided when replicating this study.

Another explanation for not finding significantly different results of location on deception might be that the locations were not matched well enough with the scenarios. It is assumed that the feelings evoked in the locations, such as feelings of competition, could generally cross over to another situation, but in this specific scenario this may not have been the case. However, the effect of the location on the scenarios in particular may be intensified by formulating the scenarios in such a way that the location becomes part of it, meaning that the social dilemma takes place either in nature or in an urban area. Another suggestion in order to improve the researchers' understanding of how strong the link between location and scenario actually was, could be that respondents are not only asked how well they could imagine themselves in the scenarios but also whether they could imagine themselves in the scenarios in the particular location.

Another possibility in order to improve the results in deception would be to move away from the imagination scenarios that were used and use more real situations where participants can decide whether they want to lie or not. Dan Ariely provided several examples on how to detect lies in real time experiences using money as an incentive (Mazar et al., 2008; Gino et al., 2009).

A potential explanation for not finding any significant results in feelings of competition may be that the scenarios and potential reflection on own lying behavior influenced the answers on the competition items. Consequently, changing the order in which different variables were placed within the questionnaire could increase the effect of location on respondents' feelings of competition and reveal some order effects of the different items.

Additionally, as no significant results were found for the SVO, an additional measure to the applied SVO measure, namely the ultimatum game, could be used in the next version of the current study. In this game participants are asked how they would split the amount of money they receive wherefore it is fairly easy to see who has a prosocial motivation, meaning equal division or giving more to the other person, and who has a self-oriented motivation, meaning giving more to oneself (Thaler, 1988).

A potential explanation for why the self-centered deception items and the other-centered deception items did not represent two separate constructs might be that the consequences of options in the scenarios were not clear enough. As the respondents may not have been fully aware that the self-oriented deception items were very different from the other-oriented deception items, it is crucial to clarify these. An alternative explanation for not

finding two separate constructs is that the items Self 2 and Others 2 consist of the exact same scenario description and differ only in their answer options. Respondents may have been confused or automatically picked the answer they chose previously which is why replacing one of these two items with a new one would increase the validity of the two deception constructs.

### **Future Research**

Replication of the current study with the help of the elaborated recommendations is crucial to better understand the influence location has on daily deception. Hopefully, this branch of research will help decrease the consequences of lying in some areas of our lives and help us find determinants that increase honest behavior.

Additionally, further examining the relation between competitiveness and deception would increase the current understanding of why people choose to deceive in various situations. An interesting observed pattern of this study is that highly competitive individuals lie less and should be investigated further. A potential construct that could be examined in this relationship is confidence. It may be the case that highly competitive individuals are more confident and believe in their own success wherefore, feel less in need of deceiving others. Another construct could be the skill of coping with negative consequences in certain domains. Another explanation may be that a highly competitive person is better at coping with stressful situations (such as other people being disappointed or hurt) and be less affected by conflicts with other people and therefore does not need to deceive.

### **Conclusion**

Concluding this research, it can be said that priming the respondents with the locations of urban and natural landscapes did not lead to any differences in deception, competition or Social Value Orientation. However, more feelings of competition were associated with more lying. Interestingly, it seems like the highest scores on feelings of competition were associated with a lower amount of lies.

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## Appendix A

## Factor Analyses of Self- and Other-oriented Deception Items and Competition

*Table A1**Exploratory Factor Analysis of Self-oriented and Other-oriented Deception N = (239)*

| Factor                   | Factor Loading |            |
|--------------------------|----------------|------------|
|                          | 1              | 2          |
| Self-oriented deception  |                |            |
| Self 1                   | <b>.23</b>     | <b>.44</b> |
| Self 2                   | .94            |            |
| Self 3                   | <b>.30</b>     | <b>.43</b> |
| Self 4                   |                | .34        |
| Other-oriented deception |                |            |
| Other 1                  |                | .49        |
| Other 2                  | .72            | .27        |
| Other 3                  | .14            | .66        |
| Other 4                  | <b>.18</b>     | <b>.37</b> |

*Note.* Double-loaded items are denoted in bold font.

*Table A2**Exploratory Factor Analysis of Competition (N=239)*

|  | Factor Loading |
|--|----------------|
| Factor   | 1              |
| Competition Items  |                |
| Winning in competition makes me feel more powerful<br>as a person.   | .67            |
| When my competitors receive reward for their<br>accomplishment, I feel jealousy.                           | .63            |
| It's a dog-eat-dog world. If you don't get the better of<br>others they will surely get the better of you. | .62            |

*Table A3**List of all Deception Scenarios as well as their Response Options*

| Item   | Scenario Description   | Response  |  |
|--------|--|---|--|
|        |  | deceiving   | not deceiving  |
| Self 1 | Imagine, you need to finish a big assignment next week. You have not started yet. The person who gave you the assignment asks you how you are proceeding. What would you do? You would tell him/her: | You did more than you actually did, because you don't want to look bad in his/her eyes.   | You have not started. - With the possibility you look bad in his/her eyes. |
| Self 2 | Imagine, there's a party tonight and your friend tells you he/she hopes you will be there. You don't feel like going. What would do? You would tell him/her that:                                    | You don't feel very well and you are unfortunately unable to come to the party. In reality, you aren't feeling ill at all but you don't want to look bad. | You don't feel like going. - With the possibility you look bad.            |
| Self 3 | Imagine, you have a meeting in the morning but you overslept. What would you do? You would tell the people in the meeting that:  | You were stuck in traffic/your train got delayed, because you don't want to lose credit.  | You overslept, with the possibility you lose credit.                       |

|         |   |   |   |
|---------|---|---|---|
| Self 4  | Imagine, you are at a job interview. You are being asked if you have experience in a relevant aspect of the job, which you haven't (for instance you are asked if you are experienced at working at a restaurant while you've only done the dishes). What would you do? | You would want the job very badly, so you tell the interviewer you do have experience.  | You would tell that you don't have the experience, with the possibility you don't get the job.          |
| Other 1 | Imagine, your friend is very happy about her new dress. You don't like it (for example, it's way too tight and looks ugly). What would you do?  | You say you do like it, so you don't hurt her feelings.   | You decide to tell the truth that you don't like the dress, with the possibility you hurt her feelings. |
| Other 2 | Imagine, there's a party tonight and your friend tells you he/she hopes you will be there. You don't feel like going. What would you do? That night you would tell him/her that:  | You don't feel very well and you are unfortunately unable to come to the party. In reality, you aren't feeling ill at all but you don't want to hurt his/her feelings when you tell you don't want to come. | You don't want to come. - With the possibility you hurt his/her feelings.                               |
| Other 3 | Imagine, your friend asks you if you think he/she is demanding as a person. In fact she is. What would you  | This is not the case because you don't want to hurt her feelings as she already is feeling insecure.  | She is demanding, with the possibility you hurt her feelings.   |

do? You would tell him/her  
that:

|         |   |   |  |
|---------|---|---|--|
| Other 4 | Imagine, your friend is in a new relationship, but you don't like the person. He/she asks you what you think of his/her new boy/girlfriends.<br>You would tell him/her: | You really like his/her new boy/girlfriend, and that you are happy for him/her. | You don't like his/her new boy/girlfriend, with the possibility you hurt her feelings. |
|---------|---|---|--|

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## Appendix B

## Qualtrics Questionnaire of the Study

## Deception in Urban and Nature

**Informed Consent** Studying the impact of location on behavior

**Purpose** The purpose of this study is to examine behavior (e.g., perceptions and decisions). Your perceptions may help identifying reactions to social dilemmas.

**Procedure** For the first part of the study you - as a participant in this study - will be placed in a certain location accompanied by an image, and hopefully be able to picture yourself in this location. For the second part of this questionnaire, you will be asked to make social decisions. After answering these questions, you are asked to fill in some demographics. Then, you have reached the end of the study. In order to protect validity of psychological experiments (i.e., that you behave as normal and natural as possible while answering the questions), you may be not fully aware of the true purpose of the study. However, after completing the questionnaire you will be fully debriefed. Afterwards, you can reach out for the researcher to get more information. If you decide to participate, your involvement will last for up to 20 minutes. Your responses will be treated anonymously in order to establish confidentiality (your answers will not be traced back to you). However, the data might be made available for other researchers in the future.

**Participant Rights** Your participation is voluntary. You may choose not to take part in the study or to stop participating at any time, for any reason, without negative consequences. You will receive full compensation also if you stop participating. For further information about this study, contact the researcher Fabienne Krywuczky (f.krywuczky@student.utwente.nl)

**Consent and Authorization Provisions** Clicking "I consent" indicates that you voluntarily agree to participate in "Studying the impact of location on behavior", that the study has been explained to you, and that your questions have been satisfactorily answered.

☐ I consent (1)

☐ I do not consent with the above information and will not participate (2)

*Skip To: End of Survey If Informed Consent Studying the impact of location on behavior Purpose The purpose of this study is... = I do not consent with the above information and will not participate*

End of Block: Consent

---

Start of Block: nature

Display This Question:

*If condition = nature*



Please, take a few seconds to imagine yourself being in the following location.

Imagine walking around in this location. Please describe what you would see and how the things you see would make you feel.

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Page Break

End of Block: nature

---

Start of Block: urban

Display This Question:

If condition = urban



Please, take a few seconds to imagine yourself being in the following location.

Imagine walking around in this location. Please describe what you would see and how the things you see would make you feel.

---

---

---

---

---

End of Block: urban

---

Start of Block: information

In the following, 8 scenarios of social dilemmas will be presented to you.  
Please, imagine yourself being in these scenarios and chose one of the available options.

End of Block: information

---

Start of Block: Block 9

Display This Question:

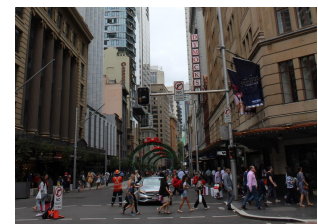
*If condition = nature*



---

Display This Question:

*If condition = urban*



---

Imagine, you need to finish a big assignment next week. You have not started yet. The person who gave you the assignment asks you how you are proceeding. What would you do? You would tell him/her:

- ☐ You did more than you actually did, because you don't want to look bad in his/her eyes. (1)
- ☐ You have not started. - With the possibility you look bad in his/her eyes. (2)

---

Page Break

*Display This Question:*

*If condition = nature*



---

*Display This Question:*

*If condition = urban*



---

Imagine, there's a party tonight and your friend tells you he/she hopes you will be there. You don't feel like going. What would do? You would tell him/her that:

- ☐ You don't feel very well and you are unfortunately unable to come to the party. In reality, you aren't feeling ill at all but you don't want to look bad. (1)
- ☐ You don't feel like going. - With the possibility you look bad. (2)

---

Page Break

*Display This Question:*

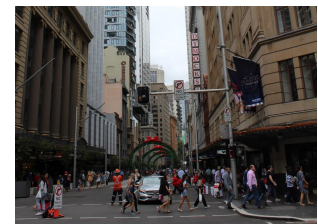
*If condition = nature*



---

*Display This Question:*

*If condition = urban*



---

Imagine, you have a meeting in the morning but you overslept. What would you do? You would tell the people in the meeting that:

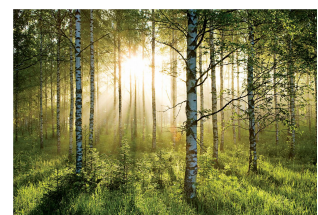
- ☐ You were stuck in traffic/your train got delayed, because you don't want to lose credit. (1)
- ☐ You overslept, with the possibility you lose credit. (2)

---

Page Break

*Display This Question:*

*If condition = nature*



---

*Display This Question:*

*If condition = urban*



---

Imagine, you are at a job interview. You are being asked if you have experience in a relevant aspect of the job, which you haven't (for instance you are asked if you are experienced at working at a restaurant while you've only done the dishes). What would you do?

- ☐ You would want the job very badly, so you tell the interviewer you do have experience. (1)
- ☐ You would tell that you don't have the experience, with the possibility you don't get the job. (2)

---

Page Break

*Display This Question:*

*If condition = nature*



---

*Display This Question:*

*If condition = urban*



---

Imagine, your friend is very happy about her new dress. You don't like it (for example, it's way too tight and looks ugly). What would you do?

- ☐ You say you do like it, so you don't hurt her feelings. (1)
  - ☐ You decide to tell the truth that you don't like the dress, with the possibility you hurt her feelings. (2)
- 

Page Break

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*Display This Question:*

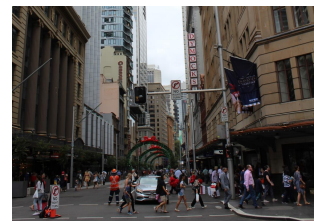
*If condition = nature*



---

*Display This Question:*

*If condition = urban*



Imagine, there's a party tonight and your friend tells you he/she hopes you will be there. You don't feel like going. What would you do? That night you would tell him/her that:

- ☐ You don't feel very well and you are unfortunately unable to come to the party. In reality, you aren't feeling ill at all but you don't want to hurt his/her feelings when you tell you don't want to come. (1)
- ☐ You don't want to come. - With the possibility you hurt his/her feelings. (2)

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Page Break

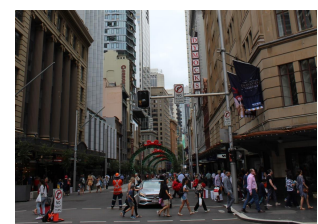
*Display This Question:*

*If condition = nature*



*Display This Question:*

*If condition = urban*



Imagine, your friend asks you if you think he/she is demanding as a person. In fact she is. What would you do? You would tell him/her that:

- ☐ This is not the case because you don't want to hurt her feelings as she already is feeling insecure. (1)
- ☐ She is demanding, with the possibility you hurt her feelings. (2)

---

Page Break

*Display This Question:*

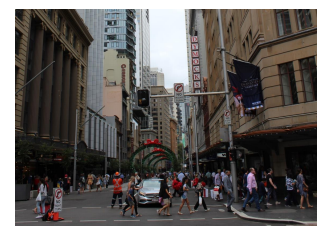
*If condition = nature*



---

*Display This Question:*

*If condition = urban*



Imagine, your friend is in a new relationship, but you don't like the person. He/she asks you what you think of his/her new boy/girlfriends. You would tell him/her:

- ☐ You really like his/her new boy/girlfriend, and that you are happy for him/her. (1)
- ☐ You don't like his/her new boy/girlfriend, with the possibility you hurt her feelings. (2)

End of Block: Block 9

---

Start of Block: competition

*Display This Question:*

*If condition = urban*



---

*Display This Question:*

*If condition = nature*



competition Please indicate to what extent you agree to the following statements.

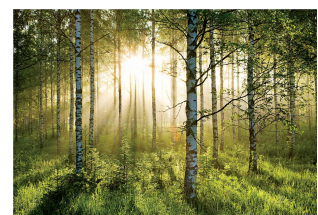
|  | not at all (1)        | not really (2)        | undecided (3)         | somewhat (4)          | very much (5)         |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Winning in competition makes me feel more powerful as a person. (1)  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| It's a dog-eat-dog world. If you don't get the better of others, they will surely get the better of you. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| When my competitors receive reward for their accomplishment, I feel jealousy. (3)                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

End of Block: competition

Start of Block: self-control

Display This Question:

*If condition = nature*



Display This Question:

*If condition = urban*



self-control Please indicate to what extent you agree to the following statements.

|   | not at all (1)        | not really (2)        | undecided (3)         | somewhat (4)          | very much (5)         |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I am good at resisiting temptation (1)                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I have a hard time breaking habits (2)                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Pleasure and fun sometimes keep me from getting work done (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

End of Block: self-control

Start of Block: SVO

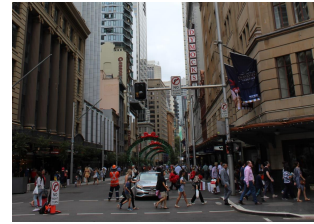
Display This Question:

If condition = nature



Display This Question:

If condition = urban



SVO explanation Imagine being randomly paired with another person that you do not know and will also not meet in your future. In the following you will choose between one of the three given options (A, B and C) and thereby distribute points to yourself and the other person. The more points you receive the better for you, the more points the other person received the better for him or her.

(SVO 1) Which one of these three option would you choose?

- ☐ (A) You get 480, the other gets 80. (1)
- ☐ (B) You get 540, the other gets 280. (2)
- ☐ (C) You get 480, the other gets 480. (3)

(SVO 2) Which one of these three option would you choose?

- ☐ (A) You get 560, the other gets 300. (1)
- ☐ (B) You get 500, the other gets 500. (2)
- ☐ (C) You get 500, the other gets 100. (3)

(SVO 3) Which one of these three option would you choose?

- ☐ (A) You get 520, the other gets 520. (1)
  - ☐ (B) You get 520, the other gets 120. (2)
  - ☐ (C) You get 580, the other gets 320. (3)
- 

(SVO 4) Which one of these three option would you choose?

- ☐ (A) You get 500, the other gets 100 (1)
  - ☐ (B) You get 560, the other gets 300 (2)
  - ☐ (C) You get 490, the other gets 490 (3)
- 

(SVO 5) Which one of these three options would you choose

- ☐ (A) You get 560, the other gets 300 (1)
  - ☐ (B) You get 500, the other gets 500 (2)
  - ☐ (C) You get 490, the other gets 90 (3)
- 

(SVO 6) Which one of these three options would you choose

- ☐ (A) You get 500, the other gets 500 (1)
  - ☐ (B) You get 500, the other gets 100 (2)
  - ☐ (C) You get 570, the other gets 300 (3)
-

(SVO 7) Which one of these three options would you choose

- ☐ (A) You get 510, the other gets 510 (1)
  - ☐ (B) You get 560, the other gets 300 (2)
  - ☐ (C) You get 510, the other gets 110 (3)
- 

(SVO 8) Which one of these three options would you choose

- ☐ (A) You get 550, the other gets 300 (1)
  - ☐ (B) You get 500, the other gets 100 (2)
  - ☐ (C) You get 500, the other gets 500 (3)
- 

(SVO 9) Which one of these three options would you choose

- ☐ (A) You get 480, the other gets 100 (1)
- ☐ (B) You get 490, the other gets 490 (2)
- ☐ (C) You get 540, the other gets 300 (3)

End of Block: SVO

---

Start of Block: effort

How much effort did you put into imagining yourself in the scenarios?

- ☐ None at all (1)
- ☐ A little (2)
- ☐ A moderate amount (3)
- ☐ A lot (4)
- ☐ A great deal (5)
- 

How well could you imagine yourself being in the scenarios?

- ☐ Not at all (1)
- ☐ Slightly (2)
- ☐ Moderately (3)
- ☐ Somewhat (4)
- ☐ Very much (5)

End of Block: effort

---

Start of Block: demographics

What is your gender?

- ☐ Male (1)
- ☐ Female (2)
- 

What is your age?

---

What is your nationality

- ☐ German (1)
- ☐ Dutch (2)
- ☐ Other: namely (3) \_\_\_\_\_
- 

What is your highest rounded education?

- ☐ Primary school (1)
- ☐ Secondary school practical pathway (2)
- ☐ Secondary school theoretical pathway (3)
- ☐ Graduate school (4)
- ☐ University bachelor (5)
- ☐ University master (6)
- ☐ Other: namely (7) \_\_\_\_\_
- 

Daily activitiy

- ☐ Home mother/father (1)
- ☐ Full-time working (2)
- ☐ Part-time working (3)
- ☐ Jobseeker (4)
- ☐ Student (5)
- ☐ Other: namely (6) \_\_\_\_\_
-

What do you think the aim of the study is?

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Do you have any suggestions or comments?

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participant Code Your participant code is `${rand://int/10000:99999}`.

End of Block: demographics

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Start of Block: end

### Debriefing

**Study: Where do we lie? The impact of location on behavior** Before you began filling out the questionnaire, the researcher was unable to completely inform you about the purpose of this study. You will now be provided with the full nature of this contribution. After your debriefing please confirm that your responses can be used for evaluation. The purpose of this questionnaire was to study in which locations people are more likely to show deceptive behavior (i.e. lying) and to see if their lies are rather self-centered or other-centered. Thus, in order to investigate the impact of location on lying behaviors, we have primed you with a location that possibly integrates a certain level of self-control and competition. The researcher will now analyze the true role of competition

and self-control in the location you were in and see how your deception was influenced by it. Please feel free to contact the researcher via E-mail (f.krywuczky@student.utwente.nl) to inform her about your **withdrawal**, any questions or interest in the results of the study.  
Thank you very much for your participation!

☐ Yes, I consent that my data will be analysed (1)

End of Block: end

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