**Master's thesis** presented to the Department of Psychology of the University of Basel for the degree of Master of Science in Psychology

Preferences and inferences of personality traits following ostracism

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Declaration of scientific integrity

The author hereby declares that she/he has read and fully adhered the [Code for Good Practice in Research of the University of Basel](https://www.unibas.ch/dam/jcr:4439d7b2-f71c-457c-837d-44938163ce02/Code%20of%20good%20practice%20in%20research.pdf).

# Abstract

# Keywords

# 1. Introduction

In 2018, the United Kingdom appointed a Minister for Loneliness in response to ongoing new evidence on loneliness and health risks (Yeginsu, 2018). Previous research has found that loneliness has similar effects on our health as excessive smoking or drinking (Holt-Lunstad et al., 2010) and increases the risk of Alzheimer's disease (Holwerda et al., 2014), cancer, and cardiovascular disease (Hawkley & Cacioppo, 2003). Thus, this issue is of great interest to our society. One form of loneliness that people experience is exclusion, amongst others in the form of ostracism (K. D. Williams, 2006).

Ostracism – defined in the Oxford English Dictionary as the exclusion from a society or group (Stevenson, 2010) – has been subject to an increasing amount of research in the last two decades (for a review, see K. D. Williams & Nida, 2011). The feeling of being excluded and ignored is known by everyone. Whether it be the exclusion from a game or a conversation. Most often, these experiences can be overcome rather quickly (K. D. Williams, 2009). But what helps us in doing so? And are their strategies or abilities we use in these situations? Within the body of ostracism research lays a topic that investigates the influence of ostracism on an affected individuals' perception of the world and other people. This is important because a changed perception also influences and changes a person's actions. By studying these changes, we can, on the one hand, make better predictions about ostracized individuals and, on the other hand, better help them with adapted interventions.

## **Theory**

The word ostracism originated in ancient Greece, where it referred to the expulsion of a person who had fallen out of favor in society. Today, it is used primarily to refer to the exclusion of a person from a group or population, where the ignoring of that person by others is crucial. When ostracism became popular as a research topic in the nineteen eighties, most studies focused on the process of social exclusion itself and the motivations of the perpetrators (e.g. Alexander, 1986; Gruter & Masters, 1986; Hirshleifer & Rasmusen, 1989; Lancaster, 1986). It was not until the end of the 20th century that the victim's perspective came to the fore, and the psychological and behavioral responses of victims of ostracism were gradually illuminated.

**1.1.1. Perceptional differences in ostracized individuals.** Humans have a universal need to belong, which is satisfied through frequent, non-aversive social interactions (Baumeister & Leary, 1995). When ostracism is experienced, the satisfaction of this need is reduced (K. D. Williams, 2009). The theory of the social monitoring system states that socially excluded people are particularly sensitive to social cues when their need to belong is thwarted (Gardner et al., 2000). This would support their urge and resulting attempts to reintegrate through social interaction to satisfy their need to belong (Gardner et al., 2005). And indeed, it has been found that social exclusion has a beneficial impact on the ability to identify facial expressions (Pickett et al., 2004), encode social cues (Kawamoto et al., 2014), concentrate on them (DeWall et al., 2009; Golubickis et al., 2018) and judge the authenticity of smiles (Bernstein et al., 2008).

But to restore the satisfaction of the need to belong, an important requirement is an interaction partner who is approachable and open for social interaction. One aspect that could make a good interaction partner are his personality traits, which, among other things, indicate his social preferences and openness towards new experiences. Since ostracism leads to an altered perception of social and facial cues (Kawamoto et al., 2014), ostracism could also lead to a more salient perception of typical personality traits inferred from a face. Which personality traits might ostracized individuals prefer in a potential interaction partner when seeking reintegration?

**1.1.2. Ostracism and facially communicated personality traits.** In a 2020 study, a cascade of artificial neural networks was trained to predict self-reported Big Five scores based on photos alone. In the end, the network was able to predict Big Five scores with significant accuracy (Kachur et al., 2020). Thus, there appear to be indicators of personality traits in human face that are at least partially indicative of personality. The question is whether people can perceive these indicators.

And indeed, this seems to be the case, as shown in a study in which participants who were given a description of a person with a low or high trait expression of agreeableness or conscientiousness showed a higher intention to ostracize the described person with a lower trait expression (Rudert et al., 2021).Similar findings have been made previously, showing that individuals can infer personality traits of the person they are seeing relatively accurately when only facial features are available (Ambady et al., 2000). A study at the University of Basel concluded that participants in two validation studies reliably perceived both Big Two and Big Five traits from facial images and were able to differentiate between these different traits (Walker & Vetter, 2016).

Individuals also show preferences for certain facially communicated personality traits. When examining general preferences for such personality traits, subjects in one study showed a preference for higher scores in extraversion and agreeableness and lower scores in neuroticism and conscientiousness (Sacco & Brown, 2018). No general preference emerged for openness; rather, the subject's openness partially predicted his preference for openness in other faces.

The combination of exclusion and preferences for facially communicated personality traits has not been the subject of previous research. However, one study measured subjects' need to belong without prior manipulation and found that a low need to belong was associated with a preference for extraverted faces (Brown & Sacco, 2017).

Furthermore, social exclusion increased categorical perception of social information (Sacco et al., 2011). Participants who had previously experienced social exclusion were better at discriminating between subtle angry and happy faces, but performed worse when discriminating between two happy faces, suggesting an increased yet more homogeneous perception of categories as a result of social exclusion. Accordingly, personality traits inferred through facial cues may also be judged more extremely by socially excluded individuals.

Taken together, these results suggest that personality may be an important social cue when need to belong is low. However, it remains unclear whether individuals with a low need to belong share additional preferences for faces that are indicative of certain personality traits compared to individuals with a high need to belong. Furthermore, it is unclear whether they perceive these traits as more extreme than individuals with a high need to belong.

**1.1.3. The Basel Face Database.** To study differences in facially communicated personality traits, pairs of faces, each with high and low trait expression, are required. The Basel face database (Walker et al., 2018) provides exactly such photographs, in which the individuals depicted are perceived as having either high or low expression of each Big Five personality trait. This resource allows to test the preferences of ostracized individuals for the Big Five personality traits and their accuracy in inferring these traits from prototypical photographs.

In previous research (Brown & Sacco, 2017), a preference for extraverted faces has been found to be related to a low need to belong. This study aims at replicating this finding as well as extending it by examining whether excluded (as opposed to included) individuals hold preferences for agreeableness, conscientiousness, neuroticism, and openness. Hence, this study will include photographs with all Big Five personality traits and analyze the preferences of socially excluded for these traits as well as their inference from manipulated photographs.

## 1.2. Hypotheses

Based on the theory outlined above, six hypotheses are stated. The first five address preferences of socially excluded for faces of others with respect to personality traits. Foreach of the Big Five traits a prediction is made about the preference differences between included and excluded participants. The first four predictions are based on the findings of Sacco & Brown (2018), who found a general preference for more extraverted, more agreeable, less conscientious and less neurotic faces. I expect socially excluded individuals to show these preferences as well, but since they perceive social information as more categorical (Sacco et al., 2011), they should perceive preexisting preferences as more pronounced. Only for openness no clear preference was found. Therefore, a prediction is made here: For the socially excluded, I expect a preference for more open faces, as this could convey a signal of responsiveness and, theoretically, people with high levels of openness should be more open to new interactions. They are also more resilient to stress (P. G. Williams et al., 2009), which could signal calmness to excluded individuals.

For conscientiousness, a similar prediction is made in that socially excluded individuals will have a stronger preference for more conscientious faces since they may convey more stability and less risk taking.

The resulting hypothesis is split up into five similar hypotheses that are as follows:

*H1A: On average, socially excluded (vs. included) individuals prefer faces manipulated to display high (vs. low) extraversion by choosing these extremes more often when choosing a potential interaction partner.*

*H1B: On average, socially excluded (vs. included) individuals prefer faces manipulated to display high (vs. low) agreeableness by choosing these extremes more often when choosing a potential interaction partner.*

*H1C: On average, socially excluded (vs. included) individuals prefer faces manipulated to display high (vs. low) openness by choosing these extremes more often when choosing a potential interaction partner.*

*H1D: On average, socially excluded (vs. included) individuals prefer faces manipulated to display low (vs. high) conscientiousness by choosing these extremes more often when choosing a potential interaction partner.*

*H1E: On average, socially excluded (vs. included) individuals prefer faces manipulated to display low (vs. high) neuroticism by choosing these extremes more often when choosing a potential interaction partner.*

Further, I expect socially excluded individuals to make more extreme ratings when judging pictures of individuals with respect to a perceived personality trait. Because the trait expressions on the presented faces are meant to be either high or low, excluded participants may make their ratings more based on categorical perceptions of social information. This argument is further supported by findings that individuals with a thwarted need to belong have a more categorical perception of social information (Sacco et al., 2011). A greater need to belong was also associated with more precision in identifying facial expressions (Pickett et al., 2004), encoding social cues (Kawamoto et al., 2014), concentrating on them (DeWall et al., 2009; Golubickis et al., 2018) and judging the authenticity of smiles (Bernstein et al., 2008).

The second hypothesis is as follows:

*H2: Socially excluded (vs. included) individuals make more extreme personality ratings of the manipulated pictures.*

All measurement instruments to measure the necessary variables are mentioned and explained in the method section to guarantee full transparency.

# 2. Methods

## 2.1. Participants

The required sample size was calculated using G\*Power (Faul et al., 2007) using a medium effect size (*d* = 0.5). A t-test with independent means, given α = 0.05, power 1-β = 0.8 yielded a sample size of 102 participants in total. To ensure that the final sample size will have enough participants, the sample size is slightly increased (~10%, *N* = 114, 57 in each condition).

Participants were recruited on the website prolific. For their participation they received … $ per hour. The average process time was 11 minutes and 45 seconds, which approximates to .. $ per participant. Of the final 104 participants, 74% were female (male = 26, female = 77, other = 1) and the average age was 25.45 years, ranging from 18 to 52 with an SD of 7.53. A detailed description of the selection process and criteria is given in the results section.

## 2.2. Design and Procedure

To compare the effects of social exclusion on preferences for personality traits and their inference from photographs, participants will be randomly assigned to one of two conditions: inclusion and exclusion. Both groups are asked for their consent and introduced to the study. Then, they play Cyberball, an online ball-tossing game where participants are either included or excluded (K. D. Williams & Jarvis, 2006). Participants in the inclusion condition get to interact with the other players by receiving an equal share of ball tosses (around 30%), while the exclusion group experiences social exclusion by the other players (they receive the ball only twice in the beginning). Right after, they will report their need satisfaction of the four basic needs: belonging, self-esteem, control, and meaningful existence (K. D. Williams, 2009). Need satisfaction will be measured using a short Need Threat Scale (Rudert & Greifeneder, 2016). It indicates whether the ostracism manipulation was successful.

Thereafter, participants will be presented with 40 different pairs of photographs, each pair displaying the same person. Importantly, the pairs of photographs are manipulated so that they display the same person once enhanced and one reduced on the personality trait of interest. Participants will be asked to choose the picture of the person that they would prefer to interact with. Participants will make in total 40 decisions (40 pairs for five personality traits, resulting in eight pairs per trait). Afterwards, they are presented with 20 individual photographs, each showing a face with either enhanced or reduced characteristics of one of the big five traits. They are asked to rate the depicted individuals on the photograph with respect to the manipulated personality trait (e.g., *not at all neurotic – extremely neurotic*) using a 7-point Likert scale. Participants will make these decisions for 20 faces. The photos presented in both tasks will be shown in a randomized order. The preference task is chosen to come first because there is no mention of personality traits in it, which could otherwise influence the answers in the following task.

Finally, participants answer a short questionnaire with 10 items to record their own trait expressions of the Big Five (Rammstedt & John, 2007). This offers the option to investigate whether their own traits have an influence on their preferences for facially communicated traits in an exploratory manner, since this association has already been found in a previous study (Sacco & Brown, 2018).

## 2.3. Statistical Analysis

To compare preferences for a high or low trait expression among included and excluded individuals, the mean preference for both groups is calculated as a number between 0 and 1 (each participant choosing one of two photos representing the values 0 and 1, respectively). A mean of 0.5 would therefore mean that a participant is indifferent between low or high manipulation on the according trait. With this mean value, an independent t-test can be calculated for each trait. The Holm-Bonferroni method is used to control for family-wise error rates following the calculations of t-tests. Afterwards, the moderating effect of participants’ own personality traits will be controlled for with a linear regression model.

To compare the personality inferences of the exclusion and the inclusion group, the items displaying a low trait expression are first inverted to be included into the analysis of the high trait expression items. Then, an independent t-test is conducted for every trait rating to calculate if the difference in the average rating of both groups is significant.

Additionally, we first run an ANOVA including one factor for the direction of trait manipulation to account for differences in the direction of trait expression.

Because the preference for certain personality traits may depend on participants’ own expression of that personality trait, participants additionally answer a short questionnaire with 10 items assessing their own trait expressions of the Big Five (Rammstedt & John, 2007). The potential moderating effect of the participants’ personality will be controlled for with a linear regression model.

# 3. Results

The online survey was conducted on July 28 and the set number of participants was reached on the same day. Of the initial 131 participants, who attempted the online study survey that day, 17 refused consent. Furthermore, seven participants failed the attention check, two gave unrealistic answers about their experience with the Cyberball game (too many or too few throws), and one advised against the use of his data without giving a specific reason. This resulted in a total number of 104 participants whose results were included in the analysis. Of these 104 participants, 50 were in the inclusion condition and 54 were in the exclusion condition. The exclusion condition was the experimental group and the included condition served as the control group.

To measure the effectiveness of Cyberball in inducing feelings of social exclusion in the experimental group, all need threat items were summed and an average score was calculated for each participant. With this new variable, a t-test was conducted, which confirmed the effectiveness of Cyberball. Participants in the experimental group (*M* = 2.67, *SD* = 2.06) showed significantly lower need threat scores than participants in the control group (*M* = 6.28, *SD* = 1.68), *t*(100) = -9.85, *p* < .001, .

First, the mean preference was calculated for each Big Five trait and both groups, included and excluded, as a number between zero and one, whereby zero stands for the low trait expression image and one for the high trait expression image. The resulting means as well as standard deviations are stated in Table 1 below.

Table 1 summarizes the first part of the analysis, in which the preferences of the included group were compared with those of the excluded group for each Big Five trait. An independent t-test was chosen for this purpose because the data were normally distributed across all conditions. Unfortunately, none of the t-test analyses yielded a significant result. The lowest p-value was obtained for the personality trait neuroticism, where the comparison between the included (M = 0.398, SD = 0.227) and excluded group (M = 0.356, SD = 0.201) yielded the results closest to significance, t(98) = -0.97, p = 0.333.

Correction of the p-values using the Holm-Bonferroni method was neither necessary, since the results were far from significant, nor would it have resulted in different figures.

Table 1

*Descriptive and inferential statistics results of the preference task analyses.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Trait** | **Condition** | | **Effect size (Cohen’s *d*)** | **95% Confidence Interval** | **Independent t-test** |
| **Included** | **Excluded** |
| Agreeableness | *M* = 0.75,  *SD* = 0.19 | *M* = 0.78,  *SD* = 0.20 | *d* = 0.12 | -0.051,  0.097 | *t*(102) = 0.61,  *p* = .54 |
| Conscientiousness | *M* = 0.50,  *SD* = 0.23 | *M* = 0.52,  *SD* = 0.20 | *d* = 0.11 | -0.060,  0.106 | *t*(98) = 0.56,  *p* = .58 |
| Extraversion | *M* = 0.73,  *SD* = 0.24 | *M* = 0.76,  *SD* = 0.17 | *d* = 0.16 | -0.048,  0.116 | *t*(89) = 0.83,  *p* = .41 |
| Neuroticism | *M* = 0.40,  *SD* = 0.23 | *M* = 0.36,  *SD* = 0.20 | *d* = 0.19 | -0.125,  0.043 | *t*(98) = -0.97,  *p* = .33 |
| Openness | *M* = 0.68,  *SD* = 0.21 | *M* = 0.69,  *SD* = 0.21 | *d* = 0.04 | -0.075,  0.089 | *t*(101) = 0.18,  *p* = .86 |

The second part of the analyses with the results from the rating task can be seen in Table 2. Again, the ratings of the included group were compared to the ratings of the excluded group for every Big Five trait using t-tests for independent groups. These analyses yielded no significant results as can be seen in Table 2. The lowest p-value resulted from the extraversion comparison between the included and excluded group, whereby excluded individuals (M = 4.74, SD = 0.639) had a higher accuracy in their ratings of faces portraying extraverted features than included individuals (M = 4.57, SD = 0.813), but even though the effect size was small (d = 0.24), the effect was far from significant, t(93) = 1.22, p = 0.226.

Table 2

*Descriptive and inferential statistics results of the rating task analyses.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Trait** | **Condition** | | **Effect size (Cohen’s *d*)** | **95% Confidence Interval** | **Independent t-test** |
| **Included** | **Excluded** |
| Agreeableness | *M* = 4.12,  *SD* = 0.68 | *M* = 4.08,  *SD* = 0.66 | *d* = 0.06 | -0.297,  0.223 | *t*(101) = -0.28,  *p* = .78 |
| Conscientiousness | *M* = 4.32,  *SD* = 0.80 | *M* = 4.23,  *SD* = 0.65 | *d* = 0.13 | -0.378,  0.191 | *t*(94) = -0.65,  *p* = .52 |
| Extraversion | *M* = 4.57,  *SD* = 0.81 | *M* = 4.74,  *SD* = 0.64 | *d* = 0.24 | -0.110,  0.462 | *t*(93) = 1.22,  *p* = .23 |
| Neuroticism | *M* = 4.08,  *SD* = 0.70 | *M* = 3.94,  *SD* = 0.80 | *d* = 0.17 | -0.423,  0.162 | *t*(102) = -0.89,  *p* = .38 |
| Openness | *M* = 3.77,  *SD* = 0.74 | *M* = 3.88,  *SD* = 0.70 | *d* = 0.15 | -0.171,  0.391 | *t*(100) = 0.77,  *p* = .44 |

Additionally, to the main analyses of hypotheses, a two-way ANOVA analysis was conducted for the rating task, with the direction of trait manipulation as one factor. The results are depicted in table free and look rather promising.

Table 3

*Inferential statistics results of the two-way ANOVA.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Trait** | **Effect size (*η2*)** | **F-statistic** | **p-value** |
| Agreeableness | *η2* = 0.20 | *F*(1, 3223) = 784.7 | *p* < .001 \* |
| Conscientiousness | *η2* = | *F*(1, 3223) = 2080.3 | *p* < .001 \* |
| Extraversion | *η2* = | *F*() = | *p* < .001 \* |
| Neuroticism | *η2* = | *F*() = | *p* < .001 \* |
| Openness | *η2* = | *F*() = | *p* < .001 \* |

Finally, a linear model analysis was computed to control for the moderator variable in form of participants’ own Big Five personality traits. To this end, the influence of participants' personality trait on the effect of condition (included vs. excluded) on rating accuracy was calculated for each trait in the rating task. Table 4 contains the moderator analysis results.

Only for the personality trait Openness a significant result was found. Namely, the main effect of participants’ own openness value had a significant effect on rating accuracy, F(3, 100) = 1.68, p = 0.04. The interaction effect of condition and openness did not reach significance, F(3, 100) = 1.68, p = 0.08, as did the main effect of condition, F(3, 100) = 1.68, p = 0.07. Because both main effects are closer to significance, there seems to be little correlation between these two variables. Surprisingly, participants’ own openness trait value had more influence on the rating accuracy than did the condition of being excluded versus included.

Table 4

*Inferential statistics results of the moderator analysis. Effect of condition, participants’ own personality traits and interaction on the preference task.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Trait** | **Condition** | **Participants’ personality trait** | **Interaction effect** | **Adjusted R2** | **F-statistic** |
| Agreeableness | *p* = .71 | *p* = .82 | *p* = .59 | *R2* = -.02 | *F*(3, 100) = 0.24 |
| Conscientiousness | *p* = .56 | *p* = .99 | *p* = .63 | *R2* = -.02 | *F*(3, 100) = 0.24 |
| Extraversion | *p* = .25 | *p* = .78 | *p* = .36 | *R2* = -.01 | *F*(3, 100) = 0.60 |
| Neuroticism | *p* = .50 | *p* = .93 | *p* = .69 | *R2* = -.02 | *F*(3, 100) = 0.39 |
| Openness | *p* = .49 | *p* = .43 | *p* = .45 | *R2* = -.02 | *F*(3, 100) = 0.25 |

The analysis could not find significant support for hypotheses H1A to H1E, nor for H2, thus refuting all hypotheses. The results are relatively far from significant, thus chance can be ruled out as an explanation for the lack of significance. It can be concluded that in the form in which the hypotheses were formulated, none of them is true, at least not according to the data.

The same conclusion can be drawn from the moderator analysis. The participants' own expression of personality traits had no significant effect on their preferences in facially communicated personality traits. Neither the main effect nor the interaction effect with the condition yielded a significant result.

# 4. Discussion

# Reference

Alexander, R. D. (1986). Ostracism and indirect reciprocity: The reproductive significance of humor. *Ethology and Sociobiology*, *7*(3–4), 253–270. https://doi.org/10.1016/0162-3095(86)90052-X

Ambady, N., Bernieri, F. J., & Richeson, J. A. (2000). Toward a histology of social behavior: Judgmental accuracy from thin slices of the behavioral stream. In *Advances in Experimental Social Psychology* (Bd. 32, S. 201–271). Elsevier. https://doi.org/10.1016/S0065-2601(00)80006-4

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Bernstein, M. J., Young, S. G., Brown, C. M., Sacco, D. F., & Claypool, H. M. (2008). Adaptive Responses to Social Exclusion: Social Rejection Improves Detection of Real and Fake Smiles. *Psychological Science*, *19*(10), 981–983. https://doi.org/10.1111/j.1467-9280.2008.02187.x

Brown, M., & Sacco, D. F. (2017). Greater need to belong predicts a stronger preference for extraverted faces. *Personality and Individual Differences*, *104*, 220–223. https://doi.org/10.1016/j.paid.2016.08.012

DeWall, C. N., Maner, J. K., & Rouby, D. A. (2009). Social exclusion and early-stage interpersonal perception: Selective attention to signs of acceptance. *Journal of Personality and Social Psychology*, *96*(4), 729–741. https://doi.org/10.1037/a0014634

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. https://doi.org/10.3758/BF03193146

Gardner, W. L., Pickett, C. L., & Brewer, M. B. (2000). Social Exclusion and Selective Memory: How the Need to belong Influences Memory for Social Events. *Personality and Social Psychology Bulletin*, *26*(4), 486–496. https://doi.org/10.1177/0146167200266007

Gardner, W. L., Pickett, C. L., Jefferis, V., & Knowles, M. (2005). On the Outside Looking In: Loneliness and Social Monitoring. *Personality and Social Psychology Bulletin*, *31*(11), 1549–1560. https://doi.org/10.1177/0146167205277208

Golubickis, M., Sahraie, A., Hunt, A. R., Visokomogilski, A., Topalidis, P., & Neil Macrae, C. (2018). The visual influence of ostracism: Ostracism and visual awareness. *European Journal of Social Psychology*, *48*(2), O182–O188. https://doi.org/10.1002/ejsp.2305

Gruter, M., & Masters, R. D. (1986). Ostracism as a social and biological phenomenon: An introduction. *Ethology and Sociobiology*, *7*(3), 149–158. https://doi.org/10.1016/0162-3095(86)90043-9

Hawkley, L. C., & Cacioppo, J. T. (2003). Loneliness and pathways to disease. *Brain, Behavior, and Immunity*, *17*(1, Supplement), 98–105. https://doi.org/10.1016/S0889-1591(02)00073-9

Hirshleifer, D., & Rasmusen, E. (1989). Cooperation in a repeated prisoners’ dilemma with ostracism. *Journal of Economic Behavior & Organization*, *12*(1), 87–106. https://doi.org/10.1016/0167-2681(89)90078-4

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social Relationships and Mortality Risk: A Meta-analytic Review. *PLOS Medicine*, *7*(7), e1000316. https://doi.org/10.1371/journal.pmed.1000316

Holwerda, T. J., Deeg, D. J. H., Beekman, A. T. F., van Tilburg, T. G., Stek, M. L., Jonker, C., & Schoevers, R. A. (2014). Feelings of loneliness, but not social isolation, predict dementia onset: Results from the Amsterdam Study of the Elderly (AMSTEL). *Journal of Neurology, Neurosurgery & Psychiatry*, *85*(2), 135–142. https://doi.org/10.1136/jnnp-2012-302755

Kachur, A., Osin, E., Davydov, D., Shutilov, K., & Novokshonov, A. (2020). Assessing the Big Five personality traits using real-life static facial images. *Scientific Reports*, *10*(1), 8487. https://doi.org/10.1038/s41598-020-65358-6

Kawamoto, T., Nittono, H., & Ura, M. (2014). Social exclusion induces early-stage perceptual and behavioral changes in response to social cues. *Social Neuroscience*, *9*(2), 174–185. https://doi.org/10.1080/17470919.2014.883325

Lancaster, J. B. (1986). Primate social behavior and ostracism. *Ethology and Sociobiology*, *7*(3–4), 215–225. https://doi.org/10.1016/0162-3095(86)90049-X

Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a Cue: The Need to Belong and Enhanced Sensitivity to Social Cues. *Personality and Social Psychology Bulletin*, *30*(9), 1095–1107. https://doi.org/10.1177/0146167203262085

Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality*, *41*(1), 203–212. https://doi.org/10.1016/j.jrp.2006.02.001

Rudert, S. C., & Greifeneder, R. (2016). When It’s Okay That I Don’t Play: Social Norms and the Situated Construal of Social Exclusion. *Personality and Social Psychology Bulletin*, *42*(7), 955–969. https://doi.org/10.1177/0146167216649606

Rudert, S. C., Hales, A. H., & Büttner, C. M. (2021). Stay out of our office (vs. our pub): Target personality and situational context affect ostracism intentions. *Journal of Experimental Social Psychology*, *95*, 104142. https://doi.org/10.1016/j.jesp.2021.104142

Sacco, D. F., & Brown, M. (2018). Preferences for facially communicated big five personality traits and their relation to self-reported big five personality. *Personality and Individual Differences*, *134*, 195–200. https://doi.org/10.1016/j.paid.2018.06.024

Sacco, D. F., Wirth, J. H., Hugenberg, K., Chen, Z., & Williams, K. D. (2011). The world in black and white: Ostracism enhances the categorical perception of social information. *Journal of Experimental Social Psychology*, *47*(4), 836–842. https://doi.org/10.1016/j.jesp.2011.03.001

Stevenson, A. (2010). *Oxford Dictionary of English*. OUP Oxford.

Walker, M., Schönborn, S., Greifeneder, R., & Vetter, T. (2018). The Basel Face Database: A validated set of photographs reflecting systematic differences in Big Two and Big Five personality dimensions. *PLOS ONE*, *13*(3), e0193190. https://doi.org/10.1371/journal.pone.0193190

Walker, M., & Vetter, T. (2016). Changing the personality of a face: Perceived Big Two and Big Five personality factors modeled in real photographs. *Journal of Personality and Social Psychology*, *110*(4), 609–624. https://doi.org/10.1037/pspp0000064

Wesselmann, E. D., Ren, D., & Williams, K. D. (2015). Motivations for responses to ostracism. *Frontiers in Psychology*, *6*, 40. https://doi.org/10.3389/fpsyg.2015.00040

Williams, K. D. (2006). Ostracism. *Annual Review of Psychology*, *58*(1), 425–452. https://doi.org/10.1146/annurev.psych.58.110405.085641

Williams, K. D. (2009). Chapter 6 Ostracism. In *Advances in Experimental Social Psychology* (Bd. 41, S. 275–314). Elsevier. https://doi.org/10.1016/S0065-2601(08)00406-1

Williams, K. D., & Jarvis, B. (2006). Cyberball: A program for use in research on interpersonal ostracism and acceptance. *Behavior Research Methods*, *38*(1), 174–180. https://doi.org/10.3758/BF03192765

Williams, K. D., & Nida, S. A. (2011). Ostracism: Consequences and Coping. *Current Directions in Psychological Science*, *20*(2), 71–75. https://doi.org/10.1177/0963721411402480

Williams, P. G., Rau, H. K., Cribbet, M. R., & Gunn, H. E. (2009). Openness to Experience and stress regulation. *Journal of Research in Personality*, *43*(5), 777–784. https://doi.org/10.1016/j.jrp.2009.06.003

Yeginsu, C. (2018, Januar 17). U.K. Appoints a Minister for Loneliness. *The New York Times*. https://www.nytimes.com/2018/01/17/world/europe/uk-britain-loneliness.html