Smiling with your eyes: hot or not?

The effects of a Duchenne smile on attractiveness in online dating

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Abstract

Smiling, this emotional expression has attracted much scientific interest concerning its genuine expression. This genuine expression is also known as the Duchenne smile. The opposite of a Duchenne smile is a non-Duchenne smile, which is also referred as a "fake" smile. In this research we conducted 2 studies about these types of smiles and their link with attractiveness, trustworthiness and dating. In Study 1 participants had to rate the attractiveness of people on photographs. This study is conducted to see whether there is a difference between the attractiveness of subjects displaying a Duchenne smile vs. a non-Duchenne smile. In the second study we wanted to investigate the link between the two different types of smile, trustworthiness and attractiveness of people on dating sites because of its rising popularity. We found that the type of smile did not have any influence on how attractive the subject was perceived and therefore this assumption had to be rejected. The type of smile did influence the trustworthiness of the subject: attractive and unattractive subjects with a Duchenne smile were perceived as trust worthier than attractive and unattractive subjects with a non-Duchenne smile. An important finding of Study 2 was that it did not matter for dating a person if a Duchenne smile was displayed. Being attractive made the most difference.

Introduction

"There is a thin line between smile and laughter."

— Santosh Kalwar

"Hardly any other emotional expression has attracted as much scientific interest concerning its genuine expression as smiling" (Quadflieg, Vermeulen, & Rossion, 2013). The researchers Quadflieg, Vermeulen, & Rossion (2013) have noticed that it is quit easy to discover when people show a smile on their faces. In an experiment they showed different pictures of many facial expressions. People from around the world unanimously agreed when seeing a photograph with a smiling face on it (Quadflieg, Vermeulen, & Rossion, 2013). Although selecting a smiling face was pretty easy, discovering the true meaning was not (Quadflieg, Vermeulen, & Rossion, 2013).

In the past years several studies have been dedicated to this facial expression. From gender based studies about smiling (Otta, 1998) to the different positive personality traits of smiling (Beaupre, Cheung, Hess, 2002). Beaupre, Cheung, Hess (2002) also noted that a

smile could have several functions: it signals happiness but it can also be a sign of dominance. Quadflieg, Vermeulen, & Rossion (2013) also found that a smile can have different purposes, both positive and negative: it shows when someone is really happy or they are enjoying themselves (Ekman and Friesen, 1982), but is can also mask sadness or embarrassment (Keltner, 1995).

From al these studies that have been done about smiling, one topic remains popular: the Duchenne smile.

Duchenne vs. non-Duchenne smile

As stated in Quadflieg, Vermeulen, and Rossion (2013): "the Duchenne marker is a facial action characterized by the narrowing of a person's eye aperture through the raising of the cheeks and the lowering of the eye cover fold accompanied by the appearance of wrinkles (''crow's feet'') on the external side of the eyes." Two muscles are involved when a Duchenne smile is showed: the zygomatic major muscle and the Orbicularis oculi muscle. When displaying a Duchenne smile the zygomatic major muscle pulls the corner of the mouth up. The Orbicularis oculi muscle causes wrinkles around the corners of the eye (Beaupre, Cheung, Hess, 2002). The Duchenne marker signals true happiness and it is a marker for enjoyment smiles (Ekman, Frank, & Friesen, 1993).

The opposite of the Duchenne smile is the non- Duchenne smile. This smile only involves he zygomatic major muscle, that is why there is only a movement in the mouth region. These false smiles do not signal true enjoyment but they are rather labeled as *social,* smiles (Ekman, 1989). This smile is often used to show other people their "fake" happiness (Gunnery, Hall & Ruben, 2013)

Figure 1: The left photo depicts a man expressing a non-Duchenne smile. The left a man expressing a Duchenne smile.

On the right side in Figure 1 you can see the Duchenne smile, or the "genuine" smile. Here you can see the wrinkles around the mouth and the eyes, which are caused by the two muscles. This Duchenne smile appears as the result of enjoyment or true positive affect (Ekman & Friesen, 1982). The non-Duchenne smile "deceptive or false smile" is depicted on the left side of Figure 1. Only muscles around the mouth characterize this smile.

Different types of smiles and their influences

It is very interesting to see how much of an impact the Duchenne smile has on people. It influences how people evaluate smiles, but it also plays a huge role in how people judge others (Kappas, Krumhuber, & Manstead, 2007). Many researchers have found evidence that a Duchenne marker shows true enjoyment (Davidson, Ekman, & Friesen, 1990). When making a distinction between the different types of smile that Ekman & Friesen made, it clearly was the Duchenne smile who showed the enjoyment and happiness of the patients felt at that time. One study with a comparable result was the study of Matsumoto (1986), as stated in Davidson, Ekman, & Friesen (1990). Matsumoto (1986) found that patients who were depressed displayed the Duchenne marker more often when giving a discharge interview as compared with patients who gave an admission interview. When it came to other smiles, no difference was seen (Davidson, Ekman, & Friesen, 1990). Another patient versus smile

experiment was done by Steiner (1986), as stated in Davidson, Ekman, & Friesen (1990). He found the Duchenne marker increasing by patients who were feeling better due to psychotherapy. These patients were not only feeling better, but the doctors had also evidence for their improvement. In conclusion, we can say that the Duchenne marker has proven to be helpful for diagnosis and predicting improvement (Bartlett, & Movellan).

In addition, Duchenne smiles were rated positively in the experiment of Johnston, Macrae, & Miles (2010). When asked participants to evaluate subjects displaying enjoyment smiles (Duchenne smiles) and non- enjoyment smiles (non-Duchenne smiles), they rated the enjoyment smile subjects as more positive than those displaying non-enjoyment smiles. They also had higher rates of cooperation with those displaying enjoyment smiles (Johnston, Macrae, & Miles, 2010). The same finding is found in the study of Scharleman, Eckel, Kacelnik and Wilson (2001), which showed an increased trust towards unfamiliar partners in the context of a trust game who were smiling more than partners with a neutral expression. The authors predicate in their study that the Duchenne smile increases the intensity of expression and that it is also linked with positive judgments of trustworthiness. The study of Schmidt et al. (2012) is linked with the previous study: in this study the authors investigated whether the attractiveness of different models and their smiling intensity, neutral, low (fake) or high had consequences on perceived trustworthiness. They found that a genuine smile (increased smile intensity) was correlated with greater trustworthiness. Continued on attractiveness: according to new research, facial expressions such as a smile or frown have a very limited impact on a person's attractiveness (Rijnvis, 2013). In this article we could not find out, whether the author was talking about the Duchenne smile or about the non-Duchenne smile. In my opinion it is important to make that distinction because as we have read, different types of smile (Duchenne and non-Duchenne) can lead to different evaluations of a person.

So, we can conclude that there is as a link between trustworthiness, attractiveness and smile. But is this link positive or negative? On one hand, authors claim that increased smile intensity (genuine smiling) is associated with greater trustworthiness and attractiveness (Schmidt et al, 2012 and Scharleman, Eckel, Kacelnik and Wilson, 2001) and on the other hand other findings describe the opposite (Rijnvis, 2013). Which finding is true? In the next paragraph we will discuss this topic further in the context of online dating, because this is an interesting setting to have a closer look at the topics.

Attractiveness and online dating

Over the past decade, the online dating scene has grown due to its risen popularity (Heilpern, Gawronski, Sritharan, & Wilbur, 2010). The United States on its own has already over 40 million visitors visiting a dating website (Heilpern, Gawronski, Sritharan, & Wilbur, 2010). The reasons why so much people use dating services are mostly because of their work. They have to work more hours, which leads to a decrease of time to meet new people. Other reasons are: increasing mobility and the disappearance of traditional modes of socialization (Frazzetto, 2010). According to Couch & Liamputtong (2008) the profile photograph is a central component of online self-presentation, and one that is critical for relational success. Both men and women are more likely to look at a dating profile that contains a photo than at one that does not (Humphreys 2004, as stated in Bastiaansen, 2014). Another finding about profile pictures is that members whose profiles contain photographs are contacted approximately seven times more often than members whose profiles do not contain photos (Humphreys, 2004). So it is better to put a photo on your page, preferably the most attractive one you have. A reason to put your most attractive photo on a dating site is because communicators direct their attention primarily to attributes such as attractiveness. According to Walther, Anderson & Park (1994) this is explained by social information processing. They state: "the motives of communicators direct people to form impressions about others based on the limited nonverbal and physical cues available via online dating". Putting your most attractive photo on the website could make your dream for a partner come true. This because attractive people are considered to be more desirable dating partners, they gain more popularity with the opposite sex and they succeed better in attracting desirable partners (Singh 2004, as described in Hancock & Toma, 2010). Another finding describes that physical attractiveness was a significant predictor of receiving messages from other users of the site for both men and women (Gawronski, Heilpern, Sritharan, & Wilbur, 2010). Thus, we can conclude that physical attractiveness is an important criterion for mate selection (Hancock & Toma, 2010).

Aim of the Present research

In this research, we conducted two Studies. In Study 1 we presented participants with series of different photographs from persons with a Duchenne smile and persons with a non-Duchenne smile. According to Schmidt et al, 2012 genuine smiles would be associated with greater attractiveness. That is why we formulated the following hypothesis:

Hypothesis 1: participants will evaluate the subjects displaying a genuine smile as more attractive than subjects displaying a fake smile.

Study 1

In Study 1 participants had to rate the attractiveness of people on photographs. This study is conducted to see whether there is a difference between the attractiveness of subjects displaying a Duchenne smile vs. a non-Duchenne smile.

Method

Participants and design

To test the hypothesis "Participants will evaluate the subjects displaying a genuine smile as more attractive than subjects displaying a fake smile" the followed design was used: 2 (smile: Duchenne vs. non-Duchenne) x 2 (attractive vs. not attractive) x 2 gender (male vs. female) between-participants design. Thirty students from Leiden University participated in this study. These participants were randomly assigned to conditions.

Materials and procedure

First we looked for people who were willing to pose with a Duchenne smile and a non-Duchenne smile in front of the camera, as can be seen in figure 2. The pictures were taken at different locations in the Netherlands: Leiden University, Erasmus University in Rotterdam and the city of Rotterdam. We then placed the pictures on an online survey.

Through the online survey, participants were asked to rate the series of photographs on attractiveness.
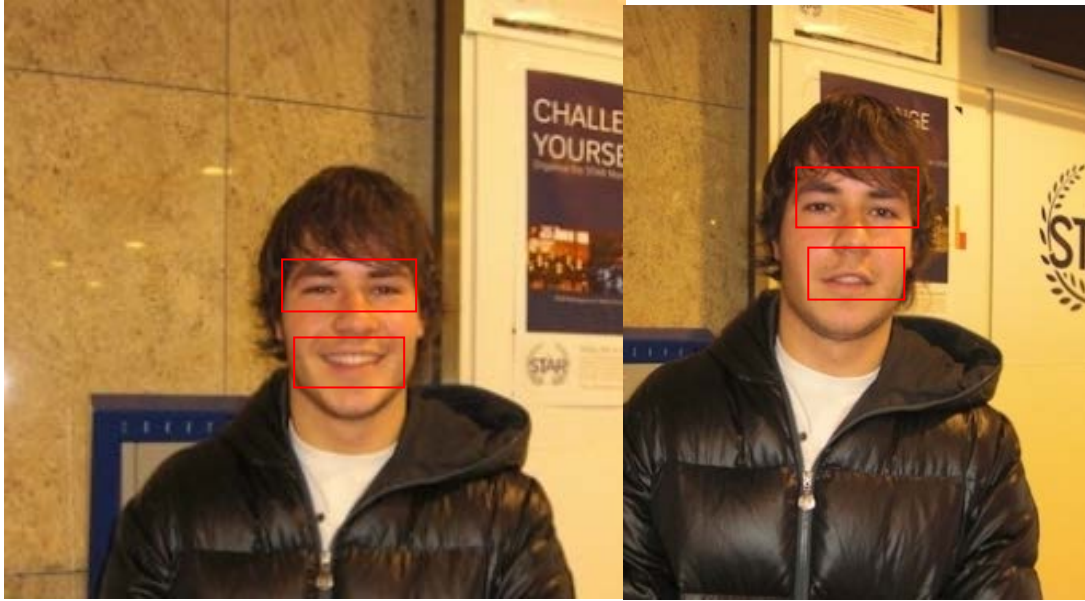
Figure 2. Example of a photograph used in Study 1: on the left, a subject with a Duchenne smile and on the right a person displaying a non-Duchenne smile.

The participants had to give their email so we could send them a link of the study. When the participants decided to participate in the study, they had to fill in the informed consent before continuing with it. Then they had to rate a series of photographs (based on their choice of gender) on attractiveness. In order to rate the photographs, the participant had to fill in how attractive they found this person to be on a seven-point Likert scale (1 = *Not at all attractive*; 7 = *Very attractive*). Afterwards we asked the participants demographic information and informed them about the aim of the study. At the end the participants could also fill in their email address if they wanted to make chance to win 25 euros.

Results

Attractiveness of the subject*[1]

An Analysis of Variance (ANOVA) was carried out on type of smile. This showed us a main effect for attractiveness for an attractive female, $F(1, 10) = 8.42$, $p < .05$. This revealed that attractive female subject displaying a Duchenne smile ($M = 1.17$, $SD = .408$) was perceived as less attractive than the same attractive female subject displaying a non-Duchenne smile ($M =$

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[1] *: The set of photographs (Duchenne/non-Duchenne) of each subject were evaluated as a different variable. The results apply for only 1 set of photographs*

2.50, $SD = 1.05$). There was also a main effect of attractiveness for one specific attractive male subject, $F (1, 15) = 10.37$, $p < .01$. This attractive male subject displaying a non-Duchenne smile *(M = 3.67, SD = .707)* was perceived as less attractive than the same attractive male subject displaying a Duchenne smile ($M = 5.38$, $SD = 1.408$). For all the other sets of photographs, the effect of type of smile was non-significant.

Discussion

In Study 1 participants had to rate the attractiveness of people on photographs. This study was conducted to see whether there is a difference between the attractiveness of subjects displaying a Duchenne smile vs. a non-Duchenne smile. The results showed that the type of smile (Duchenne/non-Duchenne) was only of influence for perceiving the attractiveness of two specific subjects. Based on these findings the hypothesis "Participants will evaluate the subjects displaying a genuine smile as more attractive than subjects displaying a fake smile" cannot be accepted because on most of the photos there was no effect of attractiveness. Moreover, on the two photos that did show an effect of attractiveness, these effects were reversed. An attractive male subject displaying a Duchenne smile was perceived as more attractive than an attractive male subject displaying a non-Duchenne smile, but an attractive female subject displaying a non-Duchenne smile was perceived as more attractive than an attractive female subject displaying a Duchenne smile. Due to insufficient support for hypothesis 1 this hypothesis has to be rejected.

Study 2

In Study 1 participants had to rate the attractiveness of people on photographs. In Study 2 we wanted to change the question of the first hypothesis a little bit. In the first experiment we analyzed whether participants would rate subjects with a Duchenne smile as more attractive than subjects displaying a non-Duchenne smile. In this study we wanted to investigate whether participants would evaluate attractive subjects displaying a genuine smile as more positive than attractive subjects displaying a fake smile.

In this study we looked also beyond attractiveness and investigated to what extent the different types of smiles determine whether people want to date with the person on the

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photograph, whether they are willing to have a relationship with them and whether they find them trustworthy. We expected that participants would evaluate attractive subjects displaying a Duchenne smile as trust worthier than subjects displaying a non-Duchenne smile (hypothesis 2) because Increased smile intensity (genuine smiling) was associated with greater trustworthiness and attractiveness (Schmidt et al, 2012). We also expected that participants were more willing to date attractive subjects with a Duchenne smile than subjects with a non-Duchenne smile (hypothesis 3a). This expectation is based on the fact that good-looking people have an advantage over non-attractive people because they are physical more attractive. That is why these people are considered more desirable dating partners (Gangestad Singh, 2004 as described in Hancock & Toma, 2010). The fact that Duchenne targets appear to be rated more positively across various dimensions of social relevance made us formulate the hypothesis in this way (Johnston, Macrae, & Miles, 2010). And at least we would expect that participants were more willing to have a relationship with attractive subjects displaying a Duchenne smile than subjects with a non-Duchenne smile (hypothesis 3b). If hypothesis 2 is right, it means that people with a Duchenne smile are seen as trustworthy. We think that people rather would want a relationship with someone who they can trust than with someone who is not trustworthy.

To test these hypothesis we created dating profiles on the internet were people expressed Duchenne or non-Duchenne smiles, and asked participants to judge the person on the photograph on different aspect: Attractiveness of the subject. Trustworthiness, Paid attention to the advertisement, Willingness to date, Willingness to have a relationship, Attraction, Not attracted, Friendliness, Trust in advertisement.

Method

Participants and design

In Study 2, we investigated whether participants evaluated attractive subjects displaying a genuine smile as more positive than attractive subjects displaying a fake smile. We also wanted to know whether participants evaluated subjects displaying a Duchenne smile as trust worthier than they evaluated subjects displaying a non-Duchenne smile.

To test the hypothesis "Participants will evaluate attractive subjects displaying a genuine smile more positively than attractive subjects displaying a fake smile" and the hypothesis "Participants will evaluate the subjects displaying a Duchenne smile as more trustworthy than subjects displaying a non-Duchenne smile" the followed design was used: A 2 (Duchenne vs.

non-Duchenne) x 2 (Attractive vs. non-Attractive) x 2 (gender: male vs. female) between participants design. The participants were randomly assigned to 8 conditions. Most of the participants were from Leiden University.

Materials and procedure

The procedure of this study was not similar to the procedure of Study 1. In this study, participants were presented with a simulated online dating profile instead of some pictures, as can be seen in figure 3. On the dating profile, you could see a picture of an attractive/ non-attractive man or a woman displaying a Duchenne smile or a non-Duchenne smile. Beside the photo, there was a column with information about the person on the picture, such as: name, age, status, hobby, a text about themselves and the choice of gender. The participants had to read a dating profile and fill in some questions. All the questions were on a seven-point Likert scale (1 = *Not at all*; 7 = *Very much*). The questions were: "How attractive do you find this person?, " How attracted are you to this person?, "How much do you trust the advertisement?", " Do you find this person friendly?", " Do you find this person trustworthy?", "How much are you willing to date the person?" and how much are you willing to engage in a relationship with this person?"

Afterwards we asked the participants demographic information and informed them about the aim of the study. At the end the participants could also fill in their email addresses if they wanted to make chance to win 25 euros.
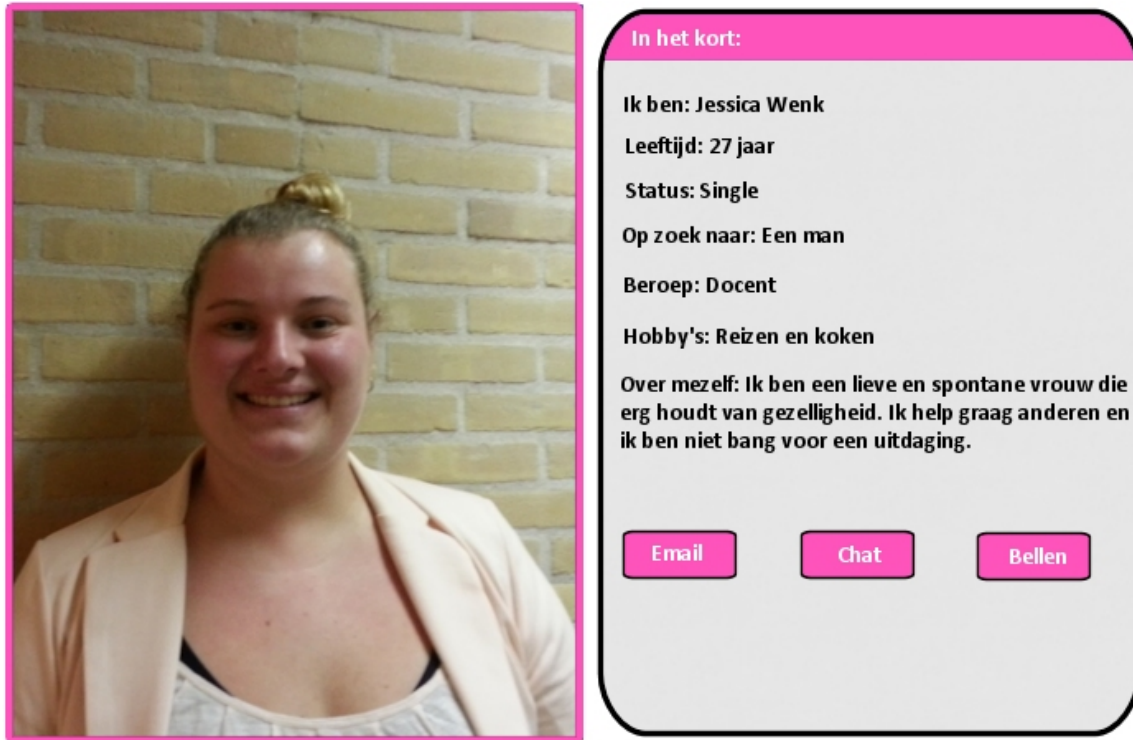
Figure 3. Example of an online dating profile used in Study 2.

Results Study 2

Attractiveness of the subject.

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of attractiveness of the subject. The main effect of attractiveness of the subject yielded an F ratio of $F (1, 154) = 28.00$, $p < .001$, $\eta^2 = .15$. Looking further, we found that unattractive subjects were perceived as less attractive (M = 2.53, SD = 1.23) than attractive subjects (M = 3.81, SD = 1.70). However, the perceived attractiveness of the subject was not influenced by the type of smile, $p = .96$. Looking at the interaction effect between attractiveness and type of smile, we conclude that it was significant: $F (1,154) = 8.31$, $p < .05$, $\eta^2 = .05$. Post hoc LSD indicated that attractive males showing a non-Duchenne smile were perceived as less attractive (M = 3.30, SD = 1.53) than attractive males displaying a Duchenne smile (M = 4.44, SD = 1.78. When looking to the females we found that unattractive females displaying a Duchenne smile (M = 1.93, SD = .70) were perceived as less attractive than attractive females displaying a Duchenne smile (M = 3.20, SD = 1.48).

Trustworthiness

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of trustworthiness. The main effect of attractiveness of the subject yielded an F ratio of $F (1, 154) = 6.73$, $p < .05$, $\eta^2 = .04$. A main effect was also found for type of smile, $F (1,154) = 4.16$, $p < .05$, $\eta^2 = .03$, indicating that attractive subjects displaying a Duchenne smile (($M = 4.83$, $SD = 1.34$) were perceived as more trustworthy than attractive subjects displaying a non-Duchenne smile ($M = 4.33$, $SD = 1.30$). However, the interaction effect was non-significant, $F (1, 154) = .33$, $p > .05$, so we can not say much about the influence of attractiveness and the subject's smile together on trustworthiness.

Paid attention to the advertisement

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of paid attention to the advertisement. The main effect of attractiveness of the subject yielded an F ratio of $F (1, 154) = 11.82$, $p < .01$, $\eta^2 = .07$, indicating that participants were more likely to pay attention to the advertisement when there was a picture of an attractive subject ($M = 2.93$, $SD = 1.74$) comparing with an unattractive subject ($M = 2.08$, $SD = 1.17$). Post hoc analysis indicated that there were no differences between the types of smile and there influence on the paid attention of the advertisement, $p = .865$.

Willingness to date

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of willingness to date. The main effect of attractiveness of the subject yielded an F ratio of, $F (1, 154) = 5.74$, $p < .05$, $\eta^2 = .04$, indicating that participants were more willing to date an attractive subject ($M = 3.30$, $SD = 1.87$) than an unattractive subject ($M = 2.62$, $SD = 1.45$). However, the main effect of subject's smile was non-significant, indicating that the type of smile did not have any influence in how much participants were willing to date the subject, $p = .677$

Willingness to have a relationship

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of willingness to have a relationship. The main effect of attractiveness of the subject showed an F ratio of, $F(1, 154) = 4.88$, $p < .05$, $\eta^2 = .03$. This means that that people were more willing to have a relationship with an attractive subject (M = 2.70, SD = 1.56) than with an unattractive subject (M = 2.19, SD = 1.22). In contrast to attractiveness the type of smile did not have any influence in willingness to have a relationship with the subject, $p = .913$

Attraction

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of attraction. The main effect of attractiveness of the subject yielded an F ratio of $F(1, 154) = 26.88$, $p < .001$, $\eta^2 = .15$, indicating that participants were more attracted to attractive subjects (M = 3.05, SD = 1.66) than to unattractive subjects (M = 1.92, SD = .93). The main effect of type of smile is non-significant. However the interaction effect was significant, $F(1,154) = 8.16$, $p < .01$, $\eta^2 = .05$. Looking further into the interaction effects, Post hoc LSD tests showed that people were more attracted to an attractive subject when they displayed a Duchenne smile (M = 3.48, SD = 1.85) than when they displayed a non-Duchenne smile (M = 2.62, SD = 1.34). Furthermore, the attraction towards attractive subjects displaying a Duchenne smile was higher (M = 3.48, SD = 1.85), in contrast with attractive subjects displaying a non-Duchenne smile (M = 2.62, SD = 1.34) or unattractive subjects (M = 1.92, SD = .93).

Not attracted

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of attractiveness. The analysis was significant, $F(1, 154) = 13.90$, $p < .001$, which indicated a main effect of attractiveness. The results show that participants were more attracted to attractive subjects than (M = 4.19, SD = 1.94) to unattractive subjects (M = 5.24, SD = 1.64). Furthermore, we found no influence of type of smile in how non-attracted participants were to the subjects, $p = .245$.

Friendliness

Friendliness scores were subjected to a 2x2x2 analysis of variance having two levels of attractiveness (attractive, unattractive), two levels of subject's smile (Duchenne, non-Duchenne) and two levels of gender (male, female). The main effect of smile and the interaction effect were statistically significant at the significance level of .05. Attractiveness did not have any influence in how friendly the subject was perceived, $p = .613$ The main effect of smile yielded an F ratio of, $F (1, 154) = 18.64$, $p < .001$, $\eta^2 = .11$, indicating that subjects with a Duchenne smile in the attractive condition (M = 5.93, SD = .92) as well as in the unattractive condition (M = 5.66, SD = .69) were perceived as more friendly than subjects displaying a non-Duchenne smile in the attractive condition (M = 4.90, SD = 1.20) as well as in the unattractive condition (M = 5.33, SD = 1.02). The interaction between attractiveness and type of smile was, $F (1,154) = 4.99$, $p < .05$, $\eta^2 = .03$.

Post hoc LSD tests showed that attractive males displaying a Duchenne smile (M = 6.09, SD = .86) were seen as more friendly than attractive males displaying a non-Duchenne smile (M = 4.87, SD = 1.04) and more friendly than unattractive males displaying a non-Duchenne smile (M = 5.39, SD = 1.07). Furthermore, attractive males displaying a non-Duchenne smile (M = 4.87, SD = 1.04) were seen as less friendly than non-attractive subjects displaying a Duchenne smile (M = 5.73, SD = .72)

Trust in advertisement

A 2 (subject's smile) x 2 (attractiveness of the subject) x 2 (gender: Male vs. Female) ANOVA was calculated on participants' ratings of trust in advertisement. The main effect of attractiveness of the subject yielded an F ratio of $F (1, 154) = 4.31$, $p < .05$, $\eta^2 = .03$, indicating that seeing unattractive subjects caused people to trust the advertisement more (M = 4.78, SD = 1.24) than seeing attractive subjects (M = 4.30, SD = 1.50). The main effect of the subject's smile was non- significant, which indicated that the type of smile did not have any influence in how much participants trusted the advertisement, $p = .21$

Discussion

This study was designed to investigate to what extent the different types of smiles determine whether people want to date with the person on the photograph, whether they are willing to have a relationship with them and whether they find them trustworthy. We also wanted to know whether participants would evaluate attractive subjects displaying a genuine smile more positively than they would evaluate attractive subjects displaying a fake smile.

As already said, it was assumed that participants would evaluate subjects displaying a genuine smile more attractive than subjects displaying a fake smile (hypothesis 1). We found that the type of smile did not have any influence on how attractive the subject was perceived and therefore this assumption has to be rejected.

The results of Study 2 indicate that hypothesis 2 "Participants will evaluate attractive subjects displaying a Duchenne smile as trust worthier than subjects displaying a non-Duchenne smile" could be confirmed. The type of smile did influence the trustworthiness of the subject. The findings indeed show us that attractive and unattractive subjects with a Duchenne smile were perceived as trust worthier than attractive and unattractive subjects with a non-Duchenne smile.

Hypothesis 3a "Participants are more willing to date attractive subjects with a Duchenne smile than subjects with a non-Duchenne smile" and hypothesis 3b "Participants are more willing to have a relationship with attractive subjects displaying a Duchenne smile than subjects with a non-Duchenne smile." are not confirmed because these two variables were only influenced by attractiveness of the subject or an interaction between attractiveness and the type of smile. This means that the participants were more willing to date or to engage in a relationship when the subject was attractive rather than unattractive. Displaying a Duchenne or non-Duchenne smile did not matter for willingness to date or engage in a relationship. We also did not find an effect of the type of smile (Duchenne vs. non-Duchenne smile) on participants' attraction to the subject, participant's trust in the advertisement and paid attention to the advertisement.

General Discussion

These two studies are conducted to gain more insight about the link between the different types of smile (the Duchenne smile and the non-Duchenne smile) and the attractiveness of people. On one hand, authors claim that increased smile intensity (genuine smiling: Duchenne smile) is associated with greater trustworthiness and attractiveness (Schmidt et al, 2012 and Scharleman, Eckel, Kacelnik and Wilson, 2001) and on the other hand other findings describe the opposite. To verify these findings we conducted the first experiment. In this experiment we expected that participants would evaluate the subjects displaying a genuine smile as more attractive than subjects displaying a fake smile. Trustworthiness was exanimated in the second study. The results showed that the type of smile (Duchenne/non-Duchenne) was only of influence for perceiving the attractiveness of two specific subjects. Based on these findings the hypothesis "Participants will evaluate the subjects displaying a genuine smile as more attractive than subjects displaying a fake smile" cannot be accepted because on most of the photos there were no effects of attractiveness. Moreover, on the two photos that did show an effect of attractiveness, these effects were reversed. An attractive male subject displaying a Duchenne smile was perceived as more attractive than an attractive male subject displaying a non-Duchenne smile, but an attractive female subject displaying a non-Duchenne smile was perceived as more attractive than an attractive female subject displaying a Duchenne smile. This finding is new and we would recommend investigating where this difference is coming from. Due to insufficient support for hypothesis 1, this hypothesis has to be rejected.

In the second study we wanted to investigate the link between the different types of smile (the Duchenne smile and the non-Duchenne smile) and the attractiveness of people in particular on dating sites because of the rising popularity and the fact that there has not been conducted an experiment regarding types of smiles linked with attractiveness on dating sites. As mentioned before online dating has dramatically risen in popularity with over 40 million unique visitors to dating websites in the United States (Heilpern, Gawronski, Sritharan, & Wilbur, 2010) and more than 800 different websites currently in existence women (Gawronski, Heilpern, Sritharan, & Wilbur, 2010). Therefore, it is important to figure out what type of photograph will work in your favor when you put it on a dating site to "promote" yourself. To take this experiment to the next level, so we could make a contribution to other existing studies regarding dating, we looked beyond the link between the type of smile and attractiveness. We investigated to what extent the different types of smiles determine whether people want to date with the person on the photograph, whether they are willing to have a

relationship with them and whether they find them trustworthy. In this study we expected that participants would evaluate attractive subjects displaying a Duchenne smile as trust worthier than subjects displaying a non-Duchenne smile (hypothesis 2). The results of Study 2 indicate this hypothesis could be confirmed. The type of smile did influence the trustworthiness of the subject. The findings indeed showed us that attractive and unattractive subjects with a Duchenne smile were perceived as trust worthier than attractive and unattractive subjects with a non-Duchenne smile. The same finding has been found in Schmidt et al, 2012: in the study participants rated the expressivity of neutral, low intensity, and high intensity smiling images of 45 women models. These images were also presented to a second group of participants who rated trustworthiness. Repeated measures analysis of covariance of the effects of attractiveness and manipulated smile intensity on trustworthiness indicated a main effect for smile intensity: increased smile intensity was associated with greater trustworthiness. (Schmidt et al, 2012). Our study differs from the study of Schmidt et al, 2012 in the type of smile. We wanted to take a look to the non-Duchenne smile because this was not examined. We can also make the same conclusion as Schmidt et al, 2012: there is an additional contribution of facial expression in creating social impressions of trustworthiness.

The other two hypotheses that we formulated in this study, "Participants are more willing to date attractive subjects with a Duchenne smile than subjects with a non-Duchenne smile" (hypothesis 3a) and "Participants are more willing to have a relationship with attractive subjects displaying a Duchenne smile than subjects with a non-Duchenne smile" (hypothesis 3b), are not confirmed because these two variables were only influenced by attractiveness of the subject or an interaction between attractiveness and the type of smile. This means that the participants were more willing to date or to engage in a relationship when the subject was attractive rather than unattractive. This in in line with the findings of Singh (2004) as described in Hancock & Toma (2010). These researchers describe that attractive people are considered more desirable dating partners. The conclusion of Hancock & Toma (2010) sums up our findings: "Thus we can conclude that physical attractiveness is an important criterion for mate selection Hancock & Toma (2010)." Displaying a Duchenne or non-Duchenne smile did not matter for willingness to date or engage in a relationship. So, we can conclude that the appearance on a photo does matter if you are looking for a date or if you want to engage in a relationship. The type of smile on the other hand makes no difference in this matter. The results found by Morrison, Morris & Bard (2013) could have probably an explanation for this: in their study they found that the structure of the face determines how attractive the person would be perceived. Since the hard tissues of the face are unchangeable,

people may still be able to perceive facial structure whatever expression the face is displaying, and still make attractiveness judgments based on structural cues. A contribution is made to this study since the researchers did a research on smile, but not on type of smile. Now we can say that it also applies on a non-Duchenne smile. We also did not find an effect of the type of smile (Duchenne vs. non-Duchenne smile) on participants' attraction to the subject, participant's trust in the advertisement and paid attention to the advertisement.

Theoretical Implication

In this study there were a few theoretical implications, which I want to point out. First of all, in Study 1 only thirty participants participated. This is a very low number of participants if you look to Study 2 where hundred participants participated. The amount of participants per condition was also not equal, which may have caused that the hypothesis of Study 1 was rejected. A recommendation for an eventually follow up would be to search for more participants. Higher sample size allows the researcher to increase the significance level of the findings, since the confidence of the result are likely to increase with a higher sample size. The larger the sample size, the more accurately it is expected to mirror the behavior of the whole group (Kalla, 2009)

Second, this research was based on an online survey. The problem with online surveys is that they are uncontrollable. It could be that the participants were influenced while making the online survey. Due to noises on the background and time pressure, it could have been that participants were not able to concentrate on the survey and just filled in the question so they could go further with other stuff. For an online survey in the future it is recommended to use as much standardized tools as possible.

Third, the photographs used in both studies were not validated. The photos of the subjects varied very much: the photos were taken by us in different locations, the subjects had different clothes on, some of the subjects smiled more then others and so on. Beside the differences in the photographs, there was another limitation. We only had ten photographs in Study 1. This, together with the inconsistency of the photos could have been one of the causes why the results of Study 1 were insignificant.

Fourth, in these two studies the subjects and the participants were mostly students. My recommendation is to choose participants more randomly so we can generalize the results.

Conclusion

Taking all the results into account, we can say that there is almost no link between the types of smile (Duchenne vs. non-Duchenne) somebody displays and how attractive we find that person. What we did find was the fact that the type of smile did influence the trustworthiness of the subject, irrespectively their attractiveness. The importance of this result lies in the fact that we found this outcome in a dating setting; there have been other studies implying the same result (Schmidt et al, 2012), but this result has never been found in such a setting. We therefore can say that this finding is quit robust. This outcome is an advantage for people trying their luck on a dating site, but it's also an advantage on daily basis. When applying for a job for example, employers are looking for employees they can trust. In social settings, when interacting with people it is important to know if you can trust people. A major finding in this study is the fact that we thought that displaying a Duchenne smile would benefit a person on a dating site, but we found nothing like this. The main thing what people take into account when deciding whether to date someone or not is the attractiveness of a person. Displaying a Duchenne smile makes not a significant difference. Further research is needed, because this is one of the first studies implementing both types of smiles and a field what is never been examined. The first stepping-stone into this field is set.

In the introduction we asked the question whether the link between trustworthiness, attractiveness and smile is positive or negative? For now, we can say that the link between trustworthiness and smile is positive. We also found that a smile in particular is not much of an influence when rating the attractiveness of a person. This link is still not very clear and further investigation is needed. Perhaps the bone structure of the face can give us more clarity in this matter?

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