This is the accepted version of the manuscript:

Ditchburn, T. A., & Bedwell, S. A. (in press). Autonomous Sensory Meridian Response: An Ineffective Long-Term Therapeutic Intervention. PsyPAG

*Research in Brief*

**Autonomous Sensory Meridian Response: An Ineffective Long-Term Therapeutic Intervention**

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*Autonomous Sensory Meridian Response (ASMR) is a sensory phenomenon characterised by a pleasant tingling sensation in the scalp that radiates throughout the body in response to specific triggers. Using self-reported measures, the current study sought to establish if regular ASMR elicitation over a one-week period bestowed significant improvements in mood in comparison to a mindfulness intervention and control group. Findings suggest ASMR is an ineffective long-term intervention for improving mood.*

Autonomous sensory meridian response (ASMR) is an involuntary sensory phenomenon experienced in response to specific auditory and visual *triggers*. ASMR is characterised by a pleasant tingling sensation originating in the scalp that, depending on the strength of the response, can radiate down the spine and throughout the rest of the body (Barratt & Davis, 2015). In recent years there has been a surge of interest in ASMR with a large online community forming on the video platforming site YouTube, with hundreds of channels now specifically creating *ASMR videos* (Barratt & Davis, 2015). These videos are often viewed by those who experience ASMR as a means of eliciting the tingling sensation.

## Therapeutic use of ASMR

Anecdotal reports frequently claim that ASMR is used as a coping mechanism to help manage and reduce the symptoms of psychological conditions and chronic pain (Barratt & Davis, 2015). Despite these claims, only two empirical studies have been conducted investigating the therapeutic properties of ASMR. Poerio, Blakey, Hostler and Veltri (2018) identified an increase in positive affect and ASMR experience among participants after watching an ASMR focused video. Additionally, Barratt and Davis (2015) identified lower levels of depression and chronic pain during and after experiencing ASMR, that gradually returned to pre-intervention levels over three hours. Interestingly, participants who had been diagnosed with clinical depression reported the largest decrease in post-intervention measures of depression, however this effect dissipated faster among this demographic. Collectively, these findings suggest ASMR can be utilized to provide short-term improvements in mood and chronic pain although we do acknowledge these findings are based on limited investigations.

Whilst these studies provide evidence of the short-term therapeutic properties of ASMR, no empirical research has yet been conducted to assess whether regular elicitation of ASMR bestows any long-term improvements in mood or chronic pain. It is paramount that we increase our understanding of ASMR, as should it also bestow long-term benefits it may be applied clinically to treat conditions such as depression and anxiety, and help manage chronic pain.

## *Links with mindfulness*

Barratt and Davis (2015) proposed that the act of watching ASMR videos could be a form of mindfulness. Support for this theory comes from Fredborg, Clark and Smith (2018), who found that those who experience ASMR scored significantly higher on the Mindful Attention and Awareness Scale (MAAS; Brown & Ryan, 2003). In addition, the intensity of tingling associated with ASMR correlated with MAAS scores suggesting a link between the experience of ASMR and mindfulness. Owing to these findings, Fredborg et al. (2018) went on to theorise that mindfulness training may help increase the intensity of tingles felt during ASMR which may enhance the therapeutic benefits associated with ASMR.

Poerio et al. (2018) also identified reduced heart rates and higher skin conductance among individuals whilst they experienced ASMR, suggesting both increased relaxation and increased arousal and focus. These physiological changes are similar to the those observed during mindfulness (Bostanov, Keune, Kotchoubey & Hautzinger, 2012; Van der Zwan, de Vente, Huizink, Bögels & de Bruin, 2015), and although tingling is not often associated with mindfulness, increasing internal focus on parts of the body can give rise to attention-related tingling (Tihanyi, Ferentzi, Beissner & Köteles, 2018), which may result in, or be misconstrued as ASMR. Although there are evident links between ASMR and mindfulness like experiences, there remains limited understanding as to how exactly ASMR influences mood and if it has the same effects as mindfulness in clinical cases. Further exploration is needed into ASMR specifically in order to clarify its potential use as a non-invasive intervention.

## The current study

The current study was the first of its kind to examine whether regular elicitation of ASMR could be used to improve mood among those who experience ASMR and the general population. To provide a measure of effectiveness and also compare any therapeutic benefits, results from the ASMR intervention were compared to a mindfulness intervention and a control group. A mindfulness intervention was selected due to the similarities identified between mindfulness and ASMR (Barratt & Davis, 2015; Fredborg et al., 2018). Due to previous studies showing an improvement in mood after experiencing ASMR (Barratt & Davis, 2015; Poerio et al., 2018), the study hypothesised that regular elicitation of ASMR would reduce symptoms of anxiety and depression and increase mental well-being among those who experience ASMR, with larger improvements found among those who self-reported a history of depression. However, due to the limited population that is believed to experience ASMR (Barratt & Davis, 2015; Cheadle, 2012), the study expected mindfulness to be more effective at improving mood among the general population due to its better accessibility and research supporting it as an effective short-term online intervention for improving mood (Krusche, Cyhlarova & Williams, 2013).

# **Methodology**

*Measures*

Data was collected using three separate questionnaires before and after an eight day intervention. Zung’s Self-Rating Anxiety scale (ZRA; Zung, 1971) was used to measure symptoms of anxiety. The CESD-R scale (Eaton, Smith, Ybarra, Muntaner & Tien, 2004) was used to measure symptoms of depression and the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS;Tennant, Fishwick, Platt, Joseph & Stewart-Brown, 2006) was used to measure participants’ mental well-being.

YouTube videos (10-30 mins) focusing on different ASMR triggers and mindfulness themes were utilized for the two test conditions. ASMR triggers were selected using the ASMR checklist (Fredborg, Clark & Smith, 2017) and popular triggers identified in ASMR forums. Mindfulness themes were selected using those identified by Kok and Singer (2016).

*Participants and Procedure*

A volunteer sample of 110 participants (76 female, 33 male, 1 transgender) aged between 19 and 73 (mean = 31.76 SD= 11.6) were recruited via an online Qualtrics survey . Upon providing consent, participants completed a demographics questionnaire and the three scales (Tennant et al., 2006; Eaton et al., 2004; Zung, 1971). Participants randomly allocated to the ASMR and mindfulness conditions were provided with a video list to watch throughout the study. Participants were directed to watch one of these videos each evening, one to three hours before going to sleep with ear/headphones for seven consecutive nights. The control group were not required to watch any videos. On day eight, all participants completed the three psychometric tests (Tennant et al., 2006; Eaton et al., 2004; Zung, 1971) again. The study was approved by the Birmingham City University Ethics Committee and complied with ethical guidelines of the British Psychological Society.

# **Results**

A general decrease in scores across all 3 scales was observed across conditions (table 1).

Table 1

*Mean pre-intervention, post-intervention and differential scores for the ASMR intervention, mindfulness intervention and control group.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **ASMR** | **Mindfulness** | **Control** |
| **CESD-R scale** | Pre-intervention score | 17.74 | 11.94 | 17.84 |
|  | Standard deviation | 11.67 | 8.19 | 13.88 |
|  | Post-intervention score | 13.41 | 7.26 | 14.27 |
|  | Standard deviation | 9.33 | 6.36 | 11.64 |
|  | Differential score | 4.23 | 4.68 | 3.58 |
|  | Standard deviation | 7.58 | 5.89 | 7.10 |
| **ZSRA scale** | Pre-intervention score | 48.61 | 44.65 | 48.69 |
|  | Standard deviation | 12.96 | 8.79 | 13.23 |
|  | Post-intervention score | 44.45 | 38.41 | 46.36 |
|  | Standard deviation | 11.07 | 6.92 | 13.55 |
|  | Differential score | 4.16 | 6.23 | 2.33 |
|  | Standard deviation | 9.24 | 6.96 | 5.85 |
| **WEMWBS** | Pre-intervention score | 40.64 | 46.85 | 42.71 |
|  | Standard deviation | 12.18 | 10.11 | 11.86 |
|  | Post-intervention score | 44.65 | 51.32 | 44.31 |
|  | Standard deviation | 11.31 | 10.78 | 13.48 |
|  | Differential score | 4.00 | 4.47 | 1.60 |
|  | Standard deviation | 7.87 | 7.57 | 6.11 |

## *CESD-R scale results*

A Shapiro-Wilk test found CESD-R scores to significantly deviate from normality before, *W*(110) = .92, P < .001, and after an intervention, *W*(110) = .90, *p* < .001, therefore this warranted the use of non-parametric tests on CESD-R scores throughout the analysis.

A Wilcoxon test found post-intervention CESD-R scores to be significantly reduced in the ASMR group (*Z*(31) = -2.79, *p* = .005, *r* = .50) mindfulness group (*Z*(34) = -4.00, *p* < .001, *r* = .69) and control group (*Z*(45) = -3.35, *p* = .001, *r* = .50).

A Kruskal-Wallis test found no significant difference in differential CESD-R scores between the three intervention groups (*X2*(2) = .43, *p* = .81). This indicates that whilst each intervention was effective at reducing symptoms of depression, none of the interventions were more effective than any other.

## *ZSRA scale results*

A Wilcoxon test found a significant reduction in post-intervention scores among the ASMR group (*Z*(31) = -2.02, *p* = .04, *r* = .36), mindfulness group (*Z*(34) = -4.02, *p* < .001, *r* = .69) and control group (*Z*(45) = -2.38, *p* = .02, *r* = .36). A Kruskal-Wallis test identified no significant difference between groups (*X2*(2) = 5.75, *p* = .06). Mann-Whitney tests were conducted between interventions and found the mindfulness intervention to have a significantly higher mean difference in pre and post-intervention scores than the control group (*U*(*n*1 = 34, *n*2 = 45) = 519.5, *p* = .02). This shows that mindfulness was more effective at reducing symptoms of anxiety than ASMR.

*WEMBWS results*

A repeated-measures ANOVA found a significant increase in post-intervention scores in the ASMR group (*F*(1, 30) = 8.11, *p* = .01, ηp2 = .211) and mindfulness group (*F*(1, 33) = 11.85, *p* = .002, ηp2 = .264).

*Participants with depression*

A Wilcoxon test found that those with depression had a significant decrease in post-intervention scores across all three interventions (*Z*(51) = -4.24, *p* < .001). A Kruskal Wallis test found no significant difference in differential scores between interventions, (*X2*(2) = .22, *p* = .90).

The difference in between pre and post-intervention ZSRA scores were also significantly larger for those with depression (*Z*(51) = -4.07, *p* < .001), no significant difference was observed between interventions (*X2*(2) = .3.74, *p* = .15).

No significant difference in WEMWBS scores was found among those with depression compared to those without (*t*(108) = -.60, *p* = .55). A repeated-measures ANOVA found a significant difference in post-intervention WEMWBS scores among those with depression in all interventions (*F*(1, 48) = 764.2, *p* < .001).

These findings show that whilst those with depression had improved post-intervention scores on all three psychometric scales, there were no significant differences that could be attributed to intervention type.

## *Participants with anxiety*

Post-intervention CESD-R scores were found to significantly decrease among those with anxiety in all three groups (*Z*(44) = -4.51, *p* < .001). No significant differences were identified between interventions (*X2*(2) = .2.18, *p* = .34). This indicates that no intervention type was more effective than any other at reducing CESD-R scores among those with anxiety.

A Mann-Whitney test found a significantly larger decrease in post-intervention ZSRA scale scores among those with anxiety, than those without (*U*(*n*1 = 44, *n*2 = 66) = 1108.5, *p* = .04). Participants with anxiety were also identified as having significantly reduced post-intervention scores in each intervention (*Z*(44) = -4.04, *p* < .001), with a Kruskal-Wallis test finding a significant difference between intervention types (*X2*(2) = 6.81, *p* = .03). Mann-Whitney tests identified that those with anxiety in the mindfulness group had significantly larger reductions in scores in comparison to controls (*U*(*n*1 = 34, *n*2 = 45) = 68.5, *p* = .01). This indicates that participants with anxiety benefitted more from the mindfulness intervention than those without anxiety.

A significant increase in WEMWBS scores was found among those with anxiety in each of the interventions (*F*(1, 41) = 8.90, *p* = .01). No significant differences were identified between interventions (*F*(2, 41) = 1.67, *p* = .20). This illustrates that those with anxiety did not benefit any more so from the ASMR or mindfulness interventions than those without anxiety.

**Discussion**

The present findings indicate ASMR as an ineffective long-term therapeutic intervention for improving mental well-being and reducing symptoms of anxiety and depression among the general population. Additionally, ASMR was also found to be ineffective at improving symptoms of depression among those with a self-reported history of depression, despite the enhanced improvement found within this demographic by Barratt and Davis (2015). It is possible that individuals may have been incapable of experiencing ASMR from the allocated list of videos which could have inadvertently influenced results. Additionally, there exists a debate as to the existence of a phenomenon known as *ASMR immunity,* in which the intensity of ASMR diminishes over time when overused (Oxenham, 2016). ASMR immunity may have played a factor in the current study and caused any therapeutic effects derived from ASMR to diminish as the study progressed. Of note however, is that post-intervention scores were not taken during or immediately after experiencing ASMR, so whilst ASMR may not have any long-lasting effect on mood and well-being, the results do not disrepute previous findings of an immediate short-term improvement in mood during and in the three hours proceeding the experience of ASMR (Barratt & Davis, 2015; Poerio et al., 2018).

Only those in the mindfulness group who self-reported a history of anxiety and were aware of their ability to experience ASMR saw any improvement in post-intervention ZSRA scale scores. This lack of effect among the general population may be owing to the one-week timeframe of the study, as improvements of stress, anxiety and depression have been shown to correlate with time spent engaged in mindful activities (Krusche et al., 2013). As mindfulness shares similar features to ASMR (Barratt & Davis, 2015), the short timeframe may also have impacted upon the results of the ASMR intervention. Our findings could instead indicate that it is the capacity to experience ASMR that enhances the therapeutic effects of mindfulness.

These findings provide an important basis in establishing whether ASMR had any long-lasting therapeutic benefits beyond the limited timeframe observed by Barratt & Davis (2015). Future research should continue to investigate the short and long-term therapeutic properties of ASMR with a particular focus on how the ability to experience ASMR enhances the therapeutic effects of mindfulness as this could lead to improved frameworks for the application of mindfulness-based therapies for the management of psychological and physiological disorders.

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