



**University of
Zurich**^{UZH}

**Zurich Open Repository and
Archive**

University of Zurich
University Library
Strickhofstrasse 39
CH-8057 Zurich
www.zora.uzh.ch

Year: 2015

**What you want to avoid is what you see: Social avoidance motivation affects the
interpretation of emotional faces**

Nikitin, Jana ; Freund, Alexandra M

DOI: <https://doi.org/10.1007/s11031-014-9459-5>

Posted at the Zurich Open Repository and Archive, University of Zurich
ZORA URL: <https://doi.org/10.5167/uzh-110044>
Journal Article
Accepted Version

Originally published at:

Nikitin, Jana; Freund, Alexandra M (2015). What you want to avoid is what you see: Social avoidance motivation affects the interpretation of emotional faces. *Motivation Emotion*, 39(3):384-391.

DOI: <https://doi.org/10.1007/s11031-014-9459-5>

1 Running Head: MOTIVATION AND PROCESSING EMOTIONAL FACES

2

3

4

5 What You Want to Avoid is What You See:

6 Social Avoidance Motivation Affects the Interpretation of Emotional Faces

7

8 Jana Nikitin & Alexandra M. Freund

9

University of Zurich

10

11

12

13

14

Author Note

15 Jana Nikitin, University of Zurich, Department of Psychology, Binzmuehlestrasse 14/11, 8050

16 Zurich, Switzerland; E-mail: nikitin@psychologie.uzh.ch. Alexandra M. Freund, University of

17 Zurich, Department of Psychology and University Research Priority Program Dynamics of

18 Healthy Aging, Binzmuehlestrasse 14/11, 8050 Zurich, Switzerland; E-mail:

19 freund@psychologie.uzh.ch. Correspondence concerning this article may be addressed to either

20 of the authors.

21 This research was supported by a grant of the funding by Suzanne and Hans Biäsch

22 Foundation for Applied Psychology, Switzerland (principle investigator: Jana Nikitin). We thank

23 the Life-Management team for helpful discussions of the work reported in this paper.

24

25 Abstract

26 This study investigated the effects of habitual social approach and avoidance motivation
27 on the classification of facial expressions of different visual clarity. Participants ($N = 78$)
28 categorized partially masked emotional faces expressing either anger or happiness as positive or
29 negative. Participants generally tended to interpret the facial expressions in a positive way. This
30 positivity effect was reduced when persons were highly avoidance motivated. Social avoidance
31 motivation predicted fewer positive and more negative interpretations in the least visible
32 condition that provided extremely little information on the facial expression. Thus, people high
33 in social avoidance motivation are likely to have anticipated angry faces as the facial stimuli
34 offered only minimal information. The results for social approach motivation did not reach
35 statistical significance. To conclude, it seems that persons who are most afraid of having
36 negative social interactions (i.e., those high in social avoidance motivation), anticipate and
37 interpret social information in the most negative way, which could lead to the reinforcement of
38 the avoidance motivation.

39 *Keywords:* social motivation, approach, avoidance, emotional faces, social-information
40 processing

41

66 social information, such as seeing happiness as invitation to affiliate in an ambiguous facial
67 expression. In contrast, the negative expectations of social avoidance motivation might be
68 associated with a negative interpretation of social information, such as seeing anger and rejection
69 in an ambiguous facial expression. In turn, the different interpretations of social information
70 might lead to different experiences of the same situation and, consequently, to different behaviors
71 (e.g., friendly or gruff), sparking a positive or negative interaction, which reaffirms prior
72 expectations associated with social approach and avoidance motivation.

73 The hypothesis of differential interpretation of social information associated with social
74 approach and avoidance motivation has been investigated using written social information. For
75 instance, Strachman and Gable (2006, Study 1) found that participants high in social avoidance
76 motivation interpreted an ambiguous essay (including positive, negative, and neutral social
77 events) in a more negative way than participants low in social avoidance motivation. In contrast,
78 participants high in social approach motivation interpreted the neutral information in the essay in
79 a positive way. Additionally, when participants were given a social avoidance goal for an
80 interaction with an unknown confederate, they expressed more dislike for the confederate (Study
81 2). In both studies, social avoidance motivation played a stronger role for the interpretations than
82 social approach motivation. Similarly, Downey and Feldman (1996) found that people high in
83 social avoidance motivation reported heightened feelings of rejection in response to ambiguous
84 information (Study 2). Finally, Gomez and Gomez (2002) found that a general appetitive
85 motivational tendency was associated with higher positivity and a general aversive motivational
86 tendency to higher negativity in the completion of word fragments. It seems, then, that social
87 approach and, to an even stronger degree, avoidance motivation are associated with biased
88 interpretation of social information. This might be the case because people high in approach
89 motivation do not want to miss a possible positive social interaction to affiliate, whereas people

90 high in avoidance motivation do not want to miss any signal of a potentially negative social
91 interaction so as to be able to avoid it.

92 In the current research, we examined the association between habitual social approach and
93 avoidance motivation and the interpretation of ambiguous emotional faces as operationalized by
94 different degrees of visibility. We used facial expressions as stimulus material because
95 processing of faces is fundamental for the experience and behavior in social situations (e.g.,
96 Chartrand & Bargh, 1999). Happy faces were used as positive facial expressions and angry faces
97 as negative facial expressions. Happy faces stand for a positive emotional state and, therefore,
98 signal preparedness to affiliate. In contrast, angry faces stand for a negative emotional state that
99 can be directed against others (Ekman, 1992) and, therefore, can be interpreted as signaling
100 interpersonal rejection.

101 In addition, the faces were masked to reduce the visual clarity of the picture. In contrast
102 to clear pictures of expressions of happiness or anger, less visually clear pictures of the same
103 emotional expressions leave room for interpretations and, thus, misclassifications. This room for
104 interpretation should allow that variables other than the actual facial expression – such as social
105 approach and avoidance motivation – influence the classifications. We expect that social
106 approach motivation is associated with a positively biased interpretation of facial stimuli,
107 whereas social avoidance motivation is associated with a negatively biased interpretation of facial
108 stimuli. The more room for interpretation the stimuli offer (i.e., the more the facial stimuli are
109 masked), the stronger should be the effect of social motivation on the classification of the facial
110 expression.

111 We used the number of false classifications (i.e., angry faces classified as positive and
112 happy faces classified as negative) as dependent variable. False classifications can be interpreted
113 as biased information processing, i.e., a tendency to interpret partially masked social stimuli in a

114 particular (positive or negative) way. We did not analyze the correct classifications (i.e., positive
115 interpretations of happy and negative interpretations of angry faces) because it is impossible to
116 distinguish if the correct classifications were caused by an interpretation bias or by recognition of
117 the actual facial expression. Moreover, the number of correctly and incorrectly classified stimuli
118 always adds up to 100% of the stimuli, making the two indices redundant.

119 We expect that social approach motivation is positively and social avoidance motivation
120 is negatively associated with false classifications of angry faces. The opposite should be true for
121 false classifications of happy faces. The effects of social motivation for misinterpreting the facial
122 expression should be stronger, the less visually clear the pictures are. We did not restrict the time
123 for the responses because the speed of the classifications was not the focus of the current study.

124 **Method**

125 **Participants**

126 Participants were recruited via newspaper advertisements, flyers, and advertisements in
127 students' mailing lists. The sample consisted of $N = 78$ students and other adults (79% females,
128 age $M = 25.08$, $SD = 5.84$, range 19–49 years). The majority of the participants (75.6%) held a
129 Swiss citizenship, 15.6 % were from other German-speaking countries, and 8.8% from other
130 countries. About half of the participants (53.8%) reported to be in a long-term relationship or
131 married, 2.6% divorced, and 43.6% single. A small group (10.3%) had one or two children.
132 Most of the participants (79.5%) were students.

133 We ran the study in laboratories of the University of Zurich. All participants gave written
134 informed consent for participation. After participation, they were fully debriefed and either paid
135 20 CHF or received extra course credit.

136 **Stimuli and Procedure**

137 Facial stimuli were chosen from the Lifespan Database of Adult Emotional Facial Stimuli
138 (FACES, Ebner, Riediger, & Lindenberger, 2010). Colored pictures of 50 models were selected
139 (12 young males, 13 young females, 13 middle-aged males, and 12 middle-aged females), each
140 clearly expressing either happiness or anger as indicated in a validation study conducted by Ebner
141 et al. (2010). Pictures were cut vertically from hairline to chin and horizontally at the
142 cheekbones. Consequently, the picture length and width varied from 10 to 12 cm. For different
143 levels of ambiguity, each picture was partially masked via Adobe Photoshop 7.0 (“grain”
144 command) in five different degrees, ranging from very low visibility (strongly masked) to very
145 high visibility (weakly masked).¹ Figure 1 shows an example of masking of a negative female
146 facial expression. We used the program DirectRT (Jarvis, 2004) for stimulus presentation,
147 timing, and data collection. Pictures were displayed in the center of the screen.

148 An experimental trial started with a blank screen presented for 100 ms and was followed
149 by a mask of “x” in the size of the facial stimulus for 1000 ms. Next, the masked picture of a
150 positive (happy) or negative (angry) facial expression was presented. Participants were instructed
151 to categorize the facial expression as positive by pressing “p” on the keyboard or negative by
152 pressing “n.” We instructed participants to guess if they were not sure. There was no time
153 restriction for the response.

154 Participants were tested alone or in groups up to five in separated cubicles. First,
155 participants completed an on-line questionnaire assessing their social approach and avoidance
156 motivation. The following classification task consisted of three blocks with 160, 160, and 180
157 trials each (with 15 test trials at the beginning of the first block), resulting in a total of 500 trials
158 (50 faces × 2 facial expressions × 5 degrees of masking).² Each facial expression was presented
159 in all five degrees of masking (see Figure 1). The masked faces appeared successively from very
160 ambiguous to very clear. The presentation of positive and negative facial expressions was

161 randomized. Before each block, three different pictures of social situations were presented and
162 participants were asked to write a short story to each of them in order to activate the habitual
163 social motivation. After three minutes, the picture disappeared from the screen and participants
164 were asked to continue with the experiment.

165 Participants response time for a stimulus was $M = 1'744$ ms ($SD = 666$ ms), resulting in
166 approximately 15 minutes for all 500 stimuli.³ The entire study lasted approximately 30 minutes.

167 **Assessment of Social Approach and Avoidance Motivation**

168 The Multi Motive Grid (MMG; Sokolowski, Schmalt, Langens, & Pucca, 2000) assessed
169 social approach and avoidance motivation. The MMG consists of 14 pictures of different social
170 situations, each accompanied by a set of 4 to 10 statements assessing affiliation, achievement,
171 and power motivation. We used only the affiliation-motive subscale in the current study (12
172 statements for social approach motivation, 12 statements for social avoidance motivation). By
173 using a yes/no response scale, participants were asked to endorse those statements that, in their
174 view, best match a given picture. Motive scores were calculated by summing across pictures the
175 number of endorsed items reflecting social approach and social avoidance motivation. Thus,
176 motive scores can range from 0 to 12 for approach and avoidance motivation, respectively.

177 Sample statements for approach motivation are the following descriptors of ambiguous social
178 scenes depicted in the pictures “Feeling good about meeting other people” and “Hoping to get in
179 touch with other people.” Sample statements for avoidance motivation are “Being afraid of being
180 rejected by others” and “Being afraid of being boring to others.” Previous studies have
181 repeatedly demonstrated excellent retest-reliability, internal consistency, and validity of both
182 scales. Sokolowski et al. (2000) and Strachman and Gable (2006) found internal consistencies α
183 $> .78$ for both scales. The internal consistency in the current study was lower than in the previous
184 studies: for approach motivation Cronbach’s $\alpha = .62$ (mean score of the scale $M = 5.97$, $SD =$

185 2.11) and for avoidance motivation $\alpha = .63$ ($M = 5.68$, $SD = 2.43$). We discuss the relatively low
186 internal consistencies in the Discussion. Social approach and avoidance motivation were
187 uncorrelated ($r = .03$, $p = .822$).

188 Results

189 Preliminary Analyses

190 From a total of 39'000 classifications, 38.9% were classified correctly as negative (i.e.,
191 angry faces classified as negative), 42.9% were classified correctly as positive (i.e., happy faces
192 classified as positive), 7.1% were classified falsely as negative, and 11.1% were classified falsely
193 as positive. Figure 2 shows that correct positive and correct negative classifications of facial
194 expressions significantly decreased and false positive and false negative classifications
195 significantly increased with decreasing visibility, $\chi^2(4, N = 39'000) = 5'144.61$, $p < .001$. On
196 average, participants classified $M = 270.1$ ($SD = 30.59$) of the 500 faces as positive and $M =$
197 229.9 ($SD = 30.59$) faces as negative, $t(77) = 5.80$, $p < .001$.

198 Main Analyses

199 We ran a multilevel analysis with facial expression (angry = 0, happy = 1), visual clarity
200 of the picture (from 1 = very high visibility to 5 = very low visibility) at Level 1, social approach
201 and avoidance motivation at Level 2, and the two-way and three-way interactions of the Level 1
202 and 2 variables as predictors of false classifications of the facial expressions:

$$\begin{aligned} 203 \text{ Percentage of False Classifications}_{ij} &= b_0j \\ 204 &+ b_1 \text{ Facial Expression}_{ij} \\ 205 &+ b_2 \text{ Expression Visibility}_{ij} \\ 206 &+ b_3 \text{ Approach Motivation}_{ij} \\ 207 &+ b_4 \text{ Avoidance Motivation}_{ij} \\ 208 &+ b_5 (\text{Facial Expression} \times \text{Approach Motivation})_{ij} \end{aligned}$$

$$\begin{aligned}
209 & + b_6 (\text{Facial Expression} \times \text{Avoidance Motivation})_{ij} \\
210 & + b_7 (\text{Facial Expression} \times \text{Expression Visibility})_{ij} \\
211 & + b_8 (\text{Expression Visibility} \times \text{Approach Motivation})_{ij} \\
212 & + b_9 (\text{Expression Visibility} \times \text{Avoidance Motivation})_{ij} \\
213 & + b_{10} (\text{Expression Visibility} \times \text{Facial Expression} \times \text{Approach Motivation})_{ij} \\
214 & + b_{11} (\text{Expression Visibility} \times \text{Facial Expression} \times \text{Avoidance Motivation})_{ij} \\
215 & + \varepsilon_{ij} \\
216 & b_{0j} = b_0 + \mu_{0j}
\end{aligned}$$

217 We expected (1) a significant three-way interaction of social approach motivation, facial
218 expression, and visual clarity of the picture and (2) a significant three-way interaction of social
219 avoidance motivation, facial expression, and visual clarity of the picture. Concretely, we
220 expected that social approach motivation is positively and social avoidance motivation negatively
221 associated with false classifications of angry faces. The opposite should be true for false
222 classifications of happy faces. In addition, the effects of the motivations for the false
223 classifications should be stronger, the less visible the picture is. When the facial expressions is
224 clearly visible (i.e., the less the pictures are distorted), the fewer misclassifications should occur,
225 providing an insufficient number of trials to test for differences between facial expressions and
226 social approach and avoidance motivation.

227 We found a main effect of facial expression, $b = 3.54$, $SE_b = 0.53$, $F(1, 229.75) = 45.47$, p
228 $< .001$, and a main effect of expression visibility, $b = 10.49$, $SE_b = 0.27$, $F(1, 251.45) = 1541.65$,
229 $p < .001$. Participants made more false classifications when they classified angry faces
230 (compared to happy faces) and they made more false classifications the less visible the facial
231 expression was.

232 **Social avoidance motivation.** These main effects were qualified by an Expression
233 Visibility \times Facial Expression \times Avoidance Motivation interaction, $b = 0.67$, $SE_b = 0.35$, $F(1,$
234 $505.77) = 3.75$, $p = .053$. To disentangle the three-way interaction, we correlated social
235 avoidance motivation with false classifications of happy and angry faces in all levels of visibility.
236 The correlations between social avoidance motivation and false classifications were significant
237 for the least visible expressions (false classifications of happy faces: $r = .27$, $p = .017$; false
238 classifications of angry faces: $r = -.23$, $p = .046$). Unexpectedly, the correlation between social
239 avoidance motivation and false classifications of angry faces was also significant for the most
240 visible condition, $r = -.24$, $p = .037$). As there were very few false classifications in the most
241 visible condition, we explored if this correlation is driven by an outlier. This seemed to be the
242 case. After excluding one participant who lay more than three standard deviations from the
243 sample mean in false classifications of angry faces in the most visible condition, the correlation
244 did not reach statistical significance ($r = -.17$, $p = .132$). None of the other correlations in any of
245 the conditions were statistically significant (all $ps > .132$).

246 Thus, it seems that social avoidance motivation is associated with biased processing of the
247 least visible social stimuli. An alternative interpretation of the results could be that social
248 avoidance motivation is associated with better *detection* of negative facial expressions. To test
249 this alternative hypothesis, we computed d' (detection sensitivity) that indicates the ability to
250 distinguish signals (i.e., correct classifications) from noise (i.e., false classifications; Stanislaw &
251 Todorov, 1999); d' is computed by subtracting the z score that correspond to the false-
252 classifications rate from the z scores that correspond to the correct-classifications rate. No
253 correlation between social avoidance motivation and d' for angry faces in any of the visibility
254 levels reached statistical significance (all $ps > .163$). Thus, the current results cannot be

255 explained by the ability to detect angry facial expressions associated with social avoidance
256 motivation.

257 **Social approach motivation.** Although the results of the multilevel analysis pointed in
258 the predicted direction, the Expression Visibility \times Facial Expression \times Approach Motivation did
259 not reach statistical significance, $b = -0.60$, $SE_b = 0.35$, $F(1, 505.77) = 2.92$, $p = .088$. None of
260 the other main or interaction effects reached statistical significance (all $ps > .068$).⁴

261 In order to test if the correlations between social approach motivation and the
262 classifications were significantly different from the correlations between social avoidance
263 motivation and the classifications, we used the test of the difference between two dependent
264 correlations with one variable in common (Lee & Preacher, 2013). We focused on the least
265 visible condition as this was the condition where social avoidance motivation significantly
266 predicted false classifications of happy and angry faces. The correlation between social approach
267 motivation and false classifications of happy faces ($r = -.12$, $p = .282$) was significantly different
268 from the correlation between social avoidance motivation and false classifications of happy faces
269 ($r = .27$, $p = .017$), $z = -2.42$, $p = .016$. Similarly, the correlation between social approach
270 motivation and false classifications of happy faces ($r = .09$, $p = .460$) was significantly different
271 from the correlation between social avoidance motivation and false classifications of angry faces
272 ($r = -.23$, $p = .046$), $z = 1.97$, $p = .049$.⁵

273 Discussion

274 How do social approach and avoidance motivation affect the interpretation of facial
275 expressions? To address this question, the current study investigated the association between
276 habitual social approach and avoidance motivation and the classification of facial expressions of
277 different degrees of visibility. Social avoidance motivation was associated with biased
278 interpretations of facial expressions. Persons with a high social avoidance motivation tended to

279 interpret poorly visible facial expressions less often as positive and more often as negative
280 compared to persons with a low social avoidance motivation. These findings cannot be explained
281 by better identification of negative facial expressions, which further supports the interpretation of
282 the findings as a biased interpretation of social stimuli.

283 The question remains which particular mechanisms of social information processing are
284 involved in the effects of social avoidance motivation on the classification of facial expressions.
285 Based on previous empirical evidence, it seems likely that several mechanisms are involved.
286 First, social avoidance motivation is positively associated with both the attention to angry faces
287 and the time spent by looking at angry faces. In an eye-tracking study, Nikitin and Freund (2011)
288 investigated the association between social avoidance motivation and gaze behavior towards
289 happy, neutral, and angry faces. The higher the social-avoidance motivation was, the more
290 frequently people directed their gaze first at angry faces, and, overall, they also spent more time
291 looking at angry faces compared to neutral and happy faces. Second, it seems that social
292 avoidance motivation is also associated with emphasizing negative social information (Strachman
293 and Gable, 2006). Strachman and Gable demonstrated that based on the same perceived
294 information about a person, people high in social avoidance motivation tended to evaluate this
295 person more negatively than people low in social avoidance motivation. Taken together, the
296 present findings for social avoidance motivation might be explained by a combination of (a) a
297 greater initial attention to negative social cues, (b) longer attention to negative social cues, and (c)
298 greater emphasis of negative social cues as compared to other cues. In other words, compared to
299 a person low in social avoidance motivation, a person high in social avoidance motivation might
300 have oriented his or her attention more strongly to cues signaling an angry face (such as signs
301 of knitted eyebrows), he or she might have given more attention to these negative cues and,

302 finally, he or she might have weighed these cues more strongly in the global evaluation of the
303 facial expression.

304 An alternative explanation of the current results is based on the fact that the least visible
305 picture provided almost no information on the facial expression (see Figure 1). Although the
306 picture was based on an actual facial expression of emotion, it was hardly recognizable. At the
307 same time, participants were forced to decide if the facial expression was positive or negative. In
308 other words, it is likely that participants based their decision on their expectation of being
309 confronted with a positive or a negative facial expression rather than actually being able to
310 extract information about facial expression from the stimulus. Consequently, the key finding of
311 the current study (i.e., avoidance motivation predicting interpretation of the least visible facial
312 expression) might reflect an anticipatory effect rather than the detection of the actual facial
313 expression. In other words, angry faces might have been perceived without extracting any
314 information from the observed stimulus. People high in social avoidance motivation might
315 generally expect that social interactions with other persons will be negative, even before they
316 receive any information about the other person. This does not mean that the previously described
317 processes (greater initial attention to negative social cues, longer attention to negative social cues,
318 and greater emphasis of negative social cues as compared to other cues) do not influence the
319 information processing associated with social avoidance motivation. Rather, the present findings
320 add an additional aspect of social avoidance motivation to this process. It seems that social
321 avoidance motivation impacts information processing already before any information is provided
322 through expectations to encounter a positive or negative social stimulus (here: facial expression).
323 Speaking against a pure anticipatory effect, the rate of correct classifications in the least visible
324 condition was significantly above chance (59.71%; $t[76] = 15.81, p < .001$, see also Figure 2).
325 Thus, it seems that the results of the current study are the result of both anticipatory processes

326 and decoding social information. Future research needs to test these different interpretations
327 more directly.

328 Contrary to our prediction, social approach motivation was not associated with the
329 classifications of emotional expressions. As mentioned in the preliminary data analyses, we
330 found more positive than negative classifications across the entire sample, which indicates a
331 general positivity bias in interpreting facial expressions. This positivity bias is in line with
332 findings that most people hold a positive view of the self, illusions of control and mastery, and
333 optimism about the future (Taylor & Brown, 1988) as well as positively biased affective
334 judgments of pictorial stimuli and impressions of neutral, unknown, or ambiguous human and
335 nonhuman stimuli (Cacioppo, Gardner, & Berntson, 1999). The reason why we did not find more
336 positive interpretations associated with high social approach motivation might be a general
337 tendency to interpret faces in a positive way that is decreased by avoidance motivation but not
338 additionally enhanced by approach motivation.

339 However, although social approach and avoidance motivation significantly differ in their
340 predictions of the classifications (at least in the least visible condition), the non-significant results
341 for social approach motivation might also be explained by a lack of power or other method-
342 related issues (such as the low internal consistency of the scale). Thus, although there is
343 empirical evidence showing that the two types of social motivation predict different social
344 processes (Gable, 2006; Nikitin & Freund, 2011; Nikitin, Burgermeister, & Freund, 2012;
345 Strachman & Gable, 2006), the current findings cannot provide strong evidence for the
346 conclusion of a dissociation between social approach and avoidance motivation. Further studies
347 with different methods are needed to clarify if the non-significant findings for social approach
348 motivation in the current study are of method-related origins or if they are expression of a
349 dissociation between social approach and avoidance motivation.

350 Limitations

351 One limitation of the current study are the relatively low internal consistencies of the
352 approach and avoidance motivation scales. Different to previous studies (Sokolowski et al.,
353 2000; Strachman & Gable, 2006), the internal consistencies in the current study were lower than
354 the typical standard of $\alpha = .70$ (approach motivation $\alpha = .62$, avoidance motivation $\alpha = .63$).
355 Thus, we cannot rule out the possibility that the non-significant findings for social approach
356 motivation are due to the low internal consistency of its measurement. The fact that the results
357 for social approach motivation pointed in the hypothesized directions but were not significant (p
358 = .088) supports this methodical explanation of the current results. However, as discussed above,
359 there is also previous empirical evidence suggesting that social approach and avoidance
360 motivation predict different social outcomes. In addition, a study with social approach and
361 avoidance motivations as measured by the Multi Motive Grid found similar results for social
362 approach and avoidance motivation for the interpretation of written social information as the
363 current study (Strachman & Gable, 2006; Study 2). Future studies using different instruments
364 assessing social approach and avoidance motivation (e.g., social approach and avoidance goals,
365 Strachman & Gable, 2006; Study 1) are needed to replicate the current findings.

366 Second, the exposure to the five visibility conditions was not random. Instead,
367 participants saw the least visible picture first, followed by the more clearly visible conditions.
368 Obviously, not randomizing the data leads to a dependency of the classifications within the
369 sequence of the same facial expression presented consecutively. Our decision to use consecutive
370 presentation of the masked faces instead of randomizing the visibility was based on two reasons:
371 First, a randomization of the ambiguity would lead to the problem that less masked (i.e., better
372 visible) facial expressions would be presented sometimes before the more masked (i.e., less
373 clearly visible) facial expression of the same model. Thus, some correct classifications would be

374 based simply on the fact that the model had been already seen in a previous trial in a visually
375 clearer condition. Second, only the presentation of the stimuli in a consecutive way (from the
376 most to the least masked picture) provides the participants with a feedback on the correctness of
377 their classifications. Given that participants had to categorize 500 stimuli, not knowing if the
378 classifications were correct or not might demotivate participants to even attempt at classifying the
379 highly distorted stimuli. This might be particularly true for performance-oriented participants
380 (whose motivation suffers more if they do not know how well they are performing), thereby
381 introducing an additional individual difference variable that is not of interest in the current study
382 and that might obscure potential effects of social motivation. Finally, the effects of social
383 avoidance motivation in the current study were found only in the least visually clear condition.
384 Given that the least visually clear picture was always presented first, there is no problem of
385 dependency for the current results.

386 Another limitation of the current study is that the findings of the current study are
387 correlational and, therefore, do not allow for causal interpretations. It is possible that interpreting
388 facial expressions in a negative way leads to high social avoidance motivation because the social
389 world appears hostile and rejecting. As argued by Mehrabian (1994), the relationship is probably
390 bidirectional and cyclical. Social avoidance motivation leads to biased interpretations of social
391 information, which, in turn, reinforces the habitual motivation. Future research is needed to test
392 the proposed cycle directly in order to learn more about how social avoidance motivation
393 develops over time.

394 Finally, the current study focused on a young sample, which makes it difficult to
395 generalize the findings to other age groups. There are some reasons to expect different results for
396 older adults. For example, older adults have better emotion-regulation strategies than younger
397 adults (Blanchard-Fields, Stein, & Watson, 2004). Thus, the negatively biased information

398 processing associated with social avoidance motivation might diminish in older age. However,
399 first investigations of the age-related differences in the association of social avoidance motivation
400 and social-information processing do not support this assumption. In a study investigating gaze
401 behavior towards emotional faces, social avoidance motivation was associated with gaze
402 preference for angry and away from happy faces for both younger and older adults (Nikitin &
403 Freund, 2011).

404 **Conclusion**

405 To conclude, people generally tend to interpret social information in a positive way. This
406 positivity effect is reduced when persons are motivated to avoid rejection and exclusion.
407 Paradoxically, those who are most afraid of having negative social interactions anticipate and
408 interpret social information in the most negative way, which probably leads to the reinforcement
409 of the negative expectations.

References

- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1974). Infant-mother attachment and social development: Socialisation as a product of reciprocal responsiveness to signals. In M. J. M. Richards (Ed.), *The integration of a child into a social world* (pp. 99–135). London, UK: Cambridge University Press.
- 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. doi:10.1037//0033-2909.117.3.497
- Blanchard-Fields, F., Stein, R., & Watson, T. L. (2004). Age Differences in Emotion-Regulation Strategies in Handling Everyday Problems. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *59*, 261–269. doi:10.1093/geronb/59.6.P261
- Cacioppo, J. T., Gardner, W. L., & Berntson, G. G. (1999). The affect system has parallel and integrative processing components: Form follows function. *Journal of Personality and Social Psychology*, *76*, 839–855. doi:10.1037//0022-3514.76.5.839
- Cacioppo, J. T., & Hawley, L. C. (2005). People thinking about people: The vicious cycle of being a social outcast in one's own mind. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 91–108). New York, NY: Psychology Press.
- Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology*, *76*, 893–910. doi:10.1037//0022-3514.76.6.893
- Downey, G., & Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology*, *70*, 1327–1343. doi:10.1037//0022-3514.70.6.1327

- Ebner, N. C., Riediger, M., & Lindenberger, U. (2010). FACES--a database of facial expressions in young, middle-aged, and older women and men: development and validation. *Behavior Research Methods*, *42*, 351–62. doi:10.3758/BRM.42.1.351
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, *6*, 169–200. doi:10.1080/02699939208411068
- Elliot, A. J., & Covington, M. V. (2001). Approach and avoidance motivation. *Educational Psychology Review*, *13*, 73–92.
- Gable, S. L. (2006). Approach and avoidance social motives and goals. *Journal of Personality*, *74*, 175–222. doi:10.1111/j.1467-6494.2005.00373.x
- Gable, S. L., & Berkman, E. T. (2008). Making connections and avoiding loneliness: Approach and avoidance social motives and goals. In A. J. Elliot (Ed.), *Handbook of approach and avoidance motivation* (pp. 204–216). New York, NY: Psychology Press.
- Gable, S. L., Reis, H. T., & Elliot, A. J. (2003). Evidence for bivariate systems: An empirical test of appetition and aversion across domains. *Journal of Research in Personality*, *37*, 349–372. doi:10.1016/S0092-6566(02)00580-9
- Gomez, A., & Gomez, R. (2002). Personality traits of the behavioural approach and inhibition systems: Associations with processing of emotional stimuli. *Personality and Individual Differences*, *32*, 1299–1316. doi:10.1016/S0191-8869(01)00119-2
- Harlow, H. F. (1958). The nature of love. *American Psychologist*, *13*, 673–685.
- Lee, I. A., & Preacher, K. J. (2013). Calculation for the test of the difference between two dependent correlations with one variable in common [Computer software]. Retrieved from <http://quantpsy.org>
- McClelland, D. C. (1985). *Human motivation* (pp. xii, 663). New York, NY: Scott, Foresman.
- Mehrabian, A. (1994). Evidence bearing on the Affiliative Tendency (MAFF) and Sensitivity to Rejection (MSR) scales. *Current Psychology*, *13*, 97–116. doi:10.1007/BF02686794

- Nikitin, J., Burgermeister, L. C., & Freund, A. M. (2012). The role of age and social motivation in developmental transitions in young and old adulthood. *Frontiers in Developmental Psychology, 6*, 366. doi:10.3389/fpsyg.2012.00366
- Nikitin, J., & Freund, A. M. (2011). Age and motivation predict gaze behavior for facial expressions. *Psychology and Aging, 26*, 695–700. doi:10.1037/a0023281
- Sokolowski, K., Schmalt, H.-D., Langens, T. A., & Pucca, R. M. (2000). Assessing achievement, affiliation, and power motives all at once: The multi-motive grid (MMG). *Journal of Personality Assessment, 74*, 126–145. doi:10.1207/S15327752JPA740109
- Stanislaw, H., & Todorov, N. (1999). Calculation of signal detection theory measures. *Behavior Research Methods, Instruments, & Computers, 95382*, 137–149. doi:10.3758/BF03207704
- Strachman, A., & Gable, S. L. (2006). What you want (and do not want) affects what you see (and do not see): Avoidance social goals and social events. *Personality and Social Psychology Bulletin, 32*, 1446–58. doi:10.1177/0146167206291007
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*, 193–210. doi:10.1037//0033-2909.103.2.193

Footnotes

¹In a pilot study, we tested how many of the “grain” commands are needed to significantly reduced the visibility. Based on the results of the pilot study, we used 10 “grain” commands for the creation of very high visibility, additional 15 “grain” commands for the creation of high visibility, and for each other condition (medium visibility, low visibility, and very low visibility) additional six “grain” commands in the current study.

²As the procedure was new, we included a relatively high number of different visibility conditions and a relatively high number of different facial stimuli. This procedure aimed at enhancing the reliability of the measurement.

³The reaction times did not systematically differ between the conditions and as a function of social motivation.

⁴We found no significant effects of gender of the participants or gender or age of the models on the results.

⁵We also explored if the correlations differed in the other visibility conditions. This was the case for false classifications of angry faces in the medium visibility condition (approach motivation: $r = .23$, $p = .048$; avoidance motivation: $r = -.13$, $p = .256$; $z = 2.22$, $p = .026$) and for false classifications of angry faces in the very high visibility condition (approach motivation: $r = .13$, $p = .246$; avoidance motivation: $r = -.24$, $p = .037$; $z = 2.30$, $p = .021$). None of the other correlations were significantly different from each other (all $ps > .071$).



Figure 1. Stimulus material: Example of masking for a negative female facial expression.

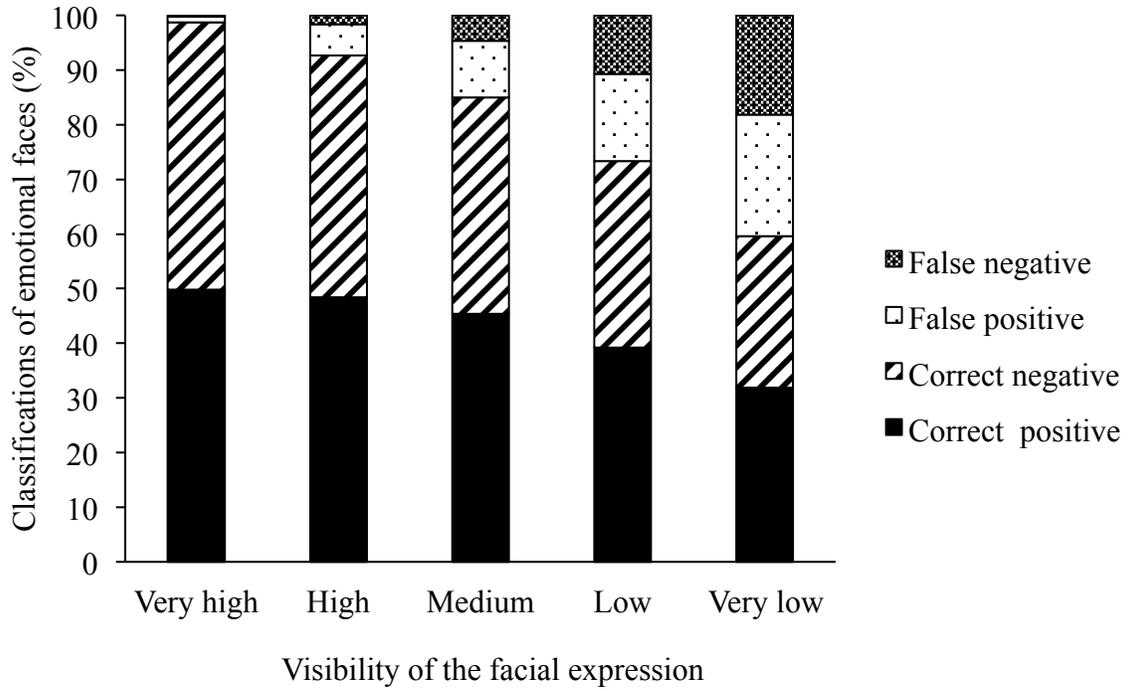


Figure 2. Proportion of correct and false classifications of positive and negative facial expressions depending on the visibility of the stimuli.