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Assessing Individual variation in personality and empathy traits in self-reported Autonomous Sensory Meridian Response

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Abstract

Autonomous Sensory Meridian Response (ASMR) is a self-reported multi-sensory phenomenon described as a pleasant tingling sensation, triggered by certain auditory and visual stimuli, which typically originates at the back of the head and tends to spread throughout the whole body resulting in a relaxed and sedated state. Despite growing reports of ASMR there is a lack of scientific investigation of this intriguing phenomenon. This study is the first to examine whether self-reported ASMR is associated with individual differences in personality characteristics compared to general population. To do so we administered the Big Five Inventory (BFI) and the Inter-Personal Reactivity Index (IRI) to a group of individuals reporting to experience ASMR and a matched control group. Our findings showed that ASMR self-reporters scored higher on Openness to Experience and lower on Conscientiousness measures of BFI. They also showed greater scores on Empathic Concern and Fantasizing subscale of IRI. These findings are discussed in the context of the personality profile found in synaesthesia, which has been recently suggested to be more prevalent among people reporting ASMR experiences.

Keywords: ASMR, personality, IRI, BFI, synaesthesia

Introduction

Autonomous Sensory Meridian Response (ASMR) is a self-reported multi-sensory phenomenon involving pleasurable tingling sensation induced by specific auditory or visual triggers, which originates on scalp and spreads down the spine and through the whole body (Barratt & Davis, 2015). The term itself refers to the euphoric sensation induced by the various subjective triggers (Cheadle, 2012). Despite a lack of scientific investigation into ASMR, there are an abundance of social networking sites dedicated to this phenomenon. There are also hundreds of YouTube channels (see Barratt & Davis, 2015 for a list of some of the most popular channels), where new ASMR triggering videos are uploaded daily, resulting in a total of 2.6 million such videos produced to date (Fairyington, 2014).

ASMR videos often include whisper, crinkly sounds, repetitive and mundane actions such as 'towel folding' and role-plays focused on giving personal attention to the viewer (e.g. a pretend haircut or make-up); however, due to a lack of scientific investigation the validity of these experiences and the underlying mechanisms remain unclear. Recent work by Barratt and Davis (2015) has provided some insights into the reasons why ASMR responders watch inducing stimuli. They found that 82% of the viewers self-reported watching ASMR videos to help them sleep, 70% use them to cope with stress, and 81% reported watching such videos prior to going to sleep. In addition, the authors suggest that the multi-sensory experiences that constitute ASMR may be associated with synaesthesia (where one property of a stimulus triggers a secondary experience not typically associated with the first – e.g. hearing words evoke the experience of taste – Ward, 2013; Simner & Ward, 2003). This was based upon a greater self-reported prevalence of synaesthesia among people claiming to experience ASMR (5.9%) relative to previously published prevalence rates of synaesthesia in the general population (4.4%; Simner et al., 2006). It is of note, however, that methodological differences may account for the association between synaesthesia and ASMR reported by Barratt and Davis (2015) because in their study the authors relied upon self-reported experience of synaesthesia, whereas in the study by Simner and colleagues (2006) participants were tested on objective measures to verify the authenticity of this condition. It is well known that the prevalence of self-reported synaesthesia is higher than that of those who pass objective measures

verifying synaesthetic experiences (e.g. Simner et al., 2006; Banissy et al., 2009) and some self-report prevalence studies of synaesthesia suggest that over 20 percent of individuals report experiencing synaesthesia (e.g. Simner et al., 2006).

Recently, self-reported ASMR has been linked to atypical functional brain connectivity in the default network relative to controls (Smith et al., 2016). This finding was interpreted as a potential reflection of a reduced ability to supress multi-sensory experiences in individuals that experience ASMR (Smith et al., 2016). The authors also drew further parallels with synaesthesia by suggesting that their findings of reduced connectivity of the thalamus in ASMR-Responders may play a role in multi-sensory experiences in a similar way to previous reports of acquired sensory-emotional synaesthesia, which is descriptively similar to some ASMR experiences, following a thalamic infarct (Schweizer et al., 2013).

Taking into account the existing findings (Barratt and Davis, 2015; Smith et al., 2016) and reports of a potential association with synaesthesia, it is feasible to suspect wider individual differences associated with ASMR compared to the general population. For example, it has been shown that individuals who experience synaesthesia in which colour is the evoked sensation have an atypical personality profile, which has been characterised by higher levels of Openness to Experience, Positive Schizotypy, Neuroticism, and Absorption / Fantasizing (Banissy et al., 2013; Chun & Hupe, 2016; Rader & Tellegen, 1987; Janik McErlean & Banissy, 2016; Banissy et al., 2012; Rouw & Scholte, 2016). Synaesthesia has also less consistently been linked with lower levels of Agreeableness (Banissy et al., 2013; but see Rouw & Scholte, 2016 and Chun & Hupe, 2016) and Conscientiousness (Rouw & Scholte, 2016; but see Banissy et al., 2013 and Chun & Hupe, 2016). Whether a similar atypical personality profile is present in individuals who report ASMR experiences remains to be determined. To address this, here we sought to explore whether ASMR is associated with individual differences in personality by administering the Big Five Inventory (John et al., 1991), which measures five dimensions of the Big Five personality characteristics (Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience). We also administered the Inter-Personal Reactivity Index (Davis, 1980), which measures four components of trait empathy (Perspective Taking, Fantasizing, Empathic Concern, Personal Distress) to a group of individuals reporting

ASMR experiences and to age and gender matched controls. Both of these instruments have been previously used to examine personality traits in synaesthesia (Banissy et al., 2013).

Material and Methods

Participants

83 ASMR-Responders (58 female, 25 male; age M = 27.22 SD = 5.92) and 85 controls (68 female, 17 male; age M = 25.12 SD = 10.55) took part in this experiment. The two groups did not significantly differ in age [t (132.886) = 1.595, p = .113] or gender [χ^2 (1, N = 168) = 2.29, p = .130]. ASMR-Responders were recruited via a Facebook site dedicated to ASMR (https://www.facebook.com/groups/ASMRGroup/). All of them were members of the ASMR Facebook group and all reported experiencing ASMR when provided with a description and question about the experience. More specifically participants were told 'ASMR is defined as a pleasurable tingling sensation that originates on scalp and can spread through the whole body, which is typically induced by certain sounds (e.g. turning pages, crinkly wrapping paper, finger tapping), watching someone perform repetitive mundane actions (e.g. folding towels, going through items in a handbag), watching someone closely inspecting day-to-day objects, hearing whisper, watching someone's hair being brushed or watching videos with various role plays (visit to a doctor, spa or a shop)'. They were then asked 'Do you experience ASMR?' All of the ASMR-Responder Group gave a positive response to this question, none of the controls did. Additionally, to ensure the genuineness of ASMR experience, all of the AMSR-Responder Group gave detailed descriptions of their personal ASMR triggers. For instance, they would explain that 'Crinkling paper, typing, and writing sounds seem to be a trigger for me. I usually watch roleplay videos to experience ASMR. Cleaning sounds without any speaking is a trigger as well, spray bottles, scrubbing and wiping sounds'. Control participants were recruited among university students, who were given course credits for their participation. Only those who answered 'No' to the question whether they experience ASMR accompanied by the aforementioned

description of the phenomenon, were included in the control group. Participants gave electronic consent to take part in this study. This study was conducted online and participants completed the questionnaires in their own time in one sitting.

Materials

Participants completed the Inter-Personal Reactivity Index (IRI; Davis, 1980), which is a widely used measure of trait empathy. It consists of four subscales: Perspective Taking (7 items), Fantasizing (7 items), Empathic Concern (7 items) and Personal Distress (7 items). Perspective Taking subscale examines one's ability to adopt someone else's point of view and contains statements such as e.g. '*I sometimes try to understand my friends better by imagining how things look from their perspective'*. Fantasizing refers to a propensity to get immersed in a novel or a film and contains statements such as e.g. *'I really get involved with the feelings of the characters in a novel'.* Empathic Concern is related to an individual's ability to feel sorry and concerned for others in distress and contains statements such as e.g. *'I often have tender, concerned feelings for people less fortunate than me'*. Personal Distress refers to feelings of anxiety induced by others' distress and contains statements such as e.g. *'In emergency situations, I feel apprehensive and ill-at-ease'.* In total IRI consists of 28 items measured on a five point Likert scale ranging from 0 ("does not describe me well") to 4 ("describes me very well").

Additionally, participants completed the Big Five Inventory (BFI; John et al., 1991), which is a well-established self-report measure of the Big Five personality trait. It consists of five subscales: Extraversion (8 items), Agreeableness (9 items), Conscientiousness (9 items), Neuroticism (8 items), and Openness to Experience (10 items). The Extraversion subscale relates to how sociable and energetic one is and contains items such as e.g.' *I see myself as someone who generates a lot of enthusiasm'.* The Agreeableness subscale taps one's propensity for altruism and compliance and contains items such as e.g. '*I see myself as someone who is considerate and kind to almost everyone'.* Conscientiousness relates to the degree of dutifulness, competence and self-discipline and contains items such as e.g. '*I see myself as someone who is a reliable worker'.* Neuroticism examines individual's level of anxiety, self-consciousness and vulnerability and contains items such as e.g. '*I see*

myself as someone who gets nervous easily'. The Openness to Experience subscale refers to how imaginative, excitable and curious one is and contains items such as e.g. '*I see myself as someone who is curious about many different things'.* The instrument consists in total of 44 items to which a rating on a five point Likert scale ranging from 1 ("disagree strongly") to 5 ("agree strongly") is given by a participant to reflect how well each statement describes their own characteristics.

In addition, participants were asked to describe their favourite triggers and to indicate what type of a response they have to several triggers commonly used in ASMR videos including whispering, finger tapping, hair brushing, closely inspecting day-to-day objects, going through items in a handbag, folding towels, people eating, typing, crinkly plastic, crinkly paper, and role-plays such as a 'visit to a doctor', 'spa visit' and 'office'. They were asked to indicate whether these triggers have no effect, mild effect or a strong effect in terms of ease of inducing ASMR sensations or whether they feel unpleasant/uncomfortable. Participants were also asked about their motivation for watching ASMR videos.

Results

Descriptive breakdown of ASMR triggers and motivation behind watching ASMR videos in ASMR-Responders

ASMR-Responders provided extensive descriptions of their triggers. The majority of participants indicated that a whisper or soft speaking was their favourite trigger (41 %), followed by crisp sounds (36.1 %) and personal attention (34.9 %). Concentrating on things and giving instructions/explaining something in detail were also popular triggers (both reported by 10.8% of participants). Lip smacking or other eating sounds were also reported to induce ASMR by 8.5% of participants (see Table 1 for a full list).

ASMR-Responders also indicated the degree of responsiveness to some of the triggers commonly used in ASMR videos by choosing one of four possible answers: 'No effect', 'It feels unpleasant/uncomfortable', 'Mild effect', 'Strong effect/Easily induces ASMR'. Whispering was reported to induce a strong response by 54.2% of

participants, followed by finger tapping (53%) and hair brushing (49.4%). Role playing involving personal attention such as 'visit to a doctor' or ‘spa visit’ were reported to easily induce ASMR by 44.6 % and 39.8 % of participants respectively. While 9.6 % of ASMR-Responders reported ‘people eating’ to be a strong trigger, as many as 25.3% found it to be unpleasant or uncomfortable (see Table 2 for a full list).

When it comes to the motivation for watching ASMR inducing videos, 85.5% of ASMR-Responders reported watching ASMR videos to relax or to experience ASMR, 41% reported that ASMR videos help them fall asleep and 10.8% stated that ASMR videos help reduce their anxiety.

Trait Empathy in ASMR-Responders compared to Controls

Mauchly’s test indicated that the assumption of sphericity was violated, χ^2 (5) = 39.45, $p < .001$, therefore a Greenhouse-Geisser correction was used. Performance on the IRI was analysed using a 2 (Group) x 4 (IRI subscales) ANOVA, which yielded a significant main effect of group [$F (1, 166) = 35.01$, $p < .001$, $\eta p^2 = .17$], due to ASMR–Responders (M = 25.15) scoring on average higher than controls (M = 22.90). There was also an interaction effect [$F (2.60, 432.71) = 12.61$, $p < 0.001$, $\eta p^2 = .07$]. Follow up Bonferroni-corrected paired comparisons showed a significant group difference on Fantasy Scale (Cronbach’s alpha = .716; $t (166) = 6.57$, $p < 0.001$, Cohen’s d = 1.01) due to ASMR-Responders (M = 28.15, SD = 4.31) scoring higher than controls (M = 23.80, SD = 4.27). There was also a significant group difference on Empathic Concern (Cronbach’s alpha = .658; $t (130.69) = 6.75$, $p < 0.001$, Cohen’s d = 1.04), due to ASMR-Responders (M = 27.42, SD = 4.55) scoring higher than controls (M = 23.52, SD = 2.63) (Fig 1). No significant group differences were found for Perspective Taking ($p = .130$ uncorrected) and Personal Distress ($p = .695$ uncorrected) subscales of the IRI, implying that the differences between ASMR-Responders and controls were not simply due to a non-specific response bias.

(FIGURE 1 HERE)

Personality Traits in ASMR-Responders compared to Controls

Mauchly's test indicated that the assumption of sphericity was violated, χ^2 (9) = 54.20, p < .001, therefore a Greenhouse-Geisser correction was used. Performance on BFI was analysed using 2 (Group) x 5 (BFI subscales) ANOVA, which yielded a non-significant main effect of group [F (1,166) = 3.842, p = .052, ŋp² = .023]. Importantly, there was an interaction effect [F (3.39, 562.66) = 11.80, p < 0.001, ŋp² =.066]. Follow up Bonferroni-corrected paired comparisons showed a significant group difference on Openness to Experience (Cronbach's alpha = .740, t (159.81) = 6.630, p < .001, Cohen's d = 1.02) with ASMR-Responders (M= 40.98 SD = 4.30) scoring higher than controls (M = 36.01, SD = 5.37) (Fig 2). There was also a significant difference on Conscientiousness [Cronbach's alpha = .759, t (166) = 2.68, p = .04, Cohen's d =.41] with ASMR-Responders (M = 29.01, SD = 5.98) scoring lower than controls (M = 31.47, SD = 5.88). ASMR-Responders also scored higher than controls on Neuroticism (Cronbach's alpha = .817, p = .021 uncorrected, Cohen's d = 0.35), but this difference did not survive multiple correction. No other significant group differences were found (Extraversion: p = .529 uncorrected, Agreeableness: p = .470 uncorrected).

(FIGURE 2 HERE)

Discussion

This study sought to elucidate whether ASMR is associated with individual differences in terms of personality traits. To do so, we compared a group of ASMR-Responders to a group of age and gender matched controls on the BFI (John et al., 1991) and the IRI (Davis, 1980). Our findings showed that individuals reporting to experience ASMR scored higher on Empathic Concern and Fantasizing subscale of

IRI. ASMR was also linked to greater scores on the Openness to Experience and lower scores on Conscientiousness subscales of BFI.

Empathic Concern relates to a person's predisposition for compassion and concern for others (Davis, 1983). ASMR-Responders scored higher on this subscale of IRI suggesting that ASMR is associated with increased levels of sympathy for those who might be experiencing distress. Openness to Experience refers to individual's curiosity and preference for novel and stimulating experiences, increased creativity and interest in art, as well as a tendency to fantasize (John et al., 2008). At the same time the Fantasizing dimension of IRI taps into a person's ability to identify with the actions and emotions of fictional characters (Davis, 1983). As the two constructs are conceptually similar and tap on one's imaginative propensity it is not surprising that ASMR–Responders scored high on both measures. Current results may also suggest that having an increased tendency to fantasise and the ability to imaginatively transpose oneself into a fictional or virtual reality may be a key skill related to video-induced ASMR. Indeed, the videos, especially those involving role-plays where the viewer receives personal attention (e.g. gets a pretend haircut), require the viewer to get imaginatively immersed in the video in order to feel as if he/she really was part of it. Whether individuals who experience ASMR in their daily lives but do not watch ASMR videos would present a similar profile with regards to these traits remains to be established.

ASMR-Responders also scored lower than controls on the Conscientiousness subscale of the BFI, which taps into individual differences in self-discipline, impulse control and goal orientation (John et al., 1991). Therefore, low scores on this dimension of the BFI may suggest that ASMR-Responders have the propensity for greater flexibility and spontaneous behaviour but at the same time they may experience a general lack of direction.

These findings are interesting in the context of Barratt and Davis' (2015) report on the prevalence of synaesthesia among people claiming to experience ASMR. They reported that 5.9% of their ASMR sample claimed experiencing some form of synaesthesia. Prior work has linked synaesthesia with a similar personality profile to that reported here for ASMR-Responders. Namely, synaesthesia for colour has been

associated with lower Conscientiousness, increased Openness to Experience and higher scores on Fantasizing (Rouw & Scholte, 2016; Banissy et al., 2013; Chun & Hupe, 2016). Synaesthetes have also been reported to show higher levels of absorption (Rader & Tellegen, 1987), which is a related construct to the Fantasising scale of IRI. Absorption is defined as a disposition to become deeply involved with the current experience (Rader & Tellegen, 1987), and it has been previously linked to daydreaming **(**Crawford, 1982). Although we did not employ any measures of absorption in this study, we would expect ASMR to be linked to a heightened level of this construct as intense concentration on the triggering stimuli such as e.g. closely inspecting every-day objects, flipping pages or tapping is a pre-requisite for the pleasurable ASMR sensations (Barratt & Davis, 2015). However, the relationship between ASMR and absorption remains to be experimentally established.

Current results also showed that the main reasons for watching ASMR videos reported by ASMR-Responders were similar to those found in the Barratt and Davis (2015) study. Namely, most people reported watching videos in order to relax, fall asleep and to reduce anxiety. In addition, the pattern of results in terms of the types of preferred triggers was very similar across this and Barratt and Davis (2015) study. Especially so when comparing our results based on participants' descriptions of their triggers, which were grouped into broader categories rather than on their responses to a selection of pre-defined triggers which were perhaps too specific. For instance, finger tapping or typing were listed separately although they could have been put under one category of crisp sounds. The three most popular triggers across this and Barratt and Davis (2015) study were whisper, crisp sounds and personal attention. However, it is of note that the percentages of people reporting these experiences across the studies were not the same. This is most likely due to the methodological differences. Namely, the current study asked participants to describe their motives and preferred triggers and also requested them to choose one of four answers regarding their response to a few popular ASMR triggers. At the same time, Barratt and Davis (2015) employed Likert type ratings of common triggers, which were more broadly defined than the ones used in the current study. Nevertheless, the results regarding the types of triggers and motivation for watching ASMR videos across the two studies are similar.

Additionally, the current study found a small percentage of ASMR-Responders reporting eating sounds to be a trigger. At the same time a substantial proportion of this group (25.3%) found this stimulus to be unpleasant or uncomfortable. Enhanced sensitivity to sound, in particular sound produced by humans, is termed misophonia which literally means 'hatred of sound' (Jastreboff & Jastreboff, 2002) and is estimated to be present in 20% of the general population (Wu, Lewin, Murphy, & Storch, 2014). People who suffer from misophonia often find sounds such as eating, breathing or finger tapping so distressing that they may resort to avoidant behaviour, feel compelled to mimic the sounds or even become physically or verbally aggressive (Wu, 2014). Interestingly the same sounds are often used in ASMR videos to induce the pleasurable tingling sensation. In this context it is worth considering that it has been suggested that misophonia and ASMR might represent two ends of the same spectrum of sound sensitivity, and that both of these phenomena may be associated with synaesthesia (Baratt & Davis, 2015). Indeed, the mechanisms of all three conditions are somewhat similar as all of them involve specific triggers that elicit a particular response. In case of ASMR and misophonia, the triggers involve human generated sounds and behaviours, which elicit either pleasurable tingling sensation in case of ASMR (Barratt and Davis, 2015) or unpleasant physical or emotional response in case of misophonia (Wu et al., 2014). However, while the current findings may hint at a greater prevalence of misophonia among ASMR-Responders as evidenced by a high proportion of them reporting eating sounds to be unpleasant or uncomfortable this needs to be tested in a more direct manner. It will also be important to more directly examine other charachertisics that might distinguish synaesthesia from ASMR and misophonia (and vice versa) including automaticity and consistency of experience.

A further important consideration for future work will be to examine personality characteristics of ASMR-Responders who were not previously aware of ASMR. As our sample of ASMR-Responders was mainly comprised of individuals from a Facebook Group dedicated to this experience, it could be argued that it is not surprising that individuals who seek out membership in groups like this are more likely to differ on traits like Openness to Experience. A similar argument can be made for previous findings linking colour synaesthesia to greater levels of Openness to Experience (e.g. Banissy et al., 2013; also see Chun & Hupe, 2016 for similar

discussion), since in that study the synaesthetes were sampled from a group of participants whom had typically sought out research groups and volunteered to participate in research. It could be argued that volunteers that seek out research are more likely to have higher Openness to Experience than those who do not, although it is of note that in the context of synaesthesia higher Openness to Experience is still found when controlling for sampling method used (Chun & Hupe, 2016; Rouw & Sholte, 2016). Extending these findings to a systematically recruited sample to help counter selection bias will be an important next step for future research examining individual differences in personality traits in ASMR.

Despite this, the degree of similarity in the personality profiles of individuals who experience synaesthesia and ASMR-Responders is interesting. When paired with the self-reported prevalence rate of synaesthesia in the Barratt and Davis (2015) study, this suggests that a systematic examination of the prevalence of synaesthesia in ASMR using objective measures to verify synaesthetic experiences (e.g. Eagleman, et al., 2007) will be an interesting avenue for further investigation.

Conclusions

In summary, ASMR appears to not only be linked to unusual multi-sensory experiences, but is also associated with individual differences in personality traits. The current findings show that ASMR-Responders score higher on the Openness to Experience and lower on Conscientiousness dimensions of BFI (John et al., 1991) as well as higher on Fantasizing and Empathic Concern subscales of IRI (Davis, 1980) compared to non-responders. Similar personality characteristics have been previously demonstrated in synaesthesia (Banissy et al., 2013; Chun & Hupe, 2016; Rouw & Scholte, 2016), which has recently been suggested to be more prevalent among ASMR-Responders compared to the general population (Barratt & Davis, 2015).

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Figure Legends

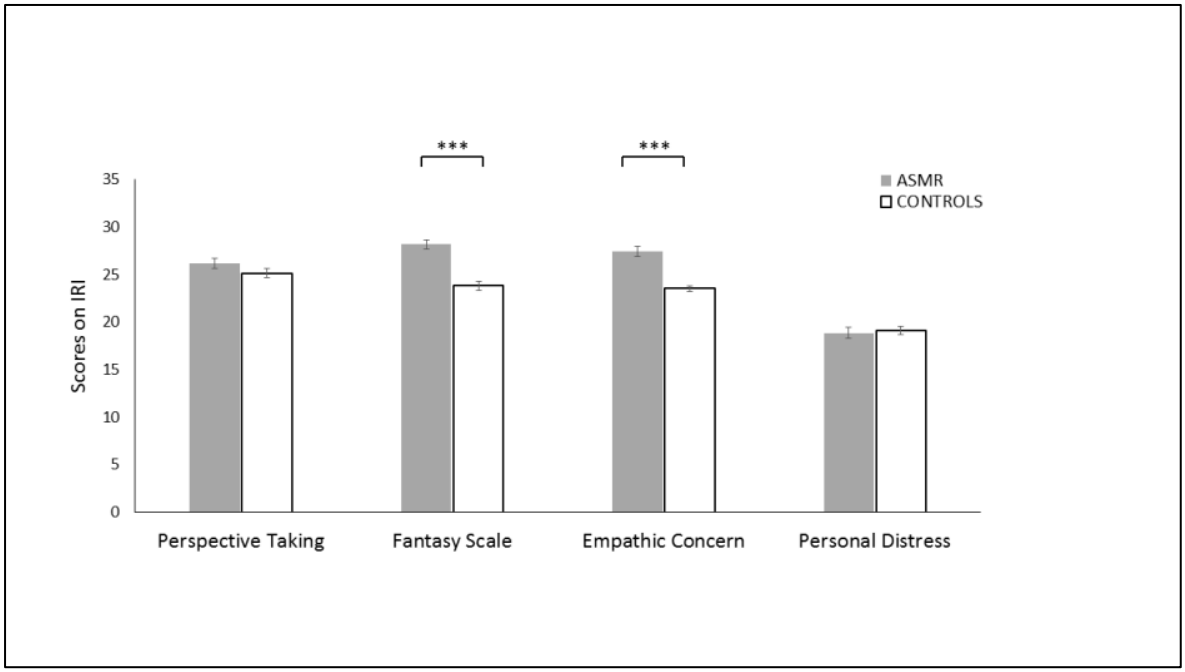

Figure 1. Mean responses for ASMR-Responders (N = 83) and controls (N = 85) on the IRI. Error bars represent SEM. * p < .05, ** p < .005, *** p < .001

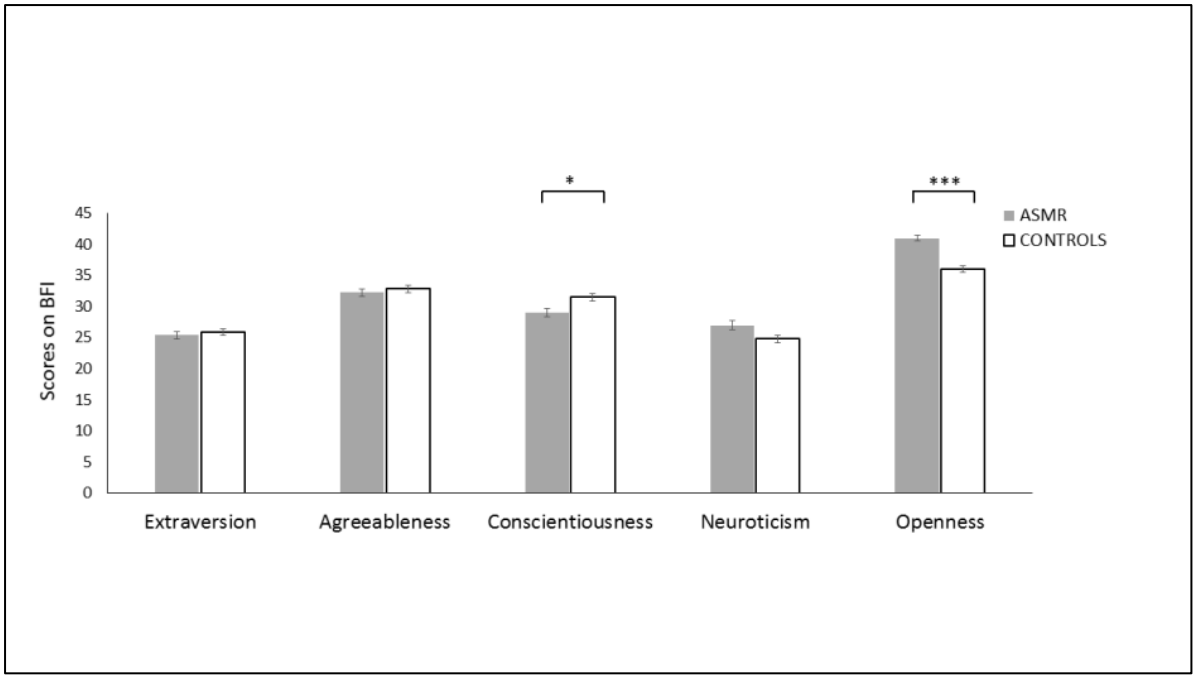

Figure 2. Mean responses for ASMR-Responders (N = 83) and controls (N = 85) on the BFI. Error bars represent SEM. * p < .05, ** p < .005, *** p < .001

Table 1. Percentage of ASMR-responders reporting particular responses to different triggers

Trigger type	% of ASMR-responders reporting particular responses to trigger			
	No effect	It feels unpleasant/ uncomfortable	Mild effect	Strong effect (easily induces ASMR)
whispering	12	2.4	31.3	54.2
finger tapping	26.5	4.8	48.2	20.5
Hair brushing	24.1	0	26.5	49.4
role plays 'visit to a doctor'	24.1	3.6	27.7	44.6
role plays 'spa visit'	20.5	0	38.6	39.8
closely inspecting day-to-day objects	30.1	0	42.2	27.7
role plays 'office'	33.7	2.4	38.6	25.3
typing	32.5	2.4	43.4	21.7
crinkly plastic	31.3	12	39.8	16.9
crinkly wrapping paper	27.7	9.6	48.2	14.4
going through items in a handbag	30.1	1.2	54.2	14.4
folding towels	61.4	1.2	27.7	9.6
people eating	49.4	25.3	15.7	9.6

Table 2. Percentage of ASMR-responders reporting tingling sensation to particular triggers.

Trigger type	% of ASMR-Responders reporting the trigger
whisper	41
crisp sounds	36.1
Personal attention	34.9
Paying attention /concentrating on things	10.8
Giving instructions/explaining something in detail	10.8
Hair brushing	9.6
eating sounds/lip smacking	8.4
gentle slow deliberate hand movement	7.2
Performing mundane actions	3.6
Other	7.2