

Smile Genuinely: I Will Believe You!

Cut Vilda Azwar, Vera Van Bakel, Styliani Efthymiadi, Lilien Nagy, Nikolaos Tsiantos, Rik Van der Voet

Abstract

The purpose of this project was to identify the role of genuine and non-genuine smiles on the perceived trustworthiness between professional and non-professional liars. Enhancing the external validity of this study, a pre-test was conducted to define the type of smiles. Subsequently, a 2 x 2 mixed experimental design was carried out via an online questionnaire. As expected, genuine smiles were proved to be more trustworthy than non-genuine smiles. On the contrary, the main effect of the type of liar was not statistically supported. Interestingly, a significant interaction effect was found. Finally, conclusions are provided linking the findings to the theoretical framework, as well as discussing limitations and future research.

Keywords: (non-)professional liars; (non-)genuine smile; non-verbal communication; trust; trustworthiness.

Introduction

Besides physical attractiveness, non-verbal facial expressions can also provide behavioral information for an effective communication (Boone & Buck, 2003). Previous researchers attempted to investigate the role of facial expressions in truth and lie detection (e.g., Vrij, 2004; Vrij & Mann, 2005). Other scholars limited their research in the use of smile (e.g., Bernstein et al., 2010; McDaniel & Si, 2014). Based on McDaniel and Si (2014), a smile is normally perceived as a positive indicator, thus it is also used for deception. Definitely, liars tend to use a smile in order to achieve their intentions. However, as Ekman, Friesen, and O'Sullivan (1988) noted, their smiles are different (i.e., fake) in comparison with truth tellers' genuine smiles.

Consequently, an issue comes to the surface; whether different types of liars are able to display different types of smiles. On the one hand, Ryan (1996) distinguished professional liars and defined them as "someone who tells lies for a living, perhaps someone who tells lies well, with conviction and with aplomb, certainly someone whose stock in trade includes the capacity to utter the well-judged falsehood" (p. 619). On the other hand, we can assume that there are also non-professional liars. Indeed, Leins, Fisher, and Ross (2013) mentioned that there are real-world liars, people who are not involved in any training process for lying. Taking into consideration that genuine and non-genuine smiles require diverse social skills (e.g., expressivity, communication skills, etc.), professional and non-professional liars are expected to perform the aforementioned gestures differently.

In addition, from a liar's perspective, it is assumed that the ultimate purpose is to gain trustworthiness. To date, trustworthiness and smiling behavior are closely related by the researchers (i.e., Boone et al., 2003; Krumhuber et al., 2007). Moreover, Scharlemann et al. (2001) conducted a Trust Game and proved that smiling partners were considered to be more trusted than non-smiling partners.

Based on the above-mentioned literature, the purpose of the current research is to shed light on the role of different types of smiles regarding perceived trustworthiness. Benefiting from this study, not only professional liars (e.g., lawyers, actors, etc.) could take advantage performing efficiently, but also potential judges of liars could be more skeptical. Therefore, this study's research question is formulated as follows:

What is the role of different types of smiles on the perceived trustworthiness between professional and non-professional liars?

Genuine vs Non-genuine Smile

A widely known distinction of different types of smile is the Duchenne and non-Duchenne smiles. The former involves both the zygomatic major muscle and the orbicularis oculi muscle, whereas the latter involves only the zygomatic major muscle (Ekman, 2003). However, Ekman (2003) noted that this distinction has not been always successfully recognized. Therefore, in many cases as well as herein, the terms 'genuine' and 'non-genuine' are used respectively.

Interestingly, Bernstein et al. (2010) proved that genuine smiles are used in order to enhance cooperative feelings, in contrast to non-genuine smiles that are used for deception. Additionally, O'Sullivan (2005) found that genuine smiles are mostly displayed by truthful people. What is more, Krumhuber et al. (2007) found evidence that a genuine smile increases the likelihood for cooperation. Thus, the following hypothesis is formulated:

H1: Genuine smiles lead to a more trustworthy perception of liars than non-genuine smiles.

Professional vs Non-professional Liars

According to Vrij, Granhag, and Mann (2010), impression formation theory highlights factors that make a person being perceived as trustworthy. For instance, expressive people tend to create a positive first impression and reduce suspicion. Furthermore, Ryan (1996) mentioned that doctors, lawyers, and politicians could be considered as professional liars; that is, people who undoubtedly have social skills. In addition to this, Riggio, Tucker, and Throckmorton (1987) showed that expressive and socially skilled people were good deceivers. Therefore, we hypothesize that:

H2: Professional liars are perceived as more trustworthy than non-professional liars.

Due to knowledge gap, it is not possible to determine whether there is or not an interaction effect between the type of smile and the type of liar. Therefore, the following hypothesized interaction effect will provide greater insight:

H3: The effect of the type of smile depends on the type of liar.

Method

Research Design

The study had a 2 (professional liars versus non-professional liars) x 2 (genuine smiles versus non-genuine smiles) mixed experimental design. In particular, participants were almost equally assigned either in the professional or the non-professional liars' condition (i.e., between-subjects design). Each of these conditions included both genuine and non-genuine smiles (i.e., within-subjects design). The independent variables of the survey were the types of liar and the types of smile, both categorical and measured at two levels. The dependent variable was the level of trustworthiness which was ordinal, and the participants were asked to indicate their level of agreement on a 5-point Likert-type scale.

Stimuli Collection

Selection Criteria and Procedure

The stimuli collection was conducted through YouTube. The created stimulus consisted of 40 short videos in total, without sound. More specifically, there were 20 professional and 20 non-professional liars showing both an equal number (i.e., 10) of genuine and non-genuine smiles. The videos were divided into four conditions: professional liars with genuine smiles, professional liars with non-genuine smiles, non-professional liars with genuine smiles and non-professional liars with non-genuine smiles. The participants received either a questionnaire constituted of 20 short videos with professional liars showing a genuine and a non-genuine smile or a questionnaire constituted of 20 short videos with non-professional liars showing a genuine and a non-genuine smile.

The 20 videos of professional liars were fragments of different TV talk shows (e.g., Jimmy Kimmel, Jimmy Fallon, etc.), as well as famous professional YouTube Vloggers (e.g., Oli White, PointlessBlogVlogs, etc.). For the creation of the professional liars' stimuli, we regarded people who play a game on TV or on YouTube that demanded them to tell lies intentionally (i.e., Lie detector game, Box of Lies). These specific fragments were chosen because the subjects of this condition were deliberately conveyed a lie, accompanied with a smile. Furthermore, the games were played by socially skilled and famous people that can be regarded as good deceivers.

Next to this, the 20 videos of non-professional liars were taken from Jimmy Kimmel's "Lie witnesses' news" interviews. In these interviews, the reporter delivered fake news and interviewed random pedestrians about their awareness and their reaction towards the news. The people who lied in answering reporter's question and expressed a smile were chosen as the stimuli for the non-professional liars. Based on the aforementioned literature, these people are perceived real-world liars, who are not involved in any training process for lying (Ryan, 1996).

Video Editing

The selected videos were approximately 10 to 20 minutes

long and needed to be cut into smaller fragments. For this purpose, the Online Video Cutter was used to trim the duration of the clip and crop the videos. Only the subject's face was kept removing any external confounding variables that might distract the participants. Furthermore, the Flash FLV Video Player was used to remove the sound. Each fragment lasted from 3 to 5 seconds. Figure 1 illustrates examples for each experimental condition.



Figure 1: On the top left and right side, non-professional liars with genuine and non-genuine smile respectively. On the bottom left and right side, professional liars with genuine and non-genuine smile respectively.

Pre-test

In order to verify whether the smiles' conditions were met, a pre-test was conducted among the six researchers. The pre-test was executed with the ultimate purpose of clarifying the genuine and non-genuine smiles among the type of liars. This improved the reliability and internal validity of the research and reassured that the smile condition was accurate and would not lead to diffusion. Furthermore, this clarification helped us to avoid biased results without asking the participants regarding the types of smile. We found that 88% of the genuine pictures and 92% of the non-genuine smile were answered correctly. We found no cases in which the type of smile was less than 4 times determined as the correct type of smile.

Perception Test

Participants

A non-probable sampling technique (i.e., a combination of convenience, volunteer, and snowball sampling) was chosen due to time constraint. A total of 105 subjects participated in this study, 40 males and 65 females. The age of the participants ranged between 19 and 41, with the 91% of the participants being between 19 and 30. The participants' nationality was distributed as follows: 13.3% Dutch, 34.3% Greek, 41% Indonesian, and 11.4% other.

Materials and Procedure

The participants were asked to judge the level of trustworthiness towards the video via an online questionnaire, which was created with the use of "Qualtrics" software. The questionnaire was sent to the participants via the researchers' Facebook or email accounts. Instructions

regarding the structure and the purposes of the survey were provided at the beginning of the questionnaire; no rewards were given. Furthermore, an email address of one of the researchers was mentioned, so that the participants could ask possible questions or be informed about the research results. Initially, the participants were asked to fill in demographic questions such as age, gender, and nationality. Moreover, the participants could click on the presented link to view each of the 20 videos. The videos were displayed on separate pages. Under each video, one question was asked regarding the level of trustworthiness based on the expression/smile shown in each video. More specifically, there was an instruction to watch the displayed video and indicate the level of agreement in the following statement: “The person in the video is trustworthy”. The statement was measured on a 5-point Likert scale (1 = “strongly disagree”, 7 = “strongly agree”).

It should also be mentioned that the order of the videos showing professional and non-professional liars was randomly assigned to the participants, but the videos on each condition were presented in the same order to all the participants.

Results

To investigate the hypotheses of this study, a 2 x 2 two-way mixed ANOVA was performed. The type of smile was entered as a within-subjects factor, whereas the type of liar as a between-subjects factor.

The dependent variable was the perceived level of trustworthiness. Descriptive statistics regarding this variable are listed in Table 1. Professional liars paired with a genuine smile were perceived as the most trustworthy ($M = 3.43$, $SD = 0.53$), while professional liars with a non-genuine smile were rated as the least trustworthy ($M = 2.96$, $SD = 0.46$).

Table 1: Means and Standard Deviations of the perceived trustworthiness per condition ($N = 105$).

Condition	M	SD
Professional liar, genuine smile	3.43	0.54
Non-professional liar, genuine smile	3.17	0.57
Professional liar, non-genuine smile	2.95	0.46
Non-professional liar, non-genuine smile	3.20	0.39

A significant main effect of type of smile was found, $F(1, 103) = 14.33$, $p < .001$, $\eta^2 = 0.122$. In general, a genuine smile ($M = 3.28$, $SD = .60$) was perceived as more trustworthy than a non-genuine smile ($M = 3.06$, $SD = .48$). This confirms the first hypothesis that genuine smiles lead to a more trustworthy perception than non-genuine smiles.

While investigating whether professional liars are perceived as more trustworthy compared to non-professional liars, no significant main effect was found, $F(1, 103) = 0.006$, $p = .938$, $\eta^2 < .001$. This means that a professional liar ($M = 3.14$, $SD = .05$) is not perceived as more trustworthy than a non-professional liar ($M = 3.18$, $SD = .42$), and therefore the second hypothesis is rejected.

Interaction Effect

Interestingly, an interaction effect of the type of smile and the type of liar on the perception of trustworthiness was found, $F(1, 103) = 17.99$, $p < .001$, $\eta^2 = 0.149$, supporting the third hypothesis. Since it was not possible to determine a priori the direction of the interaction effect, the analysis sheds light on it. In particular, whereas professional liars with a genuine smile ($M = 3.43$, $SD = .54$) are perceived as more trustworthy than non-professional liars with a non-genuine smile ($M = 3.17$, $SD = .57$), non-professional liars accompanied with a non-genuine smile ($M = 3.20$, $SD = .39$) are perceived as more trustworthy than professional liars with a non-genuine smile ($M = 2.95$, $SD = .46$). This interaction effect is shown in Figure 2.

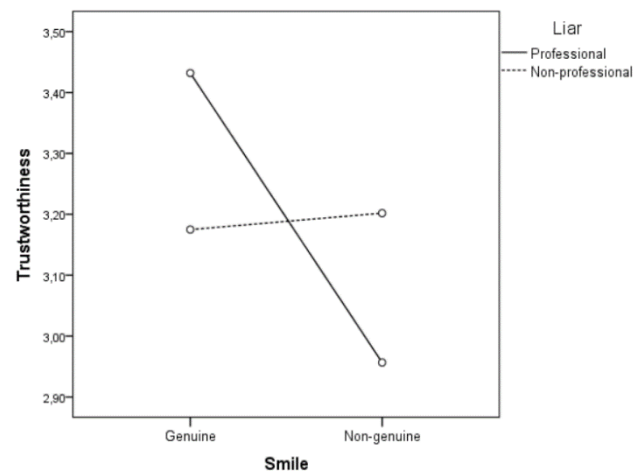


Figure 2: The interaction effect of the type of smile and the type of liar on perceived trustworthiness.

Discussion

Conclusion

In this investigation, the aim was to assess how smiles influence the perceived trustworthiness of two types of people, that is to say, people that are trained to gain trust when deceiving, and people who are not. The labels used in this article were professional liars versus non-professional liars. The project undertook to design a method that had trustworthiness as a dependent variable and the types of liars and smiles as the independent variables, whereafter the perception of the stimuli (i.e., video material) was examined. To start with, it seems that non-verbal facial expression has an influence on behavioral information. The main finding of this study can be summarized as follows: genuine smiles lead to a more trustworthy perception than non-genuine smiles. In addition, the third hypothesis gave an interesting result, namely, a significant effect was found regarding the interaction effect between the type of smile and the type of liar on the perceived level of trustworthiness. Evidence has been found that expressive people tend to create a positive first impression and reduce further suspicion (Vrij et al., 2010). However, this study does not fully support this finding. The analysis revealed that professional liars with a

genuine smile are more trustworthy than non-professional liars with a non-genuine smile, but non-professional liars accompanied with a non-genuine smile are more trustworthy than professional liars with a non-genuine smile. Thus, there are limitations to the “non-verbal power” of professional liars. Note that it was reasoned and supported by literature that expressive people and socially skilled people are good deceivers (Riggio et al., 1987); this type of people is therefore considered as professional liars in this research.

However, no significant evidence was found for distinguishing professional liars from non-professional liars. This finding also indicates that expensive media training, for gaining more trust, might not be as fruitful as these personalities might have hoped. It is crucial to delve deeper into understanding where the tipping point lies for believing or not in someone. This is one of the points discussed in the next paragraphs.

All in all, this study has shown that genuine and non-genuine smiles are perceived differently and that a smile that was coded as a genuine smile in the pre-test, increases the trustworthiness towards a person. Literature pointed out that a genuine smile increases the likelihood for cooperation (Krumhuber et al., 2007). This implies that people who often produce a genuine smile, are well appreciated and might even be more successful in life. The current findings are in line with these findings in the literature. Therefore, this study adds to a growing body of literature on the effect of a smile.

Limitations

One of the limitations of the research involves the coding of the types of smiles. The conducted pre-test focused on defining whether a smile was genuine or not. It might have been more explanatory if the material was pre-tested and coded in a more nuanced way examining the level of genuineness. For instance, it might be possible that genuine and non-genuine smiles are more explicit for professionals than non-professionals. Secondly, the settings of the videos might also have influenced the outcome, since professional liars were mostly taped inside and the non-professional liars outside. It could be that, for instance, a studio recording evokes the feeling that the setting is staged, which lowers feelings of trustworthiness. However, participants could also have reasoned that lying at, for example, a street interview is easier. Lastly, the gender of the persons displayed in the videos was not taken into consideration, and this may have been an influential factor for the results of this project.

Future research

Further research might explore the effects of the types of smile more deeply taking into account the knowledge of Duchenne and non-Duchenne smiles. This requires a more detailed coding set-up in the pre-test, whereafter a more detailed analysis follows. This subsequent research might point out that genuine and non-genuine smiles are more explicit for professionals than for non-professionals. Additionally, it would be interesting for future researchers to investigate whether there are differences in the perception of

non-verbal behavior, like smiles, among participants with dissimilar cultural background.

References

- Bernstein, M. J., Sacco, D. F., Brown, C. M., Young, S. G., & Claypool, H. M. (2010). A preference for genuine smiles following social exclusion. *Journal of Experimental Social Psychology, 46*(1), 196-199.
- Boone, R. T., & Buck, R. (2003). Emotional expressivity and trustworthiness: The role of nonverbal behavior in the evolution of cooperation. *Journal of Nonverbal Behavior, 27*(3), 163-182.
- Ekman, P. (2003). Darwin, deception, and facial expression. *Annals of the New York Academy of Sciences, 1000*(1), 205-221.
- Ekman, P., Friesen, W. V., & O'Sullivan, M. (1988). Smiles when lying. *Journal of Personality and Social Psychology, 54*(3), 414-420.
- Krumhuber, E., Manstead, A. S., Cosker, D., Marshall, D., Rosin, P. L., & Kappas, A. (2007). Facial dynamics as indicators of trustworthiness and cooperative behavior. *Emotion, 7*(4), 730-735.
- Leins, D. A., Fisher, R. P., & Ross, S. J. (2013). Exploring liars' strategies for creating deceptive reports. *Legal and Criminological Psychology, 18*(1), 141-151.
- McDaniel, J. D., & Si, M. (2014). Length of smile apex as indicator of faked expression. *Affective Agents, 25-32*.
- O'Sullivan, M. (2005). Emotional intelligence and deception detection: Why most people can't "read" others, but a few can. *Applications of Nonverbal Communication, 215-253*.
- Riggio, R. E., Tucker, J., & Throckmorton, B. (1987). Social skills and deception ability. *Personality and Social Psychology Bulletin, 13*(4), 568-577.
- Ryan, A. (1996). Professional liars. *Social Research, 619-641*.
- Scharlemann, J. P., Eckel, C. C., Kacelnik, A., & Wilson, R. K. (2001). The value of a smile: Game theory with a human face. *Journal of Economic Psychology, 22*(5), 617-640.
- Vrij, A. (2004). Why professionals fail to catch liars and how they can improve. *Legal and Criminological Psychology, 9*(2), 159-181.
- Vrij, A., Granhag, P. A., & Mann, S. (2010). Good liars. *The Journal of Psychiatry & Law, 38*(1-2), 77-98.
- Vrij, A., & Mann, S. (2005). Police use of nonverbal behavior as indicators of deception. *Applications of Nonverbal Communication, ed. RE Riggio & RS Feldman, 63-94*.