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Alice Cartaud[1], Dorine Vergilino-Perez[2,3], Laurence Chaby[1,3]

[1]Sorbonne Université, CNRS, Institut des Systèmes Intelligents et de Robotique, ISIR, F-75005 Paris

[2]Université Paris Cité, Vision Action Cognition, F-92100 Boulogne-Billancourt, France

[3]Université Paris Cité, F-92100, Boulogne-Billancourt, France

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Corresponding author:
Alice Cartaud
Institut Systèmes Intelligents et de Robotique
Campus Pierre et Marie Curie
Pyramide – Tour 55-56
4, Place Jussieu
75005 Paris – France
alice.cartaud@isir.upmc.fr

Abstract

As personality shapes our emotional experiences and gaze behaviors, does it modulate our ability to recognize subtle emotional facial expressions? Does this influence of personality on gaze behavior persist when observing more intense emotional facial expressions? To address these questions, we conducted an eye-tracking experiment including 116 participants who had to identify dynamic emotional facial expressions (anger, disgust, fear, and happiness) of different intensity. In some trials, the expression could remain neutral. Participants were divided into two clusters based on personality dimensions via hierarchical clustering: those scoring high in dimensions associated with positive emotions, and those scoring high in dimensions associated with negative emotions. Results showed that, with neutral expressions, participants demonstrated a preferential gaze toward facial areas associated with their own personality valence — individuals with positively-colored personality focused more on the mouth area than others, seeking cues of happiness, whereas those with a negatively-colored personality directed their gaze more toward the eyes than others, potentially more in search of signs of negative emotions. These specific gaze patterns persisted for subtle emotional expressions, without interfering with the sensory discrimination and decision-making processes necessary for emotion identification, as elucidated by Signal Detection Theory. However, with more intense emotions, these specific gaze behaviors only persisted when the valence of the displayed emotion was congruent with that of participants' personality. These findings suggest that personality influences gaze strategies, facilitating emotionally congruent experiences without hindering the recognition of others' emotions, even subtle ones, that is crucial for effective social interactions.

Introduction.

Everyday social interactions are influenced by our ability to decode and interpret the intentions and emotional state of others, which is essential for the appropriate adjustment of our own behavior (Cartaud et al., 2022; Lebert et al., 2024; Xavier et al., 2016). Crucial to this decoding process is the recognition of emotional facial expressions (Darwin, 1872; Ekman and Friesen, 1971; Ekman and O'Sullivan, 1988; Waller et al., 2017). Facial expressions are processed quickly and also automatically capture attentional resources (Esteves and Öhman, 1993; Palermo and Rhodes, 2007; Sawada et al., 2022; Vuilleumier, 2002). The visual exploration of others' face is a pivotal behavior in this recognition process, significantly influenced by the emotion expressed. While various facial muscles contribute to the expression of emotions, certain muscles are particularly indicative of specific emotions (Ekman and Friesen, 1978). For instance, in Western Caucasian cultures, happiness is primarily represented by the contraction of the zygomatic muscle (Action Unit 12, AU 12), while anger is primarily associated with the contraction of the corrugator muscle (AU 4). Similarly, the expression of fear is mainly associated with brow action and the expression of disgust typically relies on the activation of muscles around the nose area. Consequently, our attention is preferentially allocated to these "diagnostic areas" of the face, thereby facilitating the recognition of the corresponding emotions (Calder et al., 2000; M. G. Calvo et al., 2018; Smith et al., 2005; Vaidya et al., 2014; Wells et al., 2016). Jack et al., 2012). Thus, when observing emotional facial expressions (e.g., fear), individuals preferentially and more rapidly allocate attention to congruent facial diagnostic areas (e.g., the eyes) rather than other areas (M. G. Calvo et al., 2018; Eisenbarth and Alpers, 2011; Guo, 2012; Wells et al., 2016).

However, previous research suggests that the decoding of facial expressions, and specifically our attention to their diagnostic areas, is further influenced by the observer's personality traits (Libby and Yaklevich, 1973; Perlman et al., 2009). These traits not only shape how individuals perceive and interact with their social world, but also how they allocate attention to, and thus decode, emotional cues in facial expressions (Kaspar and König, 2012). In this context, eye-tracking technology is valuable tool revealing how individuals allocate their attention when processing facial expressions (Wright and Ward, 2008). For instance, studies focusing on a specific personality trait reported that extroverted individuals tend to prioritize their gaze toward the mouth while avoiding the eye region (Pavic et al., 2021), in particular when looking at positive facial expression, (Ellingsen et al., 2019). Conversely, individuals scoring high on neuroticism tend to direct their gaze more toward the eye area of a fearful expression (Perlman et al., 2009). Similarly, individuals with high levels of social anxiety initially focus on the eye area but subsequently shift their gaze away, regardless of the emotion displayed (Günther et al., 2021). The effect of personality traits is also apparent when observing neutral facial expressions. For instance, individuals high in neuroticism also demonstrate a preference for the eyes area when looking at neutral faces, a preference shared with those scoring high in agreeableness; while those with high conscientiousness tend to focus more on the central part of the face (Sarsam et al., 2023).

This preference for a specific region of the face based on individual characteristics could be linked to the affective dispositions of individuals (Elliot and Thrash, 2002; McCrackin et al., 2022; Perlman et al., 2009), in line with trait-congruency theory. This theory suggests that individuals tend to process information in a way that is congruent with their own personality traits (Bargh et al., 1988; Rusting, 1998). More precisely, they may exhibit a selective attentional orientation toward stimuli those valence aligns with, or is more likely to align with, their personality traits (or affective dispositions). As a result, individuals with a predominantly positively-colored personality (e.g., extroverted individuals) might focus more on the mouth area to be more likely to observe positively valenced emotional signals such as happiness. Conversely, those with a predominantly negatively-colored personality (e.g., individuals scoring high in neuroticism) might focus more on the upper part of the face, thereby facilitating the recognition of more negatively valenced emotions like fear.

In addition to these attentional orientations, personality-related affective dispositions further shape the way we interpret emotional cues, leading to interpretation biases (Rusting, 1998). For example, individuals with high levels of anxiety are better at recognizing negative emotions such as anger, fear, or disgust (Doty et al., 2013; Gutiérrez-García and Calvo, 2017; Yoon et al., 2014), while whose with high scores in neuroticism exhibit a better ability in identifying fear (Doty et al., 2013) and lower ability in identifying happiness (Andric et al., 2015). Applying Signal Detection Theory provides insights into whether this emotion-specific recognition ability results from a specific attentional orientation or an interpretation bias. According to this theory, the ability to identify one stimulus from another, relies on two separate processes: sensory discrimination and decision-making, which are identifiable independently (D. M. Green, Swets, et al., 1966; Hautus et al., 2021). The sensory discrimination process is reflected by one's *sensitivity index* (d'), and enables discriminating a specific emotion (signal) from other emotions (noise). A higher sensitivity index (d') implies a better discrimination between signal and noise. Additionally, the decision-making process is reflected by the *response criterion* (c), which reveals an individual's response bias toward or away from a given signal (irrespective of the signal's presence). A negative value of the response criterion indicates a liberal strategy, biasing responses toward the signal, whereas a positive value indicates a conservative strategy, requiring higher certainty to respond positively to the signal concerned. Thus, individual differences can be observed in both the sensory and decision-making processes. Specifically, individuals with high levels of anxiety show liberal strategies toward words that represent a threat to the ego in a word recognition task (Dowens and Calvo, 2003) and show higher sensitivity to facial expressions of fear, anger and disgust (Doty et al., 2013; Gutiérrez-García and Calvo, 2017; Yoon et al., 2014). Similarly, individuals scoring high in neuroticism exhibit generally liberal decision-making strategies (Karmon-Presser and Meiran, 2019) and increased sensitivity to fearful faces (Doty et al., 2013). Conversely, individuals scoring high in extroversion favor liberal strategies toward positively valenced words (Kang, 2014).

Under challenging conditions, with emotions exhibited with a low intensity or for a brief duration, individual differences in emotion recognition become particularly salient. However, it remains unclear whether these differences arise from personality-driven gaze behavior strategies (i.e., attentional orientation toward a specific area of the face), or from an interpretive bias. Despite individual predispositions to focus on particular facial regions due to personality traits, attention remains influenced by the activation of specific facial muscles corresponding to the expressed emotion (M. G. Calvo et al., 2018; Vaidya et al., 2014; Wells et al., 2016). When the emotion is subtle, however, the activation of these relevant facial muscles becomes less pronounced, thereby reducing the attraction of visual attention to the diagnostic areas of the face. Consequently when the emotion is subtle, the ability to identify subtle emotional facial expressions should depend both on personality-induced attentional orientation toward a specific facial area (affecting sensory discrimination) and interpretive bias specific to personality (affecting decision-making).

This study aimed to 1) examine the influence of personality on gaze behavior during the observation of neutral faces, 2) identify whether this personality-specific gaze behavior extend to the observation of emotional facial expressions across varying intensities, and 3) investigate whether this gaze behavior, induced by personality, influences sensitivity index (reflecting the ability to discriminate between a specific emotion and others) and if it is associated with a specific response bias. To do so, we assessed participants personality profiles and recorded their gaze behavior during an emotional facial expression identification task. The task required participants to recognize dynamic facial expressions – anger, disgust, fear or happiness – displayed by virtual agents at varying intensity levels. On some trials, the emotion could remain neutral, in order to study whether a response bias toward a particular emotion appeared on these neutral faces. We opted for dynamic facial expressions to get closer to naturalistic conditions, given the intrinsically dynamic nature of facial expressions (C. Green and Guo, 2018). We based our analysis on personality valence (affective disposition), as suggested by trait-congruence theories, and built our experimental groups using hierarchical clustering.

Our hypotheses were as follow:

H1a: When looking at neutral faces, individuals with a more positively-colored personality should spend more time on the mouth (area associated with the observation of positive emotions) than those with a negatively-colored personality who should spend more time on the eyes (area associated with the observation of negative emotions).

H1b: For low intensity emotional faces, we should observe the same pattern of results as when looking at neutral faces, regardless the emotion: individuals with a more positively-colored personality should focus more time on the mouth than those with a negatively-colored personality who should focus more time on the eyes.

H1c: At higher intensities, attention should be driven both by the stronger muscle activation and by personality-related affective dispositions. Specifically, individuals with a negatively-colored personality should spend more time than others on the eye area only when the emotion is negative. Conversely, those with a positively-colored personality should spent more time than others on the mouth, but only when the emotion is positive. The aim being to be more exposed to the valence congruent with their affective disposition, in line with the trait congruence theory.

H2: Assuming H1b is true, personality-induced gaze behaviors will impact sensitivity (*d'*) for low-intensity emotional facial expressions (e.g., larger *d'* for individuals with a negatively-colored personality – looking more at the upper part of the face – for expressions of anger or fear; and larger *d'* for individuals with a positively-colored personality – looking more at the lower par of the face – for expression of happiness).

H3: Response bias (c) will depend on personality profile (e.g., individuals with a positively-colored personality are expected to have a lower c value (i.e., liberal strategies) than those with a negatively-colored personality for expressions of happiness whereas the latter should have a lower c value for expressions of fear, anger, or disgust).

Method.

Participants.

Out of the initial 120 adult participants who participated in the experiment, four were excluded due to poor quality eye-tracking data (102 females out of 116 participants, M_{age} = 19.97, SD_{age} = 3.88). A minimum sample size of 100 participants was determined for Bayesian inference with a Bayes $Factor_{10}$ >3, a medium effect size ($d = 0.5$) and mildly informative priors ($\mu = 0$, $\sigma = 1$). Participants were students in psychology and compensated with course credit for their involvement in the study. They all had correct or corrected-to-correct vision and gave their written informed consent for participation. The research received approval from the University *** Committee (IRB: 00012022-104).

Material.

The stimuli were videos (1920 × 1080 px) composed of morphed images of the head and the neck of six virtual agents (three males, 500 px width, and 770 px height) created on FaceGen Modeller software, depicting facial expressions of anger, disgust, fear, or happiness, at varying intensity. The maximum intensity could be low (12.5%), medium (25%) or high (50%). In addition, we created one video per agent during which its face remained neutral (0% intensity, neutral trials).

We generated the videos depicting the emotional facial expressions by morphing the image of the neutral face with an emotional face using Adobe After Effects. Subsequently, we compiled the resulting images into 30 frames per second videos of 2000 ms each, ensuring that the face remained neutral for the first 1000 ms. Videos with neutral facial expressions featured a single image of the agents for their entire duration. We controlled videos' luminance using Matlab (version R2013b, MathWorks) and displayed the faces on a gray background. A 300 ms backward visual mask, produced by pixel permutation of the final emotional frame within a ±100 pixel range followed each video. Material is available online (https://doi.org/10.5281/zenodo.10683352).

We recorded participants' gaze behavior monocularly using an Eyelink 1000 eye-tracking system (SR Research Ltd.) at a rate of 1000 Hz. This system was positioned below the experimental 25" monitor and participants' head was stabilized on a headrest 57 cm away from the monitor.

Procedure.

Emotion identification task.

In this main task, participants had to identify the emotions from the videos, while we recorded their gaze behavior. Each trial started with participants fixating a central target to perform a drift correction of the eye position (Figure 1A). Subsequently, a video featuring an agent displaying a neutral or an emotional facial expression of increasing intensity appeared on the screen. A backward visual mask appeared directly after the video for 300 ms, followed by response boxes labeled "anger", "disgust", "fear" and "happiness" (four-alternative forced choice task), with no option to choose "neutral". Participants had to click with the mouse on the name of the emotion they had just observed, while minimizing errors. The position of the labels was counterbalanced across participants.

Participants completed a total of 156 experimental trials (144 emotional trials (12 actors

× 4 emotions × 3 intensities) + 12 neutral trials) preceded by a training session consisting of four trials. The experimental task consisted of three blocks, each starting with a 9-point calibration and separated by short breaks. The order of trials was pseudo-randomized to ensure that the same emotion did not appear consecutively, and that every agent appeared at least once per emotion per block.

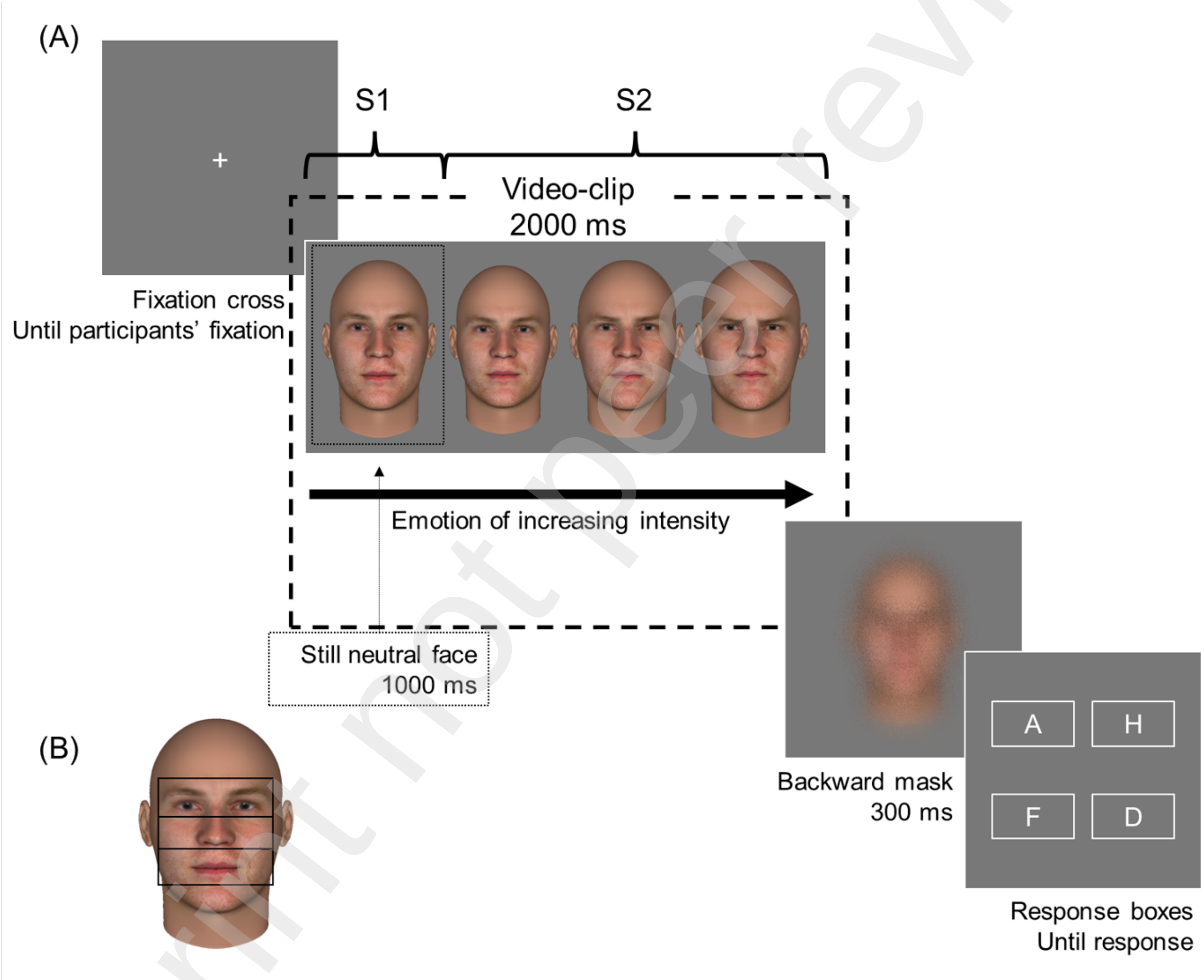

Figure 1: (A) Sequence of events of an experimental trial in the emotion identification task. S1: first exposure phase (from 0 to 1000 ms), S2: second exposure phase (from 1000 to 2000 ms). (B) Three areas of interest used for eye-tracking analysis: eye (width: 352 px; height: 129 px), nose (width: 352 px; height: 110 px) and mouth (width: 352 px; height: 110 px).

Personality measures.

At the end of the experiment, participants completed two questionnaires computerized using lab.js (Henninger et al., 2019). These questionnaires included the Big Five (BFI-Fr 45 items, McCrae and Costa Jr, 1997; French version by Plaisant et al., 2010) and the Liebowitz social anxiety scale (LSAS, Liebowitz, 1987; French version by Yao et al., 1999). The BFI-Fr assesses five personality dimensions: openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism, with scores for each trait derived from averaging nine associated items on a 5-point Likert scale. The LSAS evaluates the level of social anxiety through 24 items, each rated for anxiety (ranging from none to severe) and avoidance (ranging from never to habitual) on a 4-point scale.

For data analysis, we employed hierarchical clustering (using Ward's method) on personality scores to identify the optimal number of groups. This unsupervised method organizes data based on their (dis)similarities in order to minimize the variance within each cluster. Based on the dendrogram plot, we identified two clusters. The first cluster was labelled "positively-colored personality" (n = 50), as it mainly included participants scoring high in personality dimensions associated with positive emotions (i.e., extroversion, and agreeableness, John, Srivastava, et al., 1999). The second cluster, labelled "negatively-colored personality" (n = 66) grouped participants scoring high on neuroticism and social anxiety, dimensions associated with more negative emotions (Table 1). We performed Bayesian regressions to confirm the differences between the two clusters. They differed for each personality characteristic except for openness to experience (see Appendix B for a detailed description of the clusters and the analysis performed).

Table 1: Mean (standard deviation) of personality characteristics for each cluster from the clustering.

Cluster	O	C	E	A	N	SA
Positive	3.71 (0.62)	3.51 (0.57)	3.56 (0.72)	4.24 (0.36)	2.93 (0.80)	43.00 (15.97)
Negative	3.55 (0.62)	3.18 (0.81)	2.49 (0.77)	3.68 (0.58)	3.96 (0.62)	73.92 (19.52)

Note: Positive: positively-colored personality (n = 50), Negative: negatively-colored personality (n = 66). O: openness to experience, C: conscientiousness, E: extroversion, A: agreeableness, N: neuroticism, SA: social anxiety.

Processing of the eye-tracking data.

We created areas of interest (AOI, Figure 1B) prior to the experiment. Their size ensured that every area of interest of the face (eye, nose, mouth) stayed in, whatever the agent, emotion or intensity. We processed eye tracking data related to the emotional trials correctly identified and related to the neutral trials separately using EyetrackingR (Dink and Ferguson, 2015). We conducted the analysis in several steps. Initially, for each trial (neutral and emotional), we separated the data into two distinct exposure phases: the first phase (S1) covered the first second, during which the face remained neutral in emotional trials (from 0 ms to 1000 ms), and the second phase (S2) covered the next second when emotions were expressed in emotional trials. Then, we removed the trials with over 25% of trackloss (emotional trials: 1.34% for S1 and 0.71% for S2; neutral trials: 2.22% for S1 and 1.08% for S2). Finally, we computed the proportion of fixation time (expressed in percentage) within each AOI for each participant and trial for the first and the second phases (S1 and S2) of the neutral and the emotional trials.

Identifying gaze behavior over time.

In our pursuit to elucidate the temporal dynamics of gaze behavior in relation to personality when observing emotional facial expressions, we initiated a supplementary exploratory analysis. We employed growth curve analysis known for its robustness in modeling nonlinear time-course data (Mirman, 2014). This analysis focused on gaze behavior during low-intensity facial expressions trials. The muscular activation of the face being more subtle, the effect of personality should be more pronounced. For each participant and each trial, we calculated proportion of fixation within each AOI in 50 ms time bins, specifically during S2 of the emotional trials (from 1000 ms to 2000 ms). Then, for each AOI, we fitted fixation proportions over the time bins as a function of fourth-order orthogonal polynomials (Mirman, 2014), and the interaction between the polynomials and the emotion presented and personality (through the clusters). The linear term (first order) represents the slope (linear increase/decrease) of fixation proportion over time, the quadratic term (second order) reflects the sharpness of the central peak; the cubic and quartic terms (third and fourth order respectively) reflect the sharpness of the inflexions at the extremities of the curve (Kalénine et al., 2012).

Emotion identification.

We conducted an analysis of the emotion identification responses using Signal Detection Theory. We focused our analysis on responses to expressions of low intensity. Initially, for each of the four emotions and for each participant, we identified the probability of hits (i.e., accurate recognition of the displayed emotion) and of false alarms (i.e., incorrect identification of an emotion that is not present) following the methodology outlined by Gutiérrez-García and Calvo (2017). To address instances where the probability of hits and false alarms were extreme ($p = 0$ or $p = 1$), leading to infinite z scores, we applied the log-linear correction by increasing each frequency by 0.5 before computing the z scores of the two probabilities (Hautus, 1995). Then, we derived the sensitivity index *d'* and the response bias c using equations 1 and 2 respectively (Hautus et al., 2021). In addition, we analyzed the proportion of response for each emotion in trials where the facial expression remained neutral (12 neutral trials per individual).

$$d' = z(\text{Hit}) - z(\text{False Alarm}) \tag{1}$$

$$c = -\frac{1}{2}\left(z(\text{Hit}) + z(\text{False Alarm})\right) \tag{2}$$

Statistical analysis.

Data treatment and statistical analysis were conducted on R software (version 4.1.3, R Core Team, 2018) and RStudio (version 2022.12.0, RStudio Team, 2020). We performed Bayesian regressions using the brms package (R version: 3.6.3, brms version 2.13.0; Bürkner, 2017). We fitted each mixed-model using four independent Markov chains, each performing 2,000 iterations (with 1000 warm-up iterations) and applied mildly informative normally-distributed priors. We report the results as the medians of posterior distributions and 95% credible interval (CI, e.g., the range containing the most credible values given the data and the model). If the 95% CI of a contrast between two conditions does not include 0, there is evidence to support a difference between the two conditions. However, if the 95% CI of the contrast includes the 0 value, the null hypothesis cannot be rejected. Detailed descriptions of each statistical model are available in Appendix C and data and statistical analysis are available online (https://doi.org/10.5281/zenodo.10683352).

Results

Our analysis of the results is structured into three distinct sections. First, we examined the influence of personality on proportion of fixation time allocated to both neutral and emotional facial expressions of varying intensities, addressing H1. Then, we conducted an exploratory analysis to investigate the dynamic changes in gaze behavior over time depending on both personality and the emotion presented. Finally, we focused on the impact of personality on emotion identification. This section includes an assessment of how personality affects the categorization of neutral faces, as well as its effect on the parameters of Signal Detection Theory (*d'* and *c*), relevant to hypotheses H2 and H3. For the sake of conciseness and relevance, we report only report the statistical results that test our hypotheses. Details on fitted fixation time proportions are available on Appendix D.

Effect of personality on fixation proportion.

Neutral trials.

First, our analysis of the neutral trials revealed consistent patterns in the allocation of visual attention, regardless of whether we examined the first (S1, averaged R-Squared of the fit: $R^2 = 0.40$ [0.03, 0.49]) or second exposure phase (S2, averaged R-Squared of the fit: $R^2 = 0.01$ [0.01, 0.01]) of the trial. Participants spent more time on the eye AOI than the nose AOI (S1: +13.95 percentage points [+12.66, +15.19]; S2: +4.72 percentage points [+3.67,

+6.04]), and than the mouth AOI (S1: +13.60 percentage points [+11.79, +15.60]; S2: +5.16 percentage points [+3.83, 6.60]). However, no difference emerged between the nose and the mouth (S1: -0.34 percentage point [-2.15, +1.50]; S2: +0.44 percentage points [-0.87, +1.80]).

Second, during S1, thereby partially supporting H1a, participants from the negatively-colored personality cluster spent more time on the eye AOI (+2.93 percentage points [+1.30, +4.65]) and less time on the nose AOI (-2.17 percentage points [-3.73, -0.63]) than participants from the positively-colored personality cluster. However, no difference emerged between the two clusters over the mouth AOI (-2.81 percentage points [-5.91, +0.46], Figure 2, first line).

This effect persisted in part during S2. More specifically, participants from the negatively-colored personality cluster continued to spend more time than others on the eye AOI (+2.34 percentage points [+0.54, +3.97]), the difference vanished for the nose AOI (+0.43 percentage point [-2.01, +1.28]) and remained absent for the mouth AOI (-1.74 percentage points [-4.01, +0.27], Figure 2, second line).

Emotional trials.

When focusing on the first exposure phase of the emotional trials (S1), during which the face remained neutral, we observed a pattern similar to that of the neutral trials (averaged R-Squared of the fit: $R^2 = 0.05$ [0.05, 0.06]). First, participants spent more time on the eye AOI than on the nose (+15.45 percentage points [+15.06, +15.85]) and mouth AOI (+16.25 percentage points [+15.62, +16.87]). However, they also spent more time on the nose than on the mouth (+0.80 percentage point [+0.18, +1.38]). Second, and partially supporting H1a, participants from the negatively-colored personality cluster spent more time on the eye AOI (+2.19 percentage points [+1.53, +2.99]) and less on the nose AOI (-1.94 percentage

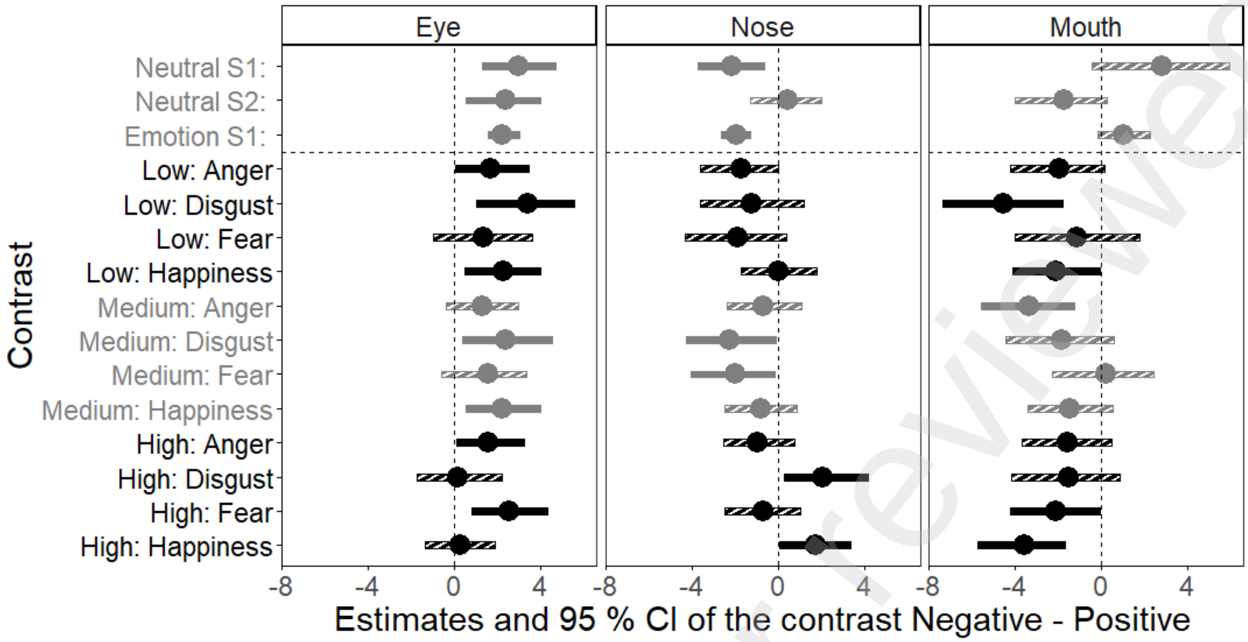

Figure 2: Median estimates of the contrasts (dots) between the negatively and positively-colored personality clusters and the associated 95% CI (horizontal lines) in percentage of fixation time as a function of AOI, intensity and emotion. There is evidence of differences between clusters when the 95% CI does not contain the value 0 (represented by the vertical dashed lines). In this case, the 95% CI are in solid line, otherwise, they are striped. Negative estimates indicate that participants from the negatively-colored personality cluster spend less time on the AOI than participants from the positively-colored personality cluster for a specific condition. The color code (black and gray) changes between intensities (low, medium, high) to enhance the figure readability. The two first lines regard the first (S1) and the second exposure phase (S2) of the neutral trials respectively, and the third line represents the first phase (S1) of the emotional stimuli. The other lines, below the horizontal dotted line, represent S2 of the emotional stimuli for the different intensities.

points [-2.64, -1.28]) than participants from the positively-colored personality cluster. No difference emerged between the two clusters over the mouth AOI (+1.03 percentage point [-0.16, +2.25], Figure 2, third line).

This personality effect persisted on S2 (averaged R-Squared of the fit: $R^2 = 0.01$ [0.01, 0.01]) for stimuli of low emotional intensity, partially supporting H1b. More precisely, participants from the negatively-colored personality cluster continued to spend more time on the eye AOI than participants from the positively-colored personality cluster for anger (+1.66

percentage point, [+0.01, +3.46]), disgust (+3.36 percentage points [+1.03, +5.55]) and happiness (+2.26 percentage points [+0.45, +3.98]), but not for fear (+1.35 percentage point [-0.98, +3.60]). Participants from the positively-colored personality cluster ceased to spend more time on the nose AOI than others, whatever the emotion (anger: +1.72 percentage point [-0.00, +3.63]; disgust: +1.25 percentage point [-1.18, +3.63]; fear: +1.87 percentage point [-0.38, +4.22]), happiness: +0.01 percentage point [-1.79, +1.74]). The time spent on the mouth AOI did not differ between the clusters for anger (+1.94 percentage point [-0.17, +4.25]) and fear (+1.17 percentage point [-1.75, +3.99]), but participants from the positively-colored personality cluster spent more time than others on it when the emotion was happiness (+2.12 percentage points [+0.06, +4.14] and disgust (+4.54 percentage points, [+1.80, +7.34], Figure 2).

For medium-intensity emotional stimuli, participants from the negatively-colored personality cluster continued to spend more time than others on the eye AOI for emotions of disgust (+2.33 percentage points [+0.37, +4.52]) and happiness (+2.20 percentage point [+0.53, +3.96]). The difference between groups remained absent for stimuli of fear (+1.54 percentage point [-0.62, +3.32]) and disappeared for anger (+1.27 percentage point [-0.37, +2.96]). Regarding the nose AOI, no difference emerged between the clusters for anger (+0.67 percentage point [-1.08, +2.39]) and happiness (+0.79 percentage point [-0.85, +2.47]). However, participants from the positively-colored personality cluster spent more time than others on it for disgust (+2.27 percentage points [+0.09, +4.27]) and fear (+1.99 percentage point [+0.16, +4.04]). Finally for the mouth AOI, participants from the positively-colored personality cluster spent more time on it than others for anger (+3.34 percentage points [+1.24, +5.58]), but no other difference emerged between the two clusters (disgust: +1.86 percentage point [-0.60, +4.44]; fear: -0.22 percentage point [-2.39, +2.27]; happiness: +1.47 percentage point [-0.54, +3.43]).

At high intensity, consistent with H1c: i) participants from the negatively-colored personality cluster spent more time than others on the eye AOI, but only when the emotion was anger (+1.54 percentage point [0.07, 3.22]), and fear (+2.52 percentage points [+0.78, +4.28]; disgust: +0.13 percentage point [-1.74, +2.20]; happiness: 0.25 percentage point [-1.38, 1.88]); ii) they also spent more time on the nose AOI than others for disgust (+2.07 percentage points [+0.27, +4.17], but not for anger (-0.98 percentage point [-2.54, +0.74]) nor fear (-0.71 percentage point [-2.46, +1.02]). In addition, iii) participants from the positively-colored personality cluster spent more time than those from the negatively-colored personality cluster on the mouth AOI when the emotion was happiness (+3.59 percentage points [+1.71, +5.76]), but not for anger (+1.57 percentage point [-0.47, +3.69]) nor disgust (+1.53 percentage point [-0.83, +4.17]). However, and not supporting H1c: i) participants from the negatively-colored personality cluster also spent more time than others on the nose AOI when the emotion was happiness (+1.74 percentage point [+0.07, +3.33]); and ii) those from the positively-colored personality cluster spent more time than others on the mouth AOI when the emotion was fear (+2.13 percentage points [+0.06, +4.23]).

Gaze behavior over time.

The exploratory analysis, centered on the presentation of low-intensity emotional stimuli, revealed no difference between groups regarding the curve shape of gaze behavior over time on the eye AOI and the mouth AOI, whatever the emotion. However, a distinct pattern emerged for the nose AOI (averaged R-Squared of the fit: R^2 = 3.11E-5 [1.99E-5, 4.72E-5]):

the cubic time term was lower for participants from the positively-colored personality cluster compared to those from the negatively-colored personality cluster (-38.83E-4 percentage point [-74.34E-4, -4.87E-4]), indicating a faster increase of fixation proportion over the nose AOI for participants from the negatively-colored personality cluster (Figure 3B). Specifically, the fixation proportion was lower for participants from the negatively-colored personality cluster at the onset of this period then increased rapidly (without exceeding the positively-colored personality cluster).

Effect of personality on emotion identification.

In our analysis of bias in identifying emotions from neutral faces, we observed a higher categorization as happiness (31.67%, [28.63, 34.67]), followed by disgust (25.69%, [28.63, 34.67]) and fear (24.13%, [21.32, 26.87]), with anger being the least frequent (20.24%, [17.46, 22.96]). No differences between the groups emerged (i.e., the 95% CI for the differences between the two groups for each emotion included zero). In addition, and as shown in Figure 4, the overall accuracy in the correct identification of emotions across all intensities was relatively high.

Despite the influence of personality on gaze behavior, this did not impact the sensitivity index *d'*, thereby not supporting H2. The *d'* values, indicating the ability to correctly identify emotions, did not differ between personality clusters, regardless of the emotion (Table 2, averaged R-Squared of the fit: $R^2 = 0.70$ [0.66, 0.73]).

Furthermore, our findings did not support H3, as the response bias c indicative of a tendency to favor certain emotions, was unaffected by personality since no difference emerged between the two clusters (Table 2, averaged R-Squared of the fit: $R^2 = 0.36$ [0.31, 0.41]).

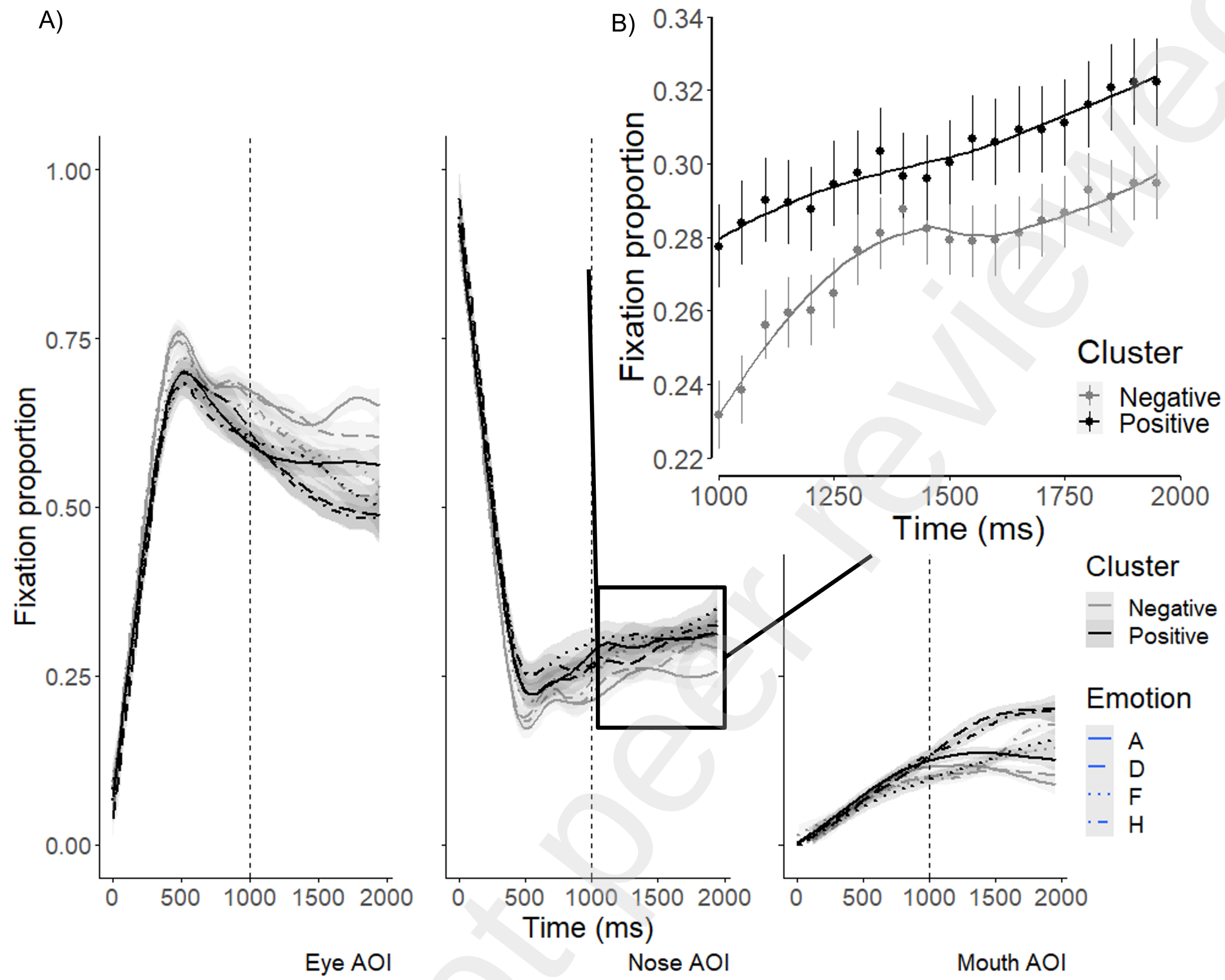

Figure 3: A) Mean fixation proportion over time (raw data) over the eye AOI (left panel), the nose AOI (central panel) and the mouth AOI (right panel) as a function of cluster and emotion. The vertical dotted lines represent the onset of emotion (1000 ms after the onset of the trial). The ribbons represent the standard error. B) Mean fitted fixation proportion over time from the onset of the emotion on the nose AOI as a function of cluster. Dots and error bars represent the mean and standard error for each 50 ms time bin respectively.

Discussion

This study investigated personality-driven gaze behavior during the viewing of neutral and emotional facial expressions of different intensities. We sought to understand if these gaze patterns could impact the identification of subtle emotional. To do so, we conducted an experiment during which we recorded participants' gaze behavior as they identified dy-

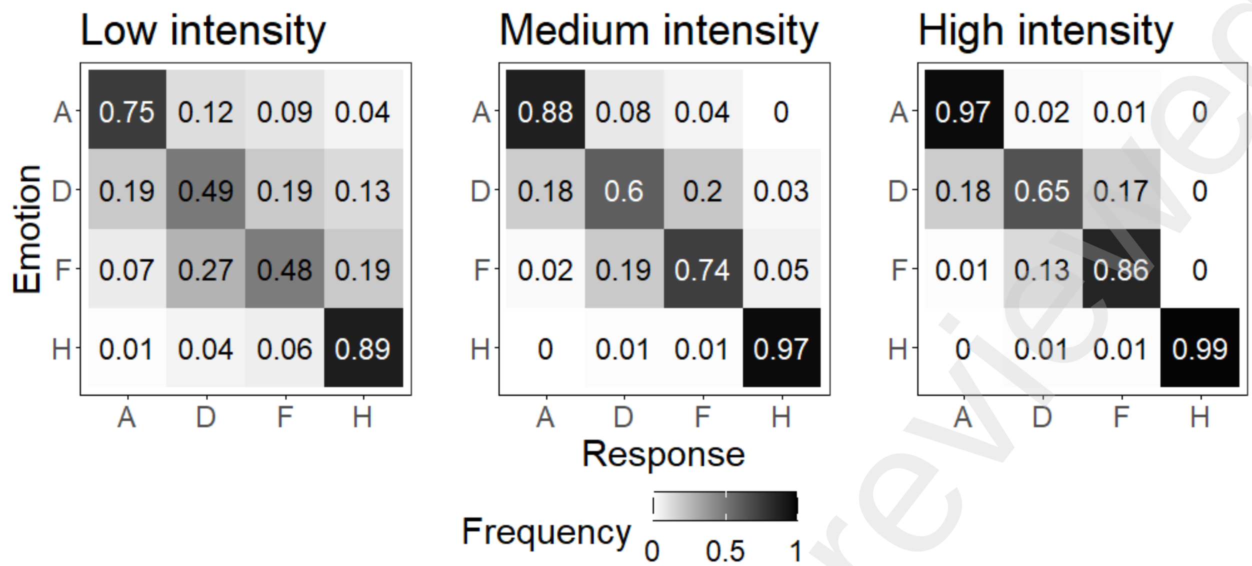

Figure 4: Confusion matrix between emotions for each intensity. A: anger, D: disgust, F: fear, H: happiness.

namic emotional facial expressions of anger, disgust, fear, and happiness. The intensity of the facial expressions could be low, medium or high and in some trials, the face could remain neutral. We categorized participants into personality-based clusters: one comprising positively colored, socially-inclined individuals and another comprising negatively colored, more introverted individuals. Furthermore, we employed Signal Detection Theory to analyze their responses to the identification of subtle emotional facial expressions.

Effect of personality on gaze behavior.

Consistent with the trait-congruency theory, individuals with a more negatively-colored personality spent more time on the eye area than those with a more positively-colored personality when viewing neutral faces, a region associated with negative emotions (such as anger or fear, Bargh et al., 1988; Perlman et al., 2009; Rusting, 1998). Interestingly, contrary to our expectation, individuals with a positively-colored personality did not spend more time

Table 2: Contrast estimates and 95% Confidence Intervals of the Signal Detection Theory parameters (*d'* and *c*) between the positively and the negatively colored clusters

Parameter	Emotion	Contrast	Estimate	95% CI
d'	.	Anger - Disgust	0.82	[0.73, 0.91]
d'	.	Anger - Fear	0.73	[0.64, 0.83]
d'	.	Anger - Happiness	-0.27	[-0.37, -0.18]
d'	.	Disgust - Fear	-0.09	[-0.18, 0.00]
d'	.	Disgust - Happiness	-1.09	[-1.18, -0.99]
d'	.	Fear - Happiness	-1.01	[-1.1, -0.91]
d'	.	Positive - Negative	-0.05	[-0.16, 0.07]
d'	Anger	Positive - Negative	-0.03	[-0.19, 0.14]
d'	Disgust	Positive - Negative	-0.05	[-0.21, 0.11]
d'	Fear	Positive - Negative	0.00	[-0.15, 0.17]
d'	Happiness	Positive - Negative	-0.11	[-0.28, 0.05]
c	.	Anger - Disgust	-0.19	[-0.27, -0.12]
c	.	Anger - Fear	-0.26	[-0.33, -0.18]
c	.	Anger - Happiness	0.26	[0.19, 0.34]
c	.	Disgust - Fear	-0.07	[-0.14, 0.00]
c	.	Disgust - Happiness	0.46	[0.38, 0.53]
c	.	Fear - Happiness	0.52	[0.46, 0.60]
c	.	Positive - Negative	0.01	[-0.05, 0.06]
c	Anger	Positive - Negative	-0.01	[-0.11, 0.09]
c	Disgust	Positive - Negative	0.09	[-0.02, 0.19]
c	Fear	Positive - Negative	0.04	[-0.07, 0.14]
c	Happiness	Positive - Negative	-0.09	[-0.18, 0.02]

Note: Positive: positively-colored personality, Negative: negatively-colored personality. Contrasts are credible if the 95% CI does not include 0.

on the mouth area than other individuals (Ellingsen et al., 2019; Pavic et al., 2021), but on the nose area. This specific gaze pattern was most evident during the first second of fixation, indicating a dominance of automatic, personality-driven processes in this initial period. The emergence of this nose-focused pattern may be attributed to the complex nature of the personality traits within our clusters. Hence, participants in the positively-colored cluster also exhibited higher levels of conscientiousness, a trait known to foster focus on the central part of the face, thereby offering a more holistic view of the face (McCrackin et al., 2022; Sarsam et al., 2023).

This difference between the two groups partly persisted with the presentation of subtle emotions. Specifically, individuals from the negatively-colored personality cluster continued to spend more time on the eye area than those from the positively-colored personality cluster except for fear. This absence of difference between the two groups for fear may be attributed to the eyes' critical role in identifying threats, a fundamental aspect regardless of personality. The differences between groups for the nose area dissipated as soon as emotion emerged, possibly due to a rapid shift in gaze toward this area in the negatively-colored personality group, as revealed by the growth curve analysis. Indeed, when confronted with dynamic stimuli, individuals tend to fixate more the central part of the face, taking advantage of kinematic information from the whole face to recognize emotions (Blais et al., 2017; Roy et al., 2010). In addition, individuals from the positively-colored personality cluster spent more time on the mouth area than those from the negatively-colored personality cluster for emotions of happiness and unexpectedly for disgust. This specific gaze for disgust faces may stem from the proximity between the mouth and nose AOI boundaries. This study paves the way for future, more data-driven analyses, which could reveal even more distinctive results, offering a finer-grained understanding of the underlying mechanisms (Caldara and Miellet, 2011). Although this approach was not adopted in the current study, it represents a promising direction for further work. Taken together, the results suggest that even at low intensity, muscle activation induced by dynamic emotional facial expressions affects differently gaze behavior, depending on personality profile, in line with the trait-congruency theory.

Unexpectedly, the results observed with medium-intensity emotions contradicted our initial predictions. More precisely, participants from the negatively-colored personality cluster spent more time than others over the eyes area, specifically for expressions of happiness and disgust, emotions typically *not* associated with the eyes. Similarly, participants from the positively-colored personality cluster spent more time than others over the mouth area, but only when viewing angry faces – emotion generally *not* associated to the mouth. These surprising results reveal a complex interaction between salience – linked to muscle activation – and personality in gaze orientation, with a predominant effect of salience that modulates the expected impact of personality. Specifically, the effect of personality is only visible for facial areas (e.g., the eye) that are not diagnostic for a particular emotion (e.g., happiness). Otherwise, for areas (e.g., the eye) that are diagnostic of a specific emotion (e.g., anger), the perceptual salience generated by muscle activity overrides the influence of personality. Therefore, the salience of the emotion seems to overcome the effect of personality, but only over diagnostic areas of the displayed emotion.

Gaze patterns regarding high-intensity emotions differed to those observed at medium intensity. More specifically, individuals with a positively-colored personality spent more time on the diagnostic areas of positive emotions (e.g., the mouth in happy expression), compared to other individuals. Conversely, those with a negatively-colored personality focused more than others on the diagnostic areas of negative emotions (e.g., the eyes in fear and anger expressions and the nose in disgust expression). Our results therefore suggest that our personality potentiates gaze behaviors that favor the exposure to emotions congruent with its positive/negative coloration, in accordance with the trait-congruency theory. One interesting point concerns the change of gaze strategies between medium and high intensity. While at medium intensity, personality appeared to influence gaze patterns only for the non-diagnostic areas of the displayed emotions, at high intensity, this effect occurred for diagnostic areas. This suggests a complex interplay between the salience of emotions and the influence of personality on gaze behavior, indicating distinct dynamics across different intensities of emotional expressions that requires further investigation.

Identification of low-intensity emotional facial expressions.

Our study reveals a homogeneous sensory discrimination across different personality clusters when identifying low-intensity emotions. This finding could be attributed to the dynamic nature of the stimuli used, which, even at a low intensity of 12%, were reasonably identified by participants. Consistent with prior research, dynamic facial expressions, offering more detailed kinematic cues, are generally recognized more easily than static representations (Barrett et al., 2019; Blais et al., 2017; Bould and Morris, 2008; Jack et al., 2016; Roy et al., 2010). In addition, this effective identification was particularly pronounced for happiness and anger, emotions we hypothesized to be most distinctively recognized between the two groups. This may result from the early attentional orientation toward negative emotions, and to the facial features associated with expressions of happiness, particularly salient, both favoring better recognition of these emotions (M. G. Calvo and Nummenmaa, 2008; Lagattuta and Kramer, 2017; Wells et al., 2016). The lack of differences in response bias across the groups, coupled with their comparable performance in categorizing neutral expressions, suggests that personality-driven gaze behaviors do not adversely affect the recognition of subtle emotional expressions, especially at lower intensities.

To conclude, the results of this study provide a deeper insight into the impact of personality, and more precisely affective disposition, on gaze behavior in social situations. We found that individuals possess a robust capacity to accurately perceive and interpret subtle emotional expressions, an ability that remains consistent despite the variations in gaze patterns influenced by personality. More precisely, personality guides attention toward facial features that align with one's affective disposition, regardless of the presence or subtlety of emotions, thereby facilitating exposure to more intense emotional expressions.

Constraints on Generality

This study was not preregistered. During the preparation of this work the authors used DeepL in order to ensure English quality and readability. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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Contribution

A: Conceptualization, Methodology, Software, Validation, Formal analysis, Data curation, Investigation, Visualization, Writing - original draft, review & editing

B: Conceptualization, Methodology, Validation, Resources, Visualization, Writing - original draft, review & editing

C: Conceptualization, Methodology, Validation, Resources, Visualization, Writing - original draft, review & editing

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Appendices

Details of the hierarchical clustering analysis

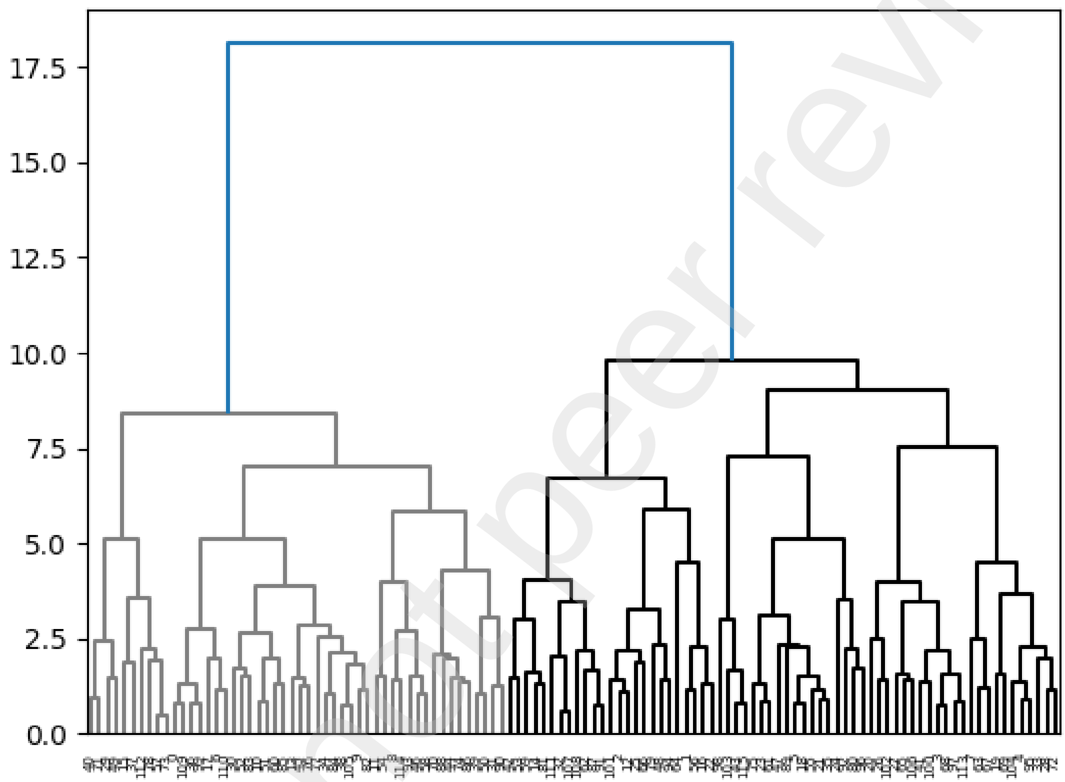

Figure B.1: Dendrogram plot using Ward's method. The negatively-colored personality cluster is in gray, the positively-colored personality cluster is in black. The x-axis groups the participants based on their distance from their cluster.

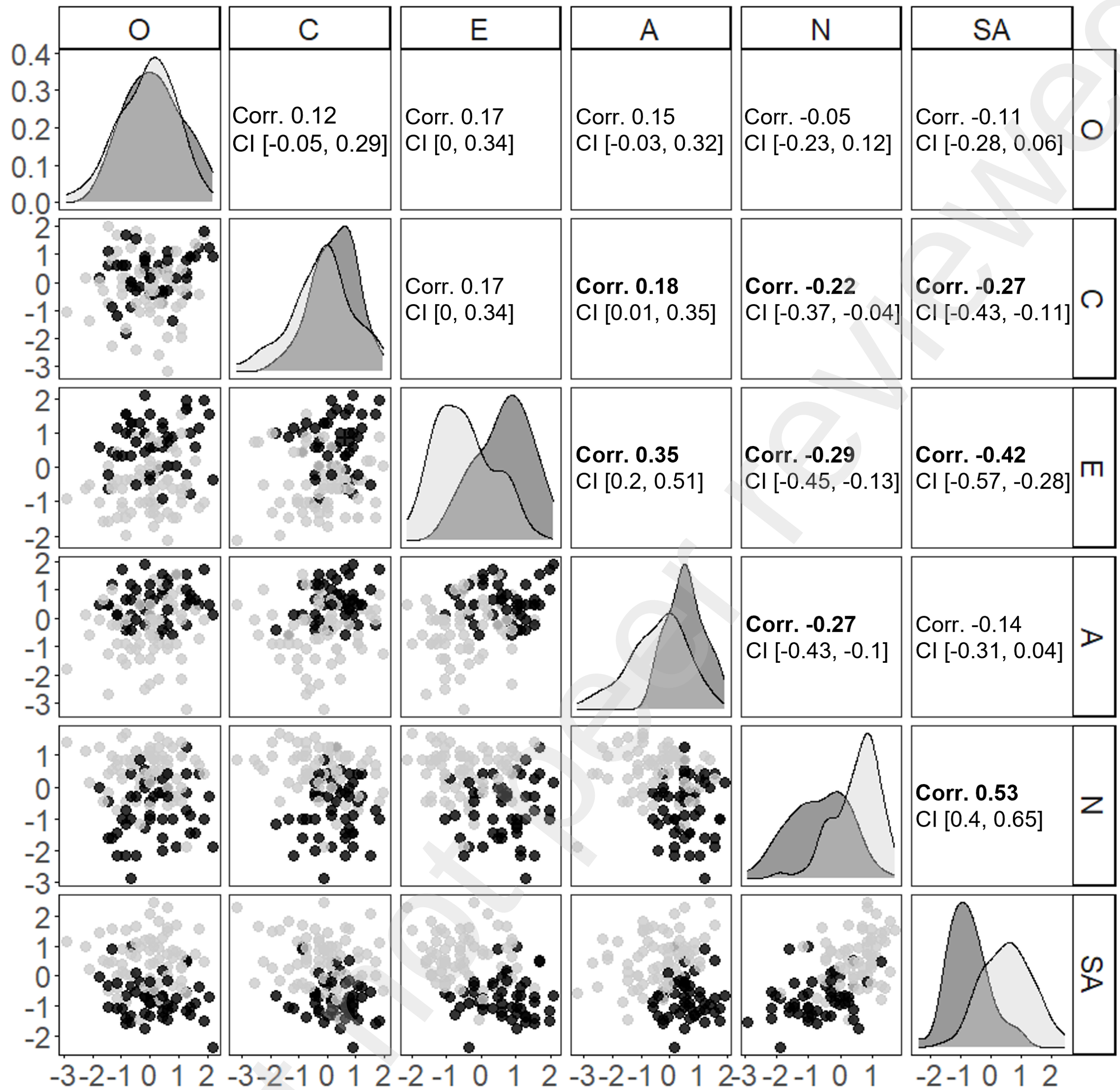

Figure B.2: Correlations between personality traits centered scores and density plots for each personality trait depending on the cluster. O: openness to experience, C: conscientiousness, E: extroversion, A: agreeableness, N: neuroticism, SA: social anxiety. Corr: correlation on the entire sample, CI: 95% confidence interval. Correlations with strong evidence of being non-zero are in bold. Individuals from the negatively-colored personality cluster are presented in gray, those from the positively-colored personality cluster are in black.

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Table B.1: Contrast estimates and 95% Confidence Intervals of the personality characteristics between the positively and the negatively-colored clusters.

Personality Characteristics	Estimate	95% CI
Openness	0.16	[-0.07, 0.38]
Conscientiousness	0.32	[0.06, 0.57]
Extroversion	1.05	[0.77, 1.32]
Agreeableness	0.53	[0.33, 0.73]
Neuroticism	-0.98	[-1.24, -0.72]
Social Anxiety	-27.66	[-33.99, -21.24]

Note: Positive estimates indicate that the median of the positively-colored personality cluster is greater than that of the negatively-colored personality cluster. Contrasts are credible if the 95% CI does not include 0 (i.e., the null hypothesis cannot be rejected).

Statistical models

For each model, the interaction and additive terms are illustrated by the symbols ':' and '+' respectively. Random effects, taking into account interindividual variability and intertrial variability (when applicable) are represented by $(1|Subject)$ and $(1|Trial)$ respectively. When applicable, we controlled for the gender (male, female) of the stimulus, but we did not test it as we did not formulate hypothesis on this variable. Through the different models, the categorical variables emotion (anger, disgust, fear, happiness), intensity (low, medium, high), AOI (eye, nose, mouth) and gender are within-subject whereas the variable cluster (other-oriented, self-oriented) is a between-subject variable.

Models for cluster comparison between the different personality characteristics

Equation C.1 represents the model applied to each personality characteristic assessed in the experiment. We specified a normal (gaussian) distribution for the dimensions openness to experience, conscientiousness, extraversion and social anxiety and a skew normal distribution (due to the asymmetry of the distribution of the data) for the agreeableness and neuroticism dimensions.

$$Personality\ characteristic \sim Cluster \tag{C.1}$$

Models for fixation proportions.

Equation C.2 represents the model used for the analysis of fixation proportions of the neutral trials (S1 and S2) and S1 of the emotional trials, taking into account the effect of area of interest (AOI) and cluster and their interaction while controlling for the gender of the stimulus. Equation C.3 corresponds to the model used for the analysis of S2 of the emotional trials, taking into account the AOI, the emotion and intensity of the stimulus and the cluster; their interaction and controlling for the effect of the stimulus' gender.

$$\begin{aligned} Fixation\ proportion \sim \text{AOI} + \text{Cluster} + \text{Gender} + AOI : Cluster \\ + (1|\text{Trial}) + (1|\text{Subject}) \end{aligned} \tag{C.2}$$

$$\begin{aligned} Fixation\ proportion \sim \text{AOI} + \text{Emotion} + \text{Intensity} + \text{Cluster} + \text{Gender} \\ + AOI : Emotion : Intensity : Cluster \\ + (1|\text{Trial}) + (1|\text{Subject}) \end{aligned} \tag{C.3}$$

Models for the growth curve analysis.

As described in the main text, for the growth curve analysis, we applied one model per AOI (eye, nose, mouth) and limited our analysis to S2 of the emotional trials displayed at low intensity. Orthogonal polynomials (continuous variables) are labelled *ot1,..., ot4* in the models and correspond to polynomials of the first to the fourth order. The random structure includes random slopes for each trial for each participant on each time term and their interaction. For each model, we specified a beta distribution (zero one inflated beta distribution).

$$\begin{aligned} \text{Fixation proportion} \sim \text{Emotion} + \text{Cluster} + \text{Gender} \\ + Emotion : Cluster \\ + (ot1 + ot2 + ot3 + ot4) \\ + (ot1 + ot2 + ot3 + ot4|\text{Subject}) \\ + (ot1 + ot2 + ot3 + ot4|Subject : Trial) \end{aligned} \tag{C.4}$$

Model for the categorization of the neutral stimuli.

Regarding the categorization of the neutral stimuli, we applied a beta distribution ("zero one inflated beta distribution", allowing the integration of values equal to 0 and 1 to the fit).

$$\begin{aligned} \textit{Proportion of response} \sim \text{Emotion} + \text{Cluster} \\ + Emotion : Cluster + (1|Subject) \end{aligned} \tag{C.5}$$

Models for signal detection theory parameters

We fitted the same models to test the effect of personality and emotion on *d'* and *c* parameters and applied a normal distribution to the fits:

$$d' \sim Emotion + Cluster + Emotion : Cluster + (1|Subject) \tag{C.6}$$

$$c \sim Emotion + Cluster + Emotion : Cluster + (1|Subject) \tag{C.7}$$

Posterior marginal medians and associated 95% CI of the proportion of fixation time

Table D.2: Posterior proportion of fixation time and 95% CI as a function of the analysis performed, area of interest (AOI) and cluster.

Analysis	AOI	Cluster	Fixation proportion	95% CI
Neutral S1	Eye	Other	0.40	[0.38, 0.42]
Neutral S1	Eye	Self	0.43	[0.41, 0.44]
Neutral S1	Mouth	Other	0.26	[0.24, 0.29]
Neutral S1	Mouth	Self	0.29	[0.27, 0.31]
Neutral S1	Nose	Other	0.28	[0.27, 0.30]
Neutral S1	Nose	Self	0.26	[0.25, 0.28]
Neutral S2	Eye	Other	0.35	[0.34, 0.37]
Neutral S2	Eye	Self	0.38	[0.36, 0.39]
Neutral S2	Mouth	Other	0.32	[0.30, 0.34]
Neutral S2	Mouth	Self	0.30	[0.28, 0.32]
Neutral S2	Nose	Other	0.31	[0.30, 0.33]
Neutral S2	Nose	Self	0.32	[0.30, 0.33]
Emotion S1	Eye	Other	0.41	[0.41, 0.42]
Emotion S1	Eye	Self	0.43	[0.43, 0.44]
Emotion S1	Mouth	Other	0.26	[0.25, 0.27]
Emotion S1	Mouth	Self	0.27	[0.26, 0.27]
Emotion S1	Nose	Other	0.28	[0.27, 0.28]
Emotion S1	Nose	Self	0.26	[0.25, 0.26]

Table D.3: Posterior proportion of fixation time and 95% CI as a function of the area of interest (AOI), cluster, intensity and emotion for S2 of the emotional trials

AOI	Cluster	Intensity	Emotion	Fixation proportion	95% CI
Eye	Other	High	Anger	0.35	[0.34, 0.36]
Eye	Other	High	Disgust	0.36	[0.35, 0.38]
Eye	Other	High	Fear	0.35	[0.33, 0.36]
Eye	Other	High	Happiness	0.35	[0.34, 0.37]
Eye	Other	Low	Anger	0.36	[0.34, 0.37]
Eye	Other	Low	Disgust	0.34	[0.32, 0.36]
Eye	Other	Low	Fear	0.36	[0.34, 0.38]
Eye	Other	Low	Happiness	0.35	[0.33, 0.36]
Eye	Other	Medium	Anger	0.36	[0.35, 0.37]
Eye	Other	Medium	Disgust	0.34	[0.33, 0.36]
Eye	Other	Medium	Fear	0.36	[0.34, 0.38]
Eye	Other	Medium	Happiness	0.34	[0.33, 0.36]
Eye	Self	High	Anger	0.37	[0.36, 0.38]
Eye	Self	High	Disgust	0.36	[0.35, 0.38]
Eye	Self	High	Fear	0.37	[0.36, 0.39]
Eye	Self	High	Happiness	0.35	[0.34, 0.37]
Eye	Self	Low	Anger	0.38	[0.36, 0.39]
Eye	Self	Low	Disgust	0.37	[0.36, 0.39]
Eye	Self	Low	Fear	0.38	[0.36, 0.39]
Eye	Self	Low	Happiness	0.37	[0.36, 0.38]
Eye	Self	Medium	Anger	0.37	[0.36, 0.38]
Eye	Self	Medium	Disgust	0.37	[0.35, 0.38]
Eye	Self	Medium	Fear	0.38	[0.36, 0.39]
Eye	Self	Medium	Happiness	0.37	[0.35, 0.38]
Mouth	Other	High	Anger	0.32	[0.30, 0.33]
Mouth	Other	High	Disgust	0.33	[0.31, 0.34]
Mouth	Other	High	Fear	0.34	[0.33, 0.36]
Mouth	Other	High	Happiness	0.35	[0.33, 0.36]
Mouth	Other	Low	Anger	0.33	[0.31, 0.34]
Mouth	Other	Low	Disgust	0.34	[0.32, 0.36]
Mouth	Other	Low	Fear	0.33	[0.30, 0.35]
Mouth	Other	Low	Happiness	0.33	[0.32, 0.35]
Mouth	Other	Medium	Anger	0.34	[0.32, 0.36]

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Table D.3 – Continued from previous page

AOI	Cluster	Intensity	Emotion	Fixation proportion	95% CI
Mouth	Other	Medium	Disgust	0.34	[0.32, 0.36]
Mouth	Other	Medium	Fear	0.31	[0.29, 0.33]
Mouth	Other	Medium	Happiness	0.33	[0.32, 0.35]
Mouth	Self	High	Anger	0.30	[0.29, 0.31]
Mouth	Self	High	Disgust	0.31	[0.29, 0.33]
Mouth	Self	High	Fear	0.32	[0.31, 0.34]
Mouth	Self	High	Happiness	0.31	[0.30, 0.32]
Mouth	Self	Low	Anger	0.30	[0.29, 0.32]
Mouth	Self	Low	Disgust	0.29	[0.28, 0.31]
Mouth	Self	Low	Fear	0.32	[0.30, 0.34]
Mouth	Self	Low	Happiness	0.31	[0.30, 0.32]
Mouth	Self	Medium	Anger	0.31	[0.29, 0.32]
Mouth	Self	Medium	Disgust	0.32	[0.30, 0.34]
Mouth	Self	Medium	Fear	0.31	[0.30, 0.33]
Mouth	Self	Medium	Happiness	0.32	[0.30, 0.33]
Nose	Other	High	Anger	0.33	[0.32, 0.34]
Nose	Other	High	Disgust	0.31	[0.29, 0.32]
Nose	Other	High	Fear	0.32	[0.30, 0.33]
Nose	Other	High	Happiness	0.30	[0.29, 0.31]
Nose	Other	Low	Anger	0.33	[0.31, 0.34]
Nose	Other	Low	Disgust	0.33	[0.31, 0.35]
Nose	Other	Low	Fear	0.33	[0.31, 0.35]
Nose	Other	Low	Happiness	0.32	[0.30, 0.33]
Nose	Other	Medium	Anger	0.32	[0.31, 0.34]
Nose	Other	Medium	Disgust	0.33	[0.32, 0.35]
Nose	Other	Medium	Fear	0.33	[0.31, 0.34]
Nose	Other	Medium	Happiness	0.32	[0.31, 0.33]
Nose	Self	High	Anger	0.32	[0.31, 0.33]
Nose	Self	High	Disgust	0.33	[0.31, 0.34]
Nose	Self	High	Fear	0.31	[0.30, 0.32]
Nose	Self	High	Happiness	0.32	[0.31, 0.33]
Nose	Self	Low	Anger	0.31	[0.30, 0.32]
Nose	Self	Low	Disgust	0.32	[0.31, 0.34]
Nose	Self	Low	Fear	0.31	[0.30, 0.33]

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Table D.3 – Continued from previous page

AOI	Cluster	Intensity	Emotion	Fixation proportion	95% CI
Nose	Self	Low	Happiness	0.32	[0.30, 0.33]
Nose	Self	Medium	Anger	0.31	[0.30, 0.33]
Nose	Self	Medium	Disgust	0.31	[0.30, 0.33]
Nose	Self	Medium	Fear	0.31	[0.30, 0.32]
Nose	Self	Medium	Happiness	0.31	[0.30, 0.33]