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PERSONALITY TRAITS MODULATE VISUAL ATTENTION IN PICTURE NAMING/CATEGORISING TASKS

The main question motivating this study was to which extent overt visual selective attention depends on personality traits and on whether the participant is performing a linguistic or non-linguistic task. To answer this question, this study investigated the effects of personality traits and task demands (i.e., categorising and naming pictures) on visual selective attention. The visual selective attention of 64 Dutch participants was assessed using eye-tracking. Their personality traits were measured using the Big-Five model (BFI-2-S). The results indicated that higher degrees of extraversion, open-mindedness and agreeableness affect visual selective attention during language production tasks. That is, more extraverted, more open-minded and more agreeable people could be more distracted by their partners' pictures more than conscientious as well as emotionally negative people could be. Those who have more degrees of the latter personality traits selectively attend to their own pictures and overlook their partners'. Thus, this study contributed to the considerable number of studies investigating the effect of individual differences on cognitive processing demonstrating that some personality traits could affect selective visual attention in picture naming/categorising tasks.

Keywords: personality traits, selective visual attention, social attention, eye tracking, linguistic/non-linguistic tasks.

1. INTRODUCTION

This study was motivated by Matthews' (2008) claim that there is a correlation between personality traits and information processing. Attention can be considered the first stage in information processing as it makes the information read or heard available to the subsequent processing stages. More precisely, selective attention plays a pivotal role in cognitive processing in general and in language processing in particular. Due to the limited capacity of the processing system, selective attention seems an essential step in the successful processing of information read or heard. It filters unnecessary information from important information, which enhances the ability of the cognitive system. Selective attention could be either visual or auditory. This study focused on visual selective attention. Particularly, in this study, visual selective attention means that the information from naming the target picture (i.e., the participants' pictures) should be processed, yet information from partners' pictures, displayed on the same screen, should be ignored (see Method, for details).

Language production research demonstrates a close coupling between visual attention and speech planning. For example, Griffin and Bock (2000) show that speakers typically fixate referents

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shortly before naming them. In spoken-language comprehension, Tanenhaus et al. (1995) similarly found that listeners direct their gaze toward objects in a display as the corresponding linguistic expressions unfold. Both sets of studies, however, focus on participants' attention to their own visual material rather than to those of an interaction partner. Visual attention to a partner's image has been examined more directly in Hoedemaker and Meyer (2019), who reported that while engaging in a turn-taking language task, speakers need not fixate a partner's picture to the same extent that they fixate their own. Likewise, Brehm et al. (2019) observed that fixations to a partner's picture occurred primarily after speech onset, suggesting that they may reflect residual processing time at the end of a trial rather than a functional requirement for production. Collectively, these studies indicate that although visual attention to a picture is often correlated with hearing or producing corresponding linguistic material, individuals vary considerably in the degree to which they attend to others' information in a partner's scene. This variation may be attributable to additional contextual or cognitive factors.

McIntyre and Graziano (2016) previously claimed that "these differences have been recognized in various forms as orientations, interests, and preferences, but empirical work examining these differences at a cognitive level is scarce" (p. 1258). This effect was probed in different joint action tasks (e.g., Dalmaso et al., 2021), which argues for "pervasive effects of real social stimuli on attentional mechanisms" (p. 469). The same conclusion was also drawn by Tufft and Gobel (2021), who asserted that both the interpretation of the social context and the gender of the social interactants could influence social visual attention. In fact, many factors are believed to alter selective attention. Those factors can be either bottom-up (low-level), such as image properties, or top-down (high-level) factors such as personality traits (Kaspar & Konig, 2012). Existing research provides ample evidence that attention can be modulated by individual differences. Working memory (Couperus et al., 2021), motivational relevance of the information (Cummins et al., 2016), emotion (Kaspar & Konig, 2012), personality traits (Wilson et al., 2016), etc., could be related to selective attention. In view of all this, the present study focuses on exploring whether personality traits are related to visual attention in non-communicative language tasks, i.e., naming (language production task) and categorising (language perception task).

This focus on personality traits is informed by Matsumoto et al.'s (2010) argument that personality might influence eye-movement patterns during visual information processing. Because personality traits reflect relatively stable dispositions, they may systematically shape how individuals attend to and engage with their environment. In fact, Wu et al. (2014) expanded on this topic as they

explored the relationship between personality traits and social attention, and they found that "who a person is affects how they move their eyes to social stimuli" (p. 25). In other words, their results confirmed that there is a relationship between personality and eye movements towards social stimuli. More precisely, their results revealed that while both extraversion and agreeableness relate positively "to the amount of attention committed to the eyes of others, openness to experience [negatively relates] to the attention committed to eyes" (Wu et al., 2014, p. 28).

As pointed out earlier, the present study aims to explore the effects of personality traits and task demands on selective visual attention in non-communicative interactions. It thereby aims to contribute to the literature on individual differences and selective visual attention in general and to the limited literature on personality traits and selective visual attention in particular. Therefore, the main questions raised in the present study were the following:

(1) Do personality traits direct visual selective attention? and

(2) Do those traits impact visual selective attention differently when someone is speaking (linguistic task) versus making a forced-choice button press categorising decision (non-linguistic task)?

Eye-tracking was used to explore whether selective attention in a non-communicative language production task (i.e., naming pictures) and perceptive tasks (i.e., categorising) is modulated by individual differences. In other words, patterns of fixations were used to probe whether, depending on their personality traits, participants pay selective attention towards their stimuli while naming or categorising them, or whether they are distracted by their partners' stimuli. Therefore, the Big Five Inventory–2 Short Form (BFI-2-S) (Soto & John, 2017) was used to measure participants' personality traits.

To address the aims of this study, the eye fixations of the speakers were analysed using multiple logistic regression models. In fact, the eye fixations were analysed to explore whether the current participants' personality traits modulate their attention to their partners' pictures while naming or categorising their own pictures. The dependent variable was the fixation to partners' stimuli. Within these models, it was assessed whether there is a main effect of each personality trait, for both production and perception tasks, and whether there is an interaction with the performed tasks. On the one hand, it was predicted that the likelihood of fixating the partner object would be higher in the production task than in the perception task. On the other hand, it was speculated that more extraverted, more open-minded, and more agreeable people would look at their partners' pictures more than conscientious and emotionally negative people would do in the speaking tasks. These predictions were

formulated on the basis of the social motivations associated with each personality trait (Costandi, 2013).

2. METHOD

2.1 Participants

Sixty-four participants, who are native speakers of Dutch and whose ages range from 18 to 30, were selected from the database of the Max Planck Institute for Psycholinguistics. The number of participants was chosen following the G*Power tool (Faul et al., 2007), which suggested that 48 participants in each of the between-participant groups would allow observation of an effect f of 0.1 or larger (a small effect size in an ANOVA-style design) (Brehm et al., 2019, p. 3). All participants read and signed an informed consent form for behavioural experiments. All participants had normal or corrected to normal vision as well as normal hearing. They were invited as pairs to the lab, introduced to each other, and were randomly assigned to one of the experiment's trials and one of the computers. Participants were remunerated for taking part in the experiment.

2.2 Design

Participants were visually presented with 180 experimental trials, which were classified into six blocks. There were 30 trials per block. There were two people per session. Each participant sat in front of a computer screen on which two objects were presented simultaneously. In other words, each participant saw his/her own picture and his/ her partner's picture. Their partners' pictures could be similar to theirs (i.e., congruent) or different (i.e., incongruent). Trials involved naming pictures aloud or categorising the pictures via button pressing. Table 1 presents how the experimental materials were divided across trials, participants, and picture congruency. The order of trial display was counterbalanced, ensuring the appearance of each block type. Participants' eye fixations were monitored via a dual eye-tracking system (Eye-Link 1000 Desktop Mount).

Table 1. Experimental Materials Across Trials, Participants, and Picture Congruency.

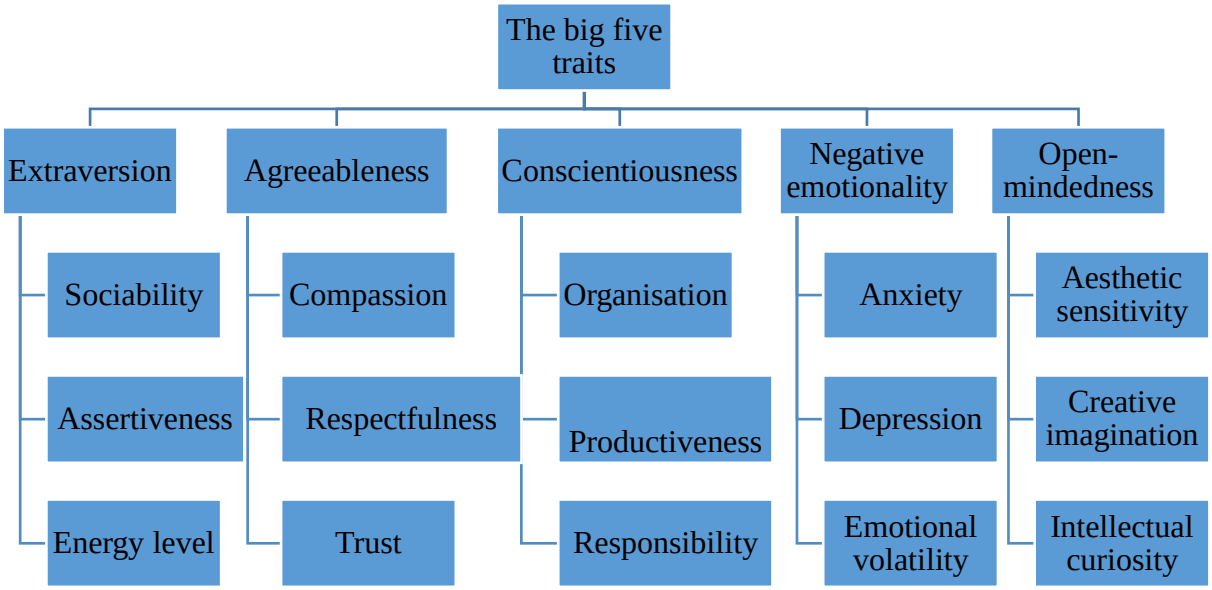
Block	**Speaker's task**	**Co-speaker's task**	**Picture Congruency**
1	Name	Name	Similar
2	Name	Categorise	Similar
3	Categorise	Name	Similar
4	Name	Name	Different
5	Name	Categorise	Different
6	Categorise	Name	Different

2.3 Materials

Thirty black-and-white line drawings, adopted from Severens et al.'s (2005) study on timed picture naming norms in Dutch, were the stimuli used in the present study (for a full list of stimuli, see Appendix A). From a semantic standpoint, the stimuli depicted either animate or inanimate entities. The animate category comprised line drawings of animals, fruits, and vegetables, whereas the inanimate category included line drawings of clothing, furniture, and vehicles. All images were presented against a uniform white background.

Besides measuring their attention levels, information about participants' personality traits was also gathered. The Big Five Inventory–2 Short Form (BFI-2-S) was used (Soto & John, 2017; unpublished Dutch version translated, validated, and shared by Jaap Denissen, personal communication). It consists of 30 items aimed at testing the following personality categories: (1) Extraversion, (2) Agreeableness, (3) Conscientiousness, (4) Negative Emotionality, and (5) Open-Mindedness. Each category is divided into three sub-categories with two items per sub-category. In their third study, Soto and John (2017) examined the internal consistency of the BFI-2-S (Cronbach alpha). The replication of the reliability analyses is reported in Appendix B. Figure 1 presents the sub-categories within the five personality traits. Table 2 in Results section (Section 3) reports the range scores for each personality trait in this study.

Figure 1. Sub-categories Within the Five Personality Traits.



2.4 Procedure

As this experiment is the same as Experiment 2 reported in Brehm et al. (2019), it followed the same procedure. That is, before the beginning of the experiment, participants were introduced to each other. They received general instructions about the setup of the experiment, and they read a detailed version of the instructions in Dutch. Participants were presented with 30 experimental items along with their corresponding names and categories. To collect responses while preventing them from hearing their partner's responses, participants wore microphone headsets in combination with noise-cancelling headphones that played pink noise. Their eye movements were calibrated using the EyeLink 1000, and participants were instructed to rest their forehead against a headrest to minimize unwanted movements. Finally, to familiarize them with the experimental stimuli and to verify the effectiveness of the sound-cancelling equipment, participants completed six practice trials: three for naming and three for categorisation. Each trial started with two fixation crosses: one per side for each participant. The display of those crosses lasted 1000 ms and was followed by a 500 ms blank screen. The stimuli were displayed for 2000 ms and then followed by a blank interval for 1500 ms. Participants were only instructed to name loudly their own pictures or categorise them by pressing buttons, and they did not receive any instructions to attend to their partners' pictures. Then, the following trial automatically started. Subsequent trials proceeded as the preceding one. At the end of the experiment, participants were given the full version of the Big Five Inventory–2 Short Form (BFI-2-S) translated into Dutch. They were instructed to rate on a 5-point Likert scale to what extent each statement applied to them. Participants indicated their level of agreement with each statement on a five-point Likert scale: (1) strongly disagree, (2) disagree a little, (3) neutral, (4) agree a little, or (5) strongly agree. The confidentiality of their responses was emphasized.

2.5 Data analysis

Mixed-effects models, namely the *lme4* package, version 1.1–18 (Bates et al., 2015) in R version 3.5.1 (R Core Team, 2018) were used to analyse the data. Primary dependent measures were log transformed proportion of fixating one or more times on the partner object during naming and categorising trials. Predictors were own task (name/categorise) and personality traits. All contrasts were coded as – 0.5 and 0.5. The analyses of the naming latencies are beyond the scope of this paper. Personality traits were manually coded, and their means were calculated using Excel.

All models were initially specified with maximal random effects, including random slopes for participants, trials (i.e., picture pairs), speaker task, speaker picture, partner picture (i.e., picture

congruency), and partner task at various stages. However, the models did not converge fully. Consequently, only the random intercepts for speaker picture and partner picture were retained. Random effects that were estimated as zero (i.e., partner picture) were subsequently removed from all models. Thus, high correlations were observed between the interaction terms and the personality traits showing effects. To address this, each personality trait was scaled to reduce multicollinearity. For the linear models, p-values were derived through model comparison.

3. RESULTS

Participants were significantly more likely to fixate their partner objects during naming trials than during categorising trials. While proportions of fixation were 0.0446 in categorising, they were 0.0794 in naming. This is confirmed with a logistic mixed-effect model (see subsequent analyses).

The likelihood of fixating the partner's objects at any point in the trials modulated by personality traits (see Table 2 for the range scores for each personality trait) was analysed using logistic mixed-effect models. The results revealed that more extraverted, more agreeable or more open-minded participants (see Tables 3, 4, and 5, respectively) were significantly more likely to fixate the partner's object. Nonetheless, conscientiousness and negative emotionality do not account for the likelihood of fixating partner's objects (see Tables 6 and 7, respectively).

Table 2. Descriptive Statistics for the BFI-2-S Domains in the Current Study.

Personality Traits	**Min**	**Mean**	**Max**
Extraversion Score	2.000	3.504	4.667
Agreeableness Score	2.500	3.977	5.000
Conscientiousness Score	2.167	3.362	4.833
Negative Emotionality Score	1.167	2.760	4.167
Open mindedness Score	2.333	3.697	5.000

Table 3. Logistic Mixed Effect Model for Odds of Fixating the Partner Object for Extraversion Trait in Both Tasks (Naming and Categorising).

Fixed effects	**Estimate**	**SE**	**z value**	**P($x^{2)}$**
Intercept	-5.01104	0.09932	-50.45	< 0.001
Speaker Task	-0.76063	0.01105	-68.84	< 0.001
Scaled Extraversion	2.26023	0.07013	32.23	< 0.001
Speaker Task X Scaled Extraversion	0.29520	0.01198	24.64	< 0.001

Random effects	**Term**	**Variance**
Speaker Task	Intercept	0.051
Scaled Extraversion	Intercept	0.098
Speaker Task X Scaled Extraversion	Intercept	-0.070

Table 4. Logistic Mixed Effect Model for Odds of Fixating the Partner Object for Agreeableness Trait in Both Tasks (Naming and Categorising).

Fixed effects	**Estimate**	**SE**	**z value**	**P($x^{2)}$**
Intercept	-4.99800	0.08131	-61.47	< 0.001
Speaker Task	-0.70844	0.01082	-65.49	< 0.001
Scaled Agreeableness	1.27548	0.06215	20.52	0.0393
Speaker Task X Scaled Agreeableness	0.15996	0.01466	10.91	< 0.001

Random effects	**Term**	**Variance**
Speaker Task	Intercept	0.006
Scaled Agreeableness	Intercept	-0.053
Speaker Task X Scaled Agreeableness	Intercept	-0.002

Table 5. Logistic Mixed Effect Model for Odds of Fixating the Partner Object for Openness Trait in Both Tasks (Naming and Categorising).

Fixed effects	**Estimate**	**SE**	**z value**	**P($x^{2)}$**
Intercept	-4.838052	0.098268	-49.233	< 0.001
Speaker Task	-0.670148	0.010418	-64.325	< 0.001
Scaled Openness	0.769552	0.087994	8.746	< 0.001
Speaker Task X Scaled Openness	-0.023849	0.009315	-2.560	0.01

Random effects	**Term**	**Variance**
Speaker Task	Intercept	0.022
Scaled Openness	Intercept	0.046
Speaker Task X Scaled Openness	Intercept	-0.004

Table 6. Logistic Mixed Effect Model for Odds of Fixating the Partner Object for Conscientiousness Trait in Both Tasks (Naming and Categorising).

Fixed effects	**Estimate**	**SE**	**z value**	**P($x^{2)}$**
Intercept	-4.84008	0.10982	-44.073	< 0.001
Speaker Task	-0.68931	0.01044	-66.047	<0.001
Scaled Conscientiousness	-0.02621	0.09599	-0.273	0.785
Speaker Task X Scaled Conscientiousness	-0.16657	0.01201	-13.873	< 0.001

Random effects	**Term**	**Variance**
Speaker Task	Intercept	0.031
Scaled Conscientiousness	Intercept	0.203
Speaker Task X Scaled Conscientiousness	Intercept	0.060

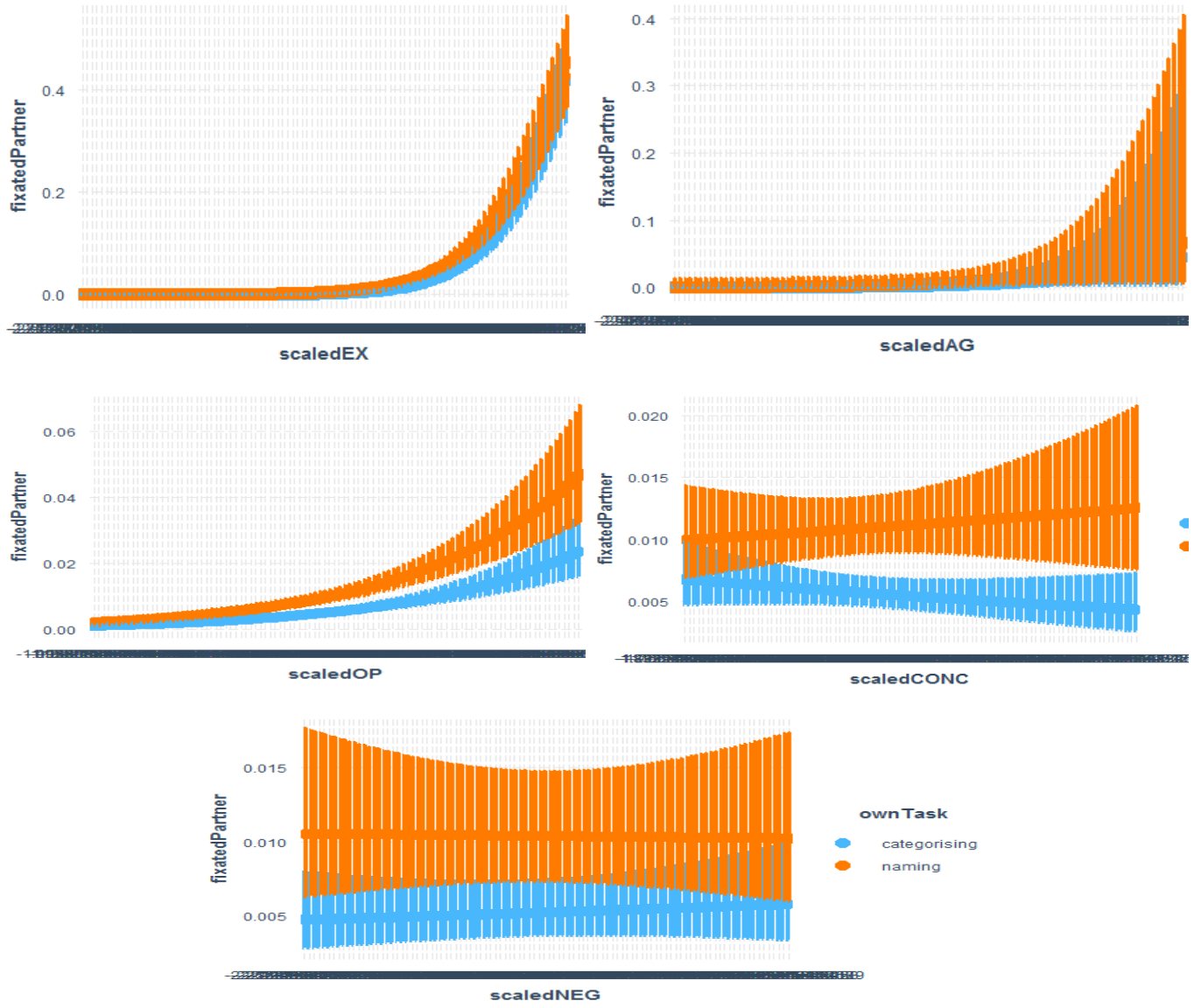
Table 7. Logistic Mixed Effect Model for Odds of Fixating the Partner Object for Negative Emotionality Trait in Both Tasks (Naming and Categorising).

Fixed effects	**Estimate**	**SE**	**z value**	**P($x^{2)}$**
Intercept	-4.89792	0.18165	-26.963	< 0.001
Speaker Task	-0.68087	0.01047	-65.054	< 0.001
Scaled Negative Emotionality	0.01992	0.09404	0.212	0.832
Speaker Task X Scaled Negative Emotionality	0.05412	0.01288	4.203	< 0.001

Random effects	**Term**	**Variance**
Speaker Task	Intercept	-0.024
Scaled Negative Emotionality	Intercept	0.100
Speaker Task X Scaled Negative Emotionality	Intercept	0.053

A closer look at the significant interactions reveals that the effect of personality traits differs according to the task performed by the speaker. In other words, the effect of personality traits was greater during the naming task than during the categorising task. For example, extraverts showed a higher tendency to fixate on their partners' pictures than introverts, with this effect being stronger during naming than during categorisation. The same conclusion applies to the remaining four personality traits. Figure 2 shows that the likelihood of fixating on the partner's pictures was influenced by the participants' own task, as indicated by interactions between task type and the five personality traits.

Figure 2. Likelihood of Fixations to Partner Pictures: Interactions Between Naming/Categorising Tasks and the Five Personality Traits.



4. DISCUSSION

The results of the present study indicated that participants with higher levels of extraversion, agreeableness, and openness were more likely to attend to their partners' irrelevant pictures than those with lower levels of these traits. There was a higher likelihood for these fixations during the naming task than during the categorisation task. These results suggest that extraversion, agreeableness, and open-mindedness are associated with a high tendency to be distracted by irrelevant stimuli. The effects of emotional negativity and conscientiousness on the frequency of fixations were not significant.

This study revealed that people fixate their partners' pictures during the naming task more than during the categorising task, which confirms the first prediction. On the one hand, this difference could be explained by the fact that the participants visualized themselves as partners in a dialogue and assumed that they should interact. This interaction was materialised through fixating the partner's pictures. Such a conclusion is supported by Costandi's (2013) claim that "people have a tendency to follow the gaze of others [in] joint action [activities]" (p. 86). In this case, the speaking activity forms a dyadic speech situation which requires joint action rather than a non-speaking situation. As explained by Brehm et al. (2019), the present conditions simulate "naming in chorus" situations (p. 9). On the other hand, the non-speaking activity requires the categorisation of pictures into living or non-living items. This activity is more of a conceptual/perceptual activity that does not normally necessitate joint action. Perceptual activities are usually individualistic activities that happen inside one's mind. The task also requires some sensorimotor action (i.e., pressing a button), so the participants' full attention was devoted to their own actions. Thus, while the naming task could evoke a "naming in chorus" situation, the categorising task (i.e., perceptual activity that necessitates sensorimotor action) could consume the participants' attention.

This "naming in chorus" setting may have promoted greater social attention among participants. In fact, Salley and Colombo (2016) claim that "the term social attention has been as a synonym for nonverbal social communication, or joint attention behaviors (p.3)". Nummenmaa and Calder (2009) define joint attention as "sharing a common focus of attention, such as an object or a spatial location with another individual" (p. 135). Therefore, participants' attention to their partners' pictures may have mirrored their attention to their partners' behaviour during the task. According to Salley and Colombo (2016), there are three categories of social attention. The last category, which "can be considered as attention (orienting, focusing and disengagement of visual systems) in the context of social streams of information" (p. 3) could fit within the present results. When they were engaged in the naming task, the present participants may have directed some attention to the social stimulus, which is, in this case, the partner's picture.

The previously formulated predictions regarding the influence of personality traits on visual attention were also confirmed. More extraverted, more open-minded, and more agreeable people would look at their partners' pictures more than conscientious and emotionally negative people would. These results could be explained by the underlying criteria of the personality traits. Consistent with the sociability criterion of extraverts, the compassion criterion of agreeable people, and the intellectual curiosity criterion of open-minded people, more extraverted, more agreeable, and more open participants could look at their partners' pictures more than their more introverted, less agreeable, and less open-minded peers would. Consistent with the organization criterion of conscientious people and the self-consciousness criterion of emotionally negative people, neither conscientiousness nor negative emotionality are expected to affect visual selective attention. This explanation is consistent with the previously outlined social attention framework. Individuals with more socially oriented traits (i.e., more extraverted, more open-minded, and more agreeable) are inclined to allocate greater attention to social stimuli compared to individuals with less socially oriented traits (i.e., conscientious and emotionally negative people).

The more socially oriented participants (i.e., more extraverted, more open, and more agreeable) tended to attend to objects that might otherwise have gone unnoticed, even when their partner's pictures were outside the focus of their covert attention (see Brehm et al., 2019, for further details). They deliberately chose to look at their partners' pictures. As discussed earlier, this choice was further influenced by both the performed task and personality traits. Partner pictures might have been seen as distractions for conscientious people, who are described as efficient, neat, and deliberate (Costandi, 2013). Emotionally negative people might have turned intentionally blind to their partners' pictures as they tended to focus their attention on their own tasks (Costandi, 2013). Conversely, more extraverted people who "[take] pleasure in social events" (Costandi, 2013, p. 69) may have perceived the situation as a genuine dialogue that warranted interactive engagement. For more agreeable people who are "cooperative and sympathetic" (Costandi, 2013, p. 69), fixating on the partners' pictures might be a form of cooperation in joint action activities "[including] paying attention to the physical environment (e.g., noticing the bend in the stairs)" (Hoedemaker & Meyer, 2019, p. 748). Finally, more open-minded people who are driven by their curiosity might have looked at their partners' picture to satisfy this need. This explanation was adopted by Brehm et al. (2019), who suggest that "fixations to partner objects might have occurred simply because time remained at the end of the trial and there were only two possible pictures to fixate" (p. 10).

The previously outlined explanations for the observed likelihood of fixating partners' pictures for more extraverted, more agreeable, and more open-minded people could lead to the speculation that these people simulated the dialogue situation. Simulation of events is the baseline of embodied cognition, where observed behaviour could have resulted "from dynamic interactions between brain, body and environment" (Costandi, 2013, p. 54). Thus, more extraverted, more agreeable, and more open people were more able to embody the dyadic situations. However, further studies are required to provide evidence of this speculation.

Lastly, this study explored the effects of personality traits on visual selective attention in a joint picture naming/categorisation task. Indeed, it has been proven that the social motives behind each personality trait could play a role in our attentional resources. Attention is the first gate for language processing, and the information that is attended will be processed, and the unattended information will be filtered out. Therefore, overloading the cognitive system with unnecessary information can result in processing deficiency (for details, cf. studies on Moses illusion and contradiction paradigms). Within this framework, individuals who are more extraverted, agreeable, and open-minded might initially appear at a disadvantage compared with those who are more conscientious or emotionally negative, as they tend to focus on their own pictures rather than attending to their partner's. However, the embodied scenarios observed in the task may mitigate or offset this potential disadvantage. Still, it is a speculation that needs to be further investigated in more psycholinguistic experiments where visual attention, accuracy, and instances of embodied language comprehension are explored regarding personality traits. This represents a potential limitation of the current research, as a single study of this kind cannot provide conclusive evidence to support such speculation. Hence, this study was an attempt to explore how social motives and contexts could influence cognitive processing in general and language processing in particular, which is in line with previous research on cognitive processes (e.g., Dalmaso et al., 2021; Tufft & Gobel, 2021). Ultimately, this study could be considered promising in terms of taking into consideration that personality traits could affect the result of language processing studies and could account for the variability of the surface-level contradictory results.

5. CONCLUSION

Intrigued by the difference in allocating attention to partners' pictures, this study looked up answers for the following two questions: (1) Do task demands affect selective visual attention in non-communicative language tasks? (2) Do personality traits affect selective visual attention? It found that there is a higher tendency for attending to partners' pictures during the naming task compared to the

categorising task. This attention is further influenced by some personal traits. Namely, the present research proves that while conscientious and emotionally negative people selectively attend to their own pictures, more extraverted, more agreeable, and more open-minded individuals are more likely to be distracted by their partners' pictures. This suggests that the attention processes are not generic, and personality traits can account for the observed variability.

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Appendix A: Items

Category	Dutch Name	English Name	Visual Complexity	Log Frequency	Number Syllables	Name Agreement	Normed RT
Non-living	broek	pants	16.6	1	1	91	804
Non-living	hoed	hat	9.87	1.61	1	100	862
Non-living	trui	sweater	12.4	1.30	1	77	977
Non-living	jas	coat	14.5	1.69	1	82	1067
Non-living	rok	skirt	10	1.49	1	85	1065
Non-living	tafel	table	12.9	2.39	2	100	734
Non-living	bed	bBed	14.5	2.48	1	97	830
Non-living	stoel	armchair	12.4	1.18	2	73	1017
Non-living	kast	dresser	21.3	1.68	1	81	1082
Non-living	bureau	desk	18.2	1.94	2	87	1118
Non-living	auto	car	10.4	2.32	2	100	694
Non-living	fiets	bike	24.4	1.68	1	100	759
Non-living	vliegtuig	plane	17.3	1.72	2	100	831
Non-living	bus	bus	23.3	1.76	1	100	955
Non-living	boot	boat	17.7	1.83	1	87	1061
Living	slang	snake	23.9	1.43	1	100	772
Living	olifant	elephant	24.5	1	3	100	788
Living	konijn	rabbit	12.2	1.36	2	100	813
Living	muis	mouse	14	1.32	1	86	997
Living	bij	bee	13	3.58	1	54	1252
Living	appel	pple	9.37	1.38	2	100	856
Living	citroen	lemon	9.68	1.04	2	97	901
Living	peer	pear	19.3	1	1	100	914
Living	aardbei	strawberry	17.3	0.70	2	100	917
Living	kers	cherry	5.8	0.70	1	89	1019
Living	paddestoel	mushroom	9.51	0.95	3	95	872
Living	wortel	carrot	14.1	1.57	2	94	885
Living	tomaat	tomato	9.57	0.95	2	97	912
Living	sla	lettuce	17.6	0.48	1	66	986
Living	mais	corn	16.7	0.90	1	92	1005

Appendix B: Reliability Analyses

The BFI-2-S reliability analyses were carried out. They revealed that the BFI-2-S facets and domains scales showed moderate to strong reliability.

Reliability Coefficients of the BFI-2-S Facets and Domains in this Study

Facets/**Domains**	Alpha
Sociability	0.71
Assertiveness	0.72
Energy level	0.71
Extraversion	0.70
Compassion	0.68
Respectfulness	0.71
Trust	0.70
Agreeableness	0.69
Organization	0.71
Productiveness	0.72
Responsibility	0.70
Conscientiousness	0.70
Anxiety	0.71
Depression	0.71
Emotional volatility	0.72
Negative Emotionality	0.70
Aesthetic sensitivity	0.71
Intellectual curiosity	0.72
Creative imagination	0.72
Open-Mindedness	0.70
Mean	0.72