Attachment Security Priming: Increasing Felt Security in Adolescents with Social, Emotional and Mental Health Difficulties

Abstract

Attachment security priming (ASP) techniques have resulted in many positive outcomes including increased felt-security, an affective attachment state associated with optimal emotional regulation and relationship functioning. To date, however, ASP studies have almost exclusively been conducted with adult samples. This randomised experimental study investigated whether ASP could increase felt-security inadolescents with social, emotional and mental health (SEMH) difficulties. We further examined the security-related themes of the written protocols produced as part of the ASP procedure, allowing for the observation of the cognitions activated by the primes. Two prime groups (*N*=100, *M*age=14.5) completed a mental imagery and written priming task; the experimental group visualised a security-inducing attachment figure, whilst the control group visualised a shopping trip. The experimental group reported significantly higher felt-security (ηp2=.252) and wrote significantly more words related to attachment-relevant themes in their written protocols, compared to the control group. Findings demonstrate the potential of using ASP techniques to improve felt-security and associated outcomes in adolescents with SEMH difficulties.

*Key words*: attachment security priming, felt security, adolescents, attachment

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According to attachment theory (Bowlby, 1973), the interactions shared with primary caregivers become internalised into working models of attachment and create an early prototype of expectations about the availability and responsiveness of significant others (Waters et al., 1998). This prototype predicts the formation of specific attachment orientations (Bowlby, 1973), which are often conceptualised along a two-dimensional continuum of attachment anxiety and avoidance in adults (Brennan et al., 1998). Dimensions similar to attachment anxiety and avoidance also exist within the behaviour of children in the strange situation paradigm (Brennan et al., 1998; Fraley & Spieker, 2003). Ainsworth et al. (1978) described a discriminant function analysis based on codes of child behaviour including angry-resistant, contact seeking, contact maintenance and avoidance (Gillath et al., 2016). Attachment anxiety akin to *anger-resistant*, is characterised by fear of abandonment, reassurance seeking and feeling overwhelmed by emotions (Mikulincer & Florian, 1998). Attachment avoidance akin to *avoidance,* is characterised by difficulties with intimacy and a need to be compulsively self-reliant (Bartholomew, 1990). In contrast, securely attached individuals possess low levels of attachment anxiety and avoidance; they are comfortable with intimacy, rely on others for support and feel confident they are valued by others (Collins & Allard, 2001).

Insecurely attached individuals may be able to temporarily experience the same positive benefits as their secure counterparts through a technique known as Attachment Security Priming (ASP). Previous research carried out with adults has shown that ASP can significantly increase felt-security over a number of days following the prime manipulation (Carnelley & Rowe, 2007; Otway et al., 2014), and written protocols produced during ASP demonstrated that participants experienced thoughts related to felt-security, positive care, positive emotions and a sense of merging (Carnelley & Rowe, 2010). Our aim in this study was to explore the effectiveness of ASP in increasing felt-security with adolescents with social, emotional and mental health (SEMH) difficulties.

**Attachment Behavioural System**

The attachment behavioural system is triggered by threat and distress and is deactivated only when a sense of felt-security is attained, through availability and sensitive responses from an attachment figure (Mikulincer & Shaver, 2016). The sense of felt-security is fundamental for promoting normal functioning and exploration and is associated with feelings of communion and agency (Carnelley & Rowe, 2010), a sense of safety (Mikulincer & Shaver, 2007a) and relationship satisfaction (Sadikaj & Zuroff, 2015). Felt-security, therefore, is an indicator that security of attachment is being experienced and is often measured as an experimental marker that security has been achieved in priming studies (Luke et al., 2012). Examining felt-security can help to unpick the ways in which attachment security can positively impact on a range of developmental and longer-term outcomes.

For example, a secure attachment style has been found to be a protective factor against the development of mental health problems (Sroufe, 1988). A study of adolescents previously exposed to trauma found that individuals with secure attachment styles demonstrated fewer depressive and anxious symptoms compared to individuals with insecure attachment styles (Okello et al., 2014). Attachment security may serve as a buffering system whereby the perception of social support helps to reduce the likelihood that stressful life events will produce emotional distress (Cohen & Syme, 1985; Olstad, et al., 2001).

This has led researchers to explore whether attachment-based treatments focused on increasing felt-security in adults could help to improve their emotional-wellbeing (Bucci et al., 2015; Facompré et al., 2018). Attachment-focused treatment has taken on different forms such as using attachment theory to tailor treatment to the individuals’ attachment style (e.g., Shorey & Snyder, 2006), therapy to enhance attachment security (e.g., Davila, 2003), couple therapy to resolve relationship conflict and to enable partners to address life traumas constructively together (Johnson, 2002). Other attachment-based treatments are child and parent intervention programmes (e.g., the circle of security, Hoffman et al., 2006; attachment and biobehavioural catch-up, Dozier et al., 2005). Whilst these forms of treatment can help to enhance attachment security for adults, specific attachment security-based interventions that focus primarily on children and adolescents in school settings is limited (Rowe et al., 2020).

**Attachment Security Priming**

ASP is a technique that involves temporarily activating a sense of attachment security in adults. This can be done by priming security-related words or images supraliminally or subliminally, or by priming a mental representation of a secure attachment figure, rendering the secure-style of that relationship active by a process of spreading activation (Baldwin et al., 1996). ASP makes attachment security cues more readily available for mental processes thereby affecting an individuals’ cognitions, emotions and behaviour (Canterberry & Gillath, 2012). It does this by exposing individuals to primes designed to activate a sense of comfort, security and love (Gillath & Karantzas, 2015; Carnelley & Rowe, 2010), that is, by increasing felt-security. This technique leads individuals to think, feel and behave in a similar way to securely-attached individuals, albeit temporarily (Mikulincer & Shaver, 2007a).

The ASP techniques used with adult samples typically require participants to visualise and write about a secure attachment figure. Carnelley and Rowe (2010) analysed the written protocols produced by participants across a number of studies that had been assigned to different priming conditions to find out how ASP was experienced by individuals. They further examined how the effects of ASP differed to other types of primes (e.g., positive affect). They found that ASP led to themes such as felt-security, positive care, a sense of merging with another, positive emotion, and communion, supporting previous theoretical interpretations of the effects of attachment security (Baldwin, 2007; Mikulincer & Shaver, 2007b; Silverman et al., 1982). Additionally, the effects of the secure prime could be distinguished from positive affect priming on a range of outcomes. Of particular interest, the secure prime resulted in significantly more positive emotion words and fewer negative emotion words compared to the positive affect prime.

ASP increases felt-security relative to neutral or insecure primes. Otway et al. (2014) asked participants to complete a 3-minute visualisation task about either a security-inducing attachment figure (secure prime) or a supermarket shopping trip (neutral prime) on three consecutive days. They found that repeated priming resulted in higher felt-security in secure-primed participants compared to neutral-primed participants immediately after the first prime, final prime and one day after the final prime. The authors concluded that the secure text primes effectively maintained the initial sense of felt-security induced in secure-primed participants active for a number of days, thereby acting as ‘security booster’ to participants. Similarly, Luke et al. (2012) found that ASP significantly increased felt-security and energy in participants compared to attachment anxiety or attachment avoidant priming. Moreover, findings from a recent systematic review found that attachment security primes improved positive affect and reduced negative affect relative to control primes, and repeated priming showed a cumulative positive effect of ASP over time (Rowe et al., 2020).

Most research examining the effects of ASP have been carried out with adults (e.g., Carnelley et al., 2016); very little research exists involving children or adolescents. Indeed, only two extant studies report such data. Stupica et al. (2017) were the first known researchers to carry out ASP with children. In their study subliminal priming was carried out with children (aged 6 and 7) to determine whether ASP decreased fear reactions to threatening stimuli. They found that ASP significantly decreased physiological and expressive fear responses in the children and the effects of priming were consistent across all global attachment types. Additionally, McGuire et al. (2018) explored whether ASP could be effectively used with adolescents (aged 13 to 19) to reduce depressive symptoms. A range of priming tasks aimed to induce attachment security (e.g., writing task, thought visualisation exercise, word search) were carried out with the participants for 5 days, over a two-week period, at either the high school or community centre. McGuire et al. (2018) found that after a two-week period of repeated priming adolescents showed lower depressive symptoms compared to participants exposed to neutral primes. These findings are encouraging as they demonstrate that ASP is effective in reducing depressive mood in a real world setting with a young person sample, however, no study to date has directly examined whether ASP enhances felt security in adolescents with SEMH difficulties, leaving an important gap in the literature. Given the value of increasing attachment security through ASP, and understanding the mechanism behind it, for a plethora of mental health outcomes in adults, this would appear an important next direction for research.

**The Present Research**

The current study builds on past work and is novel in a number of ways. Firstly, it examined whether a modified ASP (adapted from an established adult security prime and piloted with a child sample), increased felt-security in adolescents with SEMH difficulties. The current study defined SEMH as described in the revised Special Educational Needs and Disability (SEND) Code of Practice 2015 (Department for Education, 2015). It is defined using the following umbrella term:

Children and young people may experience a wide range of social and emotional difficulties which manifest themselves in many ways. These may include becoming withdrawn or isolated, as well as displaying challenging, disruptive or disturbing behaviour. These behaviours may reflect underlying mental health difficulties . . . [or] disorders such as attention deficit disorder, attention deficit hyperactive disorder or attachment disorder. (Section 6.32).

ASP enhances a range of positive outcomes in adults, thus investigating the fidelity of this approach with adolescents with SEMH needs will provide some evidence as to whether this could be used as a potential intervention in schools. Children and adolescents with SEMH difficulties often demonstrate poor social, emotional and academic success and are at greater risk of developing negative outcomes later in life (Aviles et al., 2006). Thus, this purpose sample was chosen because it contains the specific type of young person who would require additional support and intervention in school for their SEMH needs. The only previous study to have examined felt-security with a young person sample using ASP methods was McGuire et al. (2018), their sample was less selective, however, as it consisted of typically-developing adolescents. Secondly, the study examined the content of the written priming protocols produced by the adolescents for attachment-relevant themes to get a sense of the themes activated by the security primes. While this has been examined in adults (e.g., Carnelley & Rowe, 2010), it has yet to be examined in a child and young person sample. This is an important contribution to the literature as our design allows us to not only observe whether felt security is indeed enhanced by ASP in this young and important (adolescents with SEMH needs) population, but also to observe the cognitions activated by the primes, thereby providing us with an idea as to how the primes work. Thirdly, this is the first study to examine the effects of ASP on felt-security in a cohort of adolescents as young as 11 years, and the first in which ASP has been conducted with mainstream schools as well as a small number of adolescents from special educational placements for SEMH difficulties. Pupils from specialist SEMH settings possess exceptional needs in relation to behaviour regulation and socioemotional functioning, thus it is likely that they will rate themselves lower in felt-security compared to participants from mainstream settings. The prevalence and severity of SEMH difficulties experienced by adolescents in mainstream settings should not be underestimated though, approximately three students in every typical mainstream classroom will have a clinically diagnosable mental health condition (Green et al., 2005; Mental Health Foundation, 2016). Thus, demonstrating the need for intervention in both mainstream and specialist provisions to support adolescents with their emotional wellbeing. Finally, the study is also novel in that it is the first to examine ASP in a British educational setting. It was carried out across seven schools, thereby increasing its representativeness and generalisability.

We predicted that exposing adolescents to security (versus neutral) primes would result in higher felt-security, and a higher percentage of words related to felt-security, social-related terms and emotions in their priming protocols, suggesting greater spreading activation of security-related information relative to the neutral prime (Baldwin et al., 1996).

**Method**

**Participants**

We recruited 150 pupils (90 Males) who had been identified with SEMH needs from mainstream secondary schools (*N*=128) and special school settings (*N*=22) in Southern England. Special schools in the local area were approached initially as they had a higher percentage of pupils with SEMH needs in their settings. Afterwards a broader recruitment approach was carried out, which involved contact with several mainstream schools locally and neighbouring counties. Participants were recruited via Special Educational Needs and Disabilities Coordinators (SENDCOs) or other senior staff members (e.g., Deputy Head, Head Teacher) who identified the students as having SEMH needs based on the criteria defined by the SEND Code of Practice 2015 (please see Introduction section above for definition). Letters were sent to parents by the Head Teacher or senior staff members using either an opt-in or opt-out recruitment method chosen by the school.

Six participants were excluded from analysis because they either declined participation or failed to complete the study. A further 37 participants were omitted because they failed to engage or follow instructions properly in the visualisation task. Seven outliers were identified (values greater than ±3 standard deviations; Field, 2009). Final analyses included 100 participants (57 males) aged between 11 to 19 years old (*M*=14.5 years old) from mainstream schools (*N*=87) and special schools (*N*=13). Results from the larger sample (*N*=144; excluding outliers) were similar to the reduced sample (*N*=100) in regard to the direction and significance of the main findings. There were no significant differences in age, year group or gender between priming conditions.

To compute sample size estimation, a statistical power analysis was performed using GPower 3.1 software. To detect a medium or large effect for .80 power in Analysis of Variance (ANOVA) with two groups (*f*=.25) and *p*=.05, a sample size of 96 or 40, was necessary, respectively (Cohen, 1992). We aimed for a sample of 96 participants to enable us to detect a medium effect. Our sample size was greater than 96 and therefore able to detect a medium or large effect.

**Procedure**

The study was granted ethical approval from the Psychology Department’s Ethics Committee and the University’s Research Integrity and Governance Team. Head Teachers were approached at mainstream schools and specialist SEMH settings to take part in the study. Head Teachers then sent out letters to parents to gain their consent for their child’s participation. On the day of the study, participants were given information detailing the study purpose and aims. A cover story was presented to participants to reduce demand characteristics; participants were told that the purpose of the study was to examine how adolescents’ creativity and memory skills were affected by visualisation tasks. Filler items related to the cover story were included in the pre- and post-prime measures. After providing assent, participants completed demographics and filler items. Participants were then randomly allocated to a secure-prime (*N*=48) or neutral-prime (*N*=52) condition and completed the priming task. Immediately after the priming task, participants completed filler items and a felt-security measure. Afterwards, participants were thanked and debriefed.

**Measures**

**Prime Task.** We used an adaption of Bartz and Lydon's (2004) attachment style priming method and modified it for use with an adolescent sample by simplifying the language and providing examples of who could be a secure attachment figure (e.g., parent, close friend). Participants wrote for 10 minutes about a relationship that made them feel secure; participants were asked to visualise the person and how they feel when they are with them (see Appendix A). An alternative security prime was provided if they could not think of a secure relationship (see Appendix B); a total of 3 participants chose this version of the prime. The alternative prime differed to the secure prime in that it asked participants only to *imagine* a relationship that would make them feel secure, rather than requiring them to bring a specific relationship to mind. An alternative secure prime has been used previously in priming studies when a secure relationship could not be easily identified (e.g., Carnelley et al., 2018). The neutral prime was an adaption of one used by Mikulincer and Shaver (2001); participants wrote for 10 minutes and visualised themselves going into a local newsagents, taking items from the shelves and moving them around. All primes were piloted first to ensure they were suitable for an adolescent sample.

**Felt-security.** To determine whether the prime was successful in this young sample, participants completed a 10-item measure (α=.96) of felt-security (Luke et al., 2012). Participants rated the extent to which the person (secure-prime) or scenario (neutral-prime) in the visualisation task made them feel (e.g., loved, safe) on a 6-point Likert scale (1=*not at all*, 6=*very much*).

**Text analysis.**The text analysis software program, Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2001), was used to analyse participants’ written scripts. LIWC compares each word in the text against a dictionary which contains words associated with psychologically-relevant categories. We used LIWC to count the number of felt-security (e.g., loved, secure), affect (e.g., positive emotion, anger) and social (e.g., friend, family) words. We used the attachment category dictionary for LIWC from past research (Carnelley & Rowe, 2010; Luke et al., 2012).

**Results**

**Preliminary Analyses**

Missing values accounted for 0.6% of the total data and were excluded from the analysis. Basic assumptions were met for ANOVA. Seven outliers were identified (values greater than ±3 standard deviations; Field, 2009). Analyses was run with and without the outliers to determine if the outliers had a significant impact upon the findings. When results from the two data sets were compared there were no differences in the main analyses between the data with and without outliers. Results described below are based on the data without outliers.

**Felt-Security**

A one-way ANOVA was conducted, with prime condition (two levels: secure, neutral) as the independent variable (IV) and felt-security as the dependent variable (DV) to examine whether post-prime felt-security was higher for participants in the secure-prime condition compared to the neutral-prime condition. The main effect of prime condition on felt-security was significant, *F*(1,98) = 33.104, *p*=.001, ηp2=.252. Participants in the secure-prime condition (*M*=4.83, *SD*=1.18) reported significantly higher felt-security compared to participants in the neutral-prime condition (*M*=3.33, *SD*=1.41) as hypothesised (see Figure 1).

**Content of Written Protocols**

LIWC results revealed that participants in the secure-prime condition wrote significantly more words related to felt-security than those in the neutral-prime condition (Table 1). This suggests that the secure-prime helped to induce attachment security in participants, and it enabled them to write about attachment-relevant themes in their written texts.

The LIWC results also revealed that participants in the secure-prime condition used significantly more words related to affect, positive emotions, negative emotions, anger, anxiety and sadness (see Table 1). This indicates that the ASP evoked greater and more varied emotions in participants compared to neutral primes, which may be due to the emotionally-induced memories that came to mind when participants visualised their secure attachment figures.

We also explored words which described the inclusion of possible attachment figures in the written texts including family, friend or other social-related terms in the two conditions (Table 1). Participants in the secure-prime condition wrote significantly more family-related words and social words than those in the neutral-prime condition, although the prime groups did not differ in the percentage of friend-related words used.

The qualitative content of the written protocols differed considerably between prime groups. Participants in the secure-prime group recalled specific memories relating to their attachment figure and their associated emotions, as seen in the example below:

My Auntie, everytime I was with her I would always be happy and felt I could be myself she would always be there for me no matter what I had done, she would tell me everything’s gonna be okay even if she knew it wasn’t. She would listen to everything I told her and did everything in her power as she could do to make me feel happy, she used to say ‘no matter what you do I will love you like my own daughter’ and I would never know what to say because I have never felt that love before. If she was with me all the time my life would be interesting but I would always be happy and having a good time. She didn’t have much but she gave me her all. When she was upset or in pain she wouldn’t tell anyone she would put on a smile and get on with her life she would tell me ‘never show pain because it shows people you have weaknesses that they will take advantages of’ she was the only person I had growing up but I wouldn’t want anyone else (participant 55).

Participants in the alternative secure-prime group (*N*=3) were not able to draw on specific memories but they were able to describe what feeling safe and secure would feel like and what impact it would have on them, as demonstrated in the example below:

If I were in a close relationship with someone I would feel safe because they would understand me easily and I would feel comfortable having a conversation with them. I [*sic*] This person would tell me not to worry about stuff that I would normally worry about and I will tell them the same and that would make me feel comfortable and hopefully they would feel the same. The kind of person I am thinking of is imaginary but if this person exists and they were with me then I would be happy or something very similar to happy (participant 1).

The written protocols completed by participants in the neutral-prime condition contained more pragmatic and factual information, such as the timing of the visit, products they bought and the associated costs, as shown in the example below:

I walked into the shop and made a turn to my right so I could grab a fanta lemon bottle and fanta apple bottle and some orange juice I then turned back around to walk near the door and reached to the almost top shelf to get some pringles, the time im [*sic*] entering the shop is at 4:32pm and I leave the shop at 4:38pm with all of my items. My total cost for my items is £5.50 I pay with a £10 note and get £4.50 back as change (participant 88).

**Discussion**

**Felt-Security**

The current study is the first to examine the impact of ASP on felt-security in adolescents with SEMH difficulties. As predicted, ASP successfully evoked a sense of felt-security immediately afterwards in the participants. The secure-primed participants reported significantly greater felt-security compared to the neutral-primed participants. These results are very encouraging, indicating that ASP has the potential to temporarily boost adolescents’ sense of security, which has been associated with a greater capacity to cope with stress (Lopez & Brennan, 2000) and relationship functioning (Carnelley et al., 1994). The current findings support and extend existing evidence which has also shown that ASP can successfully evoke a sense of felt-security in adults (Carnelley et al., 2018; Otway et al., 2014). The majority of research in this area has been conducted with adults, our study used a purpose sample of adolescents with SEMH difficulties. The only other study to have used an adolescent sample is McGuire et al. (2018), however their age range was between 13 to 18 years old, whilst our study included younger and older adolescents between the ages of 11 to 19 years old. Additionally, our study included a sample of adolescents identified with SEMH difficulties, which is the specific target population the technique would be aimed at in schools. This enables us to make valid and reliable generalisations about the effectiveness of the technique in increasing felt-security in this specific cohort.

**Content of Written Protocols**

**Felt-security.** The LIWC results demonstrated that participants in the secure-prime condition wrote significantly more felt-security words in their written texts compared to the neutral-prime condition. This provided further evidence that the prime manipulation was successful. These findings are congruent with Carnelley and Rowe’s (2010) research with adults, which also found that individuals primed with attachment security wrote significantly more felt-security related words in their written protocols compared to individuals in other prime conditions. The felt-security words included the words ‘accepted’ and ‘safe’, which have been highlighted in the literature to be key in defining a sense of attachment security (Baldwin, 2007; Mikulincer & Shaver, 2007b; Schaller, 2007). Successfully priming security-related memories of symbolic attachment figures produces effects that mirror those of dispositional attachment security (Carnelley & Rowe, 2010). This is important as there is substantial evidence that shows securely attached children develop more positive social-emotional competence, cognitive functioning, physical health and mental health, whilst insecurely attached children are at greater risk for negative outcomes in all these domains (Ranson & Urichuk, 2008). This suggests that ASP could help enable children and adolescents to experience the same positive benefits as their peers with dispositional secure attachments in the short-term.

**Social.** The LIWC analyses demonstrated that participants in the secure-prime condition wrote significantly more social and family-related words in their written texts compared to the neutral-prime condition. There was not a significant difference, however, in the number of friend-related words they wrote. Kerns et al. (2006) examined children’s perception of availability and utilisation of attachment figures and found that children were more likely to turn to parents to meet their attachment needs and peers to meet their companionship needs. Thus, writing about friends may serve less of an attachment need compared to family, which may help to explain the nonsignificant finding between prime conditions.

**Affect.** The attachment figures that participants in the secure-prime group chose to visualise appeared to induce a mixture of emotions. Their written texts included significantly more negative and positive emotion words compared to the neutral-prime condition. Research has shown that individuals with mood conditions, such as this sample, experience considerable difficulty with emotional understanding and regulation (Gross & Muñoz, 1995; Werner & Gross, 2010). Individuals with depression report difficulties identifying, tolerating and modifying their emotions, whilst individuals with anxiety demonstrate lower emotional understanding, greater negative reactivity to emotions and less ability to self-soothe (Berking & Wupperman, 2012). Thus, participants in the secure-prime group may have reported a mixture of strong emotions due to their difficulties in identifying, understanding and regulating their emotions.

Additionally, their choice of attachment figure may have also led to mixed emotions. Whilst the majority of participants seemed to choose attachment figures which induced attachment security, as shown by the findings, they may have also chosen attachment figures which induced some negative emotions in them as well, such as hurt feelings (e.g., being told off) or a sense of longing (e.g., missing someone who lives far away).

The content of the security-priming written protocols is important as it provides us with a sense of how the primes have their effects. They suggest a pattern of spreading activation (Baldwin et al., 1996; Rowe & Carnelley, 2003) from the direct content of the prime to related, and mainly positive, cognitions and affect. ASP tasks may also serve as opportunities for adolescents with SEMH difficulties to practice regulating their emotions and cognitions within close, secure relationships in a safe way, which they can then generalise to other social interactions and relationships.

**Validity of Behavioural Priming**

Concerns have been raised in recent years about the replicability and validity of behavioural priming effects in research (e.g., Cesario, 2014; Pashler et al., 2012). In particular, Sakaluk (2013) argued there were problematic responses to recall-based attachment primes, specifically in relation to participants having difficulties recalling memories corresponding to their assigned attachment style condition and then being subsequently excluded from the study (e.g., Bartz & Lydon, 2004; Mikulincer et al., 2001a). In addition, Sakaluk (2013) raised concerns about the representativeness of samples (i.e., overreliance of undergraduate students) and the need to specify attachment figures which participants had greater experience with (e.g., parent). All of these issues were addressed in the current study. A purpose sample was taken from the target population (i.e., adolescents with SEMH difficulties). The information provided to participants in the experimental trials explicitly stated relevant examples of attachment figures that participants could bring to mind (e.g., parent, best friend). To mitigate any difficulties participants might have identifying a mental representation of an attachment figure, an alternative security prime was provided for these participants which required them only to *imagine* a secure relationship rather than think of a specific one. It is reasonable to assume most adolescents will have had exposure to a secure relationship (Gillath et al., 2022), even if this occurred indirectly. There have not been any other issues for concern raised in relation to the validity and reliability of priming within attachment security literature.

**Strengths**

This is the first study to explore whether and how ASP is effective in a sample of adolescents with SEMH difficulties. It is the first to examine ASP effects on felt-security and the written protocols produced by adolescents during ASP to further understand their thoughts and visualisations. There are only two ASP studies to date which have been carried out with children and young people below 18 years old (McGuire et al., 2018; Stupica et al., 2017), thus this study has extended the literature with this under-researched sample.

Additionally, the sample size obtained in the current study may be seen as a relative strength especially given the difficulties in recruiting adolescents with SEMH needs. The recruitment process involved gaining consent from a number of sources including Head Teachers, parents and the adolescents themselves. This proved difficult because drop-out occurred at all three levels of recruitment for a number of reasons such as schools reporting lack of capacity to host the study (e.g., time and space), schools choosing an opt-in consent approach with parents (many of whom were hard to reach) which resulted in lower response rate, and adolescents declining participation on the day of the study. Despite these challenges, the final sample size was relatively large and the study was sufficiently powered.

**Limitations**

Only one prime session was carried out with participants. Studies which have carried out repeated priming over time have found that the effect of the prime tends to increase over time (Carnelley et al., 2018; 2016). For instance, Carnelley et al. (2018) carried out ASP to reduce anxiety and depressive symptoms in a clinical sample and they found that ASP only became statistically significant after the third prime. Therefore, future research should consider using a repeated-priming methodology to increase the effectiveness of the prime.

The LIWC program suffers from a few limitations. It cannot be used for complex coding as it has only been designed to count individual words and classify them into strict categories (e.g., sad, friend), thus it cannot interpret figurative language. Additionally, LIWC can only capture thoughts and feelings consciously available to the adolescents and not those active below the level of conscious awareness (Carnelley & Rowe, 2010). Nonetheless, despite these potential limitations, our findings offer a unique window into the cognitions triggered by the security prime in a young sample.

SEMH needs amongst adolescents vary significantly. Some individuals may internalise their needs (e.g., anxiety and low mood), whilst others will exhibit challenging externalising behaviours (e.g., non-compliance, disruption). Detailed information on the participants’ specific needs were not collated. Future research should compare the effects of ASP for adolescents with different SEMH needs (e.g., anxiety, low mood, anger).

Measures of felt-security were not administered immediately prior to the intervention. This decision was taken to reduce demand characteristics. For pre-measures to have been completed successfully, without the risk of invalidating the participants’ responses to the ASP task, a time lapse in between (e.g., administering pre-measures a week earlier) would have been necessary. This would have likely resulted in increased participant burden and a significantly reduced sample size in this hard-to-reach cohort.

Moderator analyses with age, gender and year group were not conducted as no differences were detected between prime conditions when preliminary analyses were run with these factors. Two further reasons influenced the decision not to conduct the moderation analyses: The study sample was too small and statistical power was insufficient. Therefore, we cannot rule out the possibility that potential differences between participant conditions may have influenced the findings. Furthermore, we cannot exclude the possibility that baseline attachment security (not measured in the current study) may have influenced results.

**Implications for Practitioners**

The findings of this research have important implications for practitioners because the need to find effective techniques and interventions in school which help to increase attachment security and enhance emotional wellbeing is paramount due to the rising levels of mental health difficulties in children and young people (NHS Digital, 2021). In the current study, ASP led to significantly higher felt-security compared to neutral priming immediately following the prime. Felt-security has been associated with a range of positive outcomes, such as increased feelings of safety (Bowlby, 1969), reduction in barriers to social connection (Holmes & Murray, 2007) and emotional regulation (Lopez & Brennan, 2000). The findings from the present study have demonstrated that ASP can enhance felt-security in adolescents with SEMH difficulties within a school context, and thus has the potential to be used as an intervention that will contribute towards their social and emotional development. It would be beneficial for ASP sessions to be facilitated by a trusted adult who could help to support pupils with SEMH difficulties to successfully access the intervention, especially those who may experience difficulties with comprehension, attention and motivation.

ASP is a low-cost and time efficient technique which has strong theoretical underpinnings. These factors are particularly important for practitioners and schools because interventions need to be evidence-based, easy to implement and economical for the setting. The ease with which ASP can be carried out also means that individuals can complete the priming tasks in various different contexts (school, home and out in the community) after receiving their initial prime. This has been demonstrated in a number of studies which have successfully primed participants via text messages (Carnelley et al., 2018; Oehler & Psouni, 2019). Priming adolescents via text messages could be a practical solution as it means they can easily integrate it into their lives by completing it at a location and time that suits them. Technology and mobile phone are being used increasingly in mental health services for a variety of tasks including symptom assessment, psychoeducation and tracking treatment progress (Luxton et al., 2011).

Future research should also continue to investigate the potential of ASP as a technique to use for children and adolescents with a larger sample size and through a repeated priming methodology. This is particularly important as ASP may lead to additional personal, interpersonal and wellbeing benefits, as reported with adult samples, that were not measured as part of the current study. In addition, it would be of interest to measure baseline trait attachment in order to investigate differences in priming as a function of dispositional attachment style in future studies.

**Conclusion**

This study is the first to examine the effects of ASP on enhancing felt-security in adolescents with SEMH difficulties. The findings demonstrated that ASP resulted in significantly higher felt-security and it influenced adolescents to write about significantly more attachment-relevant themes within their written protocols. This suggests that the secure-prime induced attachment security. Given the high prevalence of emotional difficulties in adolescents and the extensive waiting times to be seen by Child and Adolescent Mental Health Services, there is an increasing need for schools to deliver interventions which improve adolescents’ sense of safety and emotional wellbeing. ASP is a low-cost and easy to administer technique which could help to support adolescents in school by alleviating emotional barriers to their learning and development.

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Appendix A

Attachment Security Prime

Please think about a relationship where you found that it was easy to get close to the other person. You felt comfortable because of this person and you didn’t often worry about them going away. Have you got a relationship in mind? You may have this type of relationship with your mum, dad, close friend or another relative such as a grandparent.

Now take a moment to think about what it is like being in this relationship:

* What is it like being with this person who makes you feel safe and secure?
* You may want to remember a time when you were actually with this person.
* Try and get a mental image in your mind.
* What would he or she say to you?
* What would you say in return?
* How do you feel when you are with this person?
* How would you feel if they were here with you now?

Please write your thoughts on the piece of paper provided and whilst you are writing try hard to visualise this person. You will have 10 minutes to complete this task and the researcher will let you know when the time is up.

Appendix B

Alternative Security Prime

Please imagine a relationship where you find it easy to get close to the other person and you feel comfortable being around them. In this relationship you don’t often worry about the person going away. You may have experienced a similar relationship in the past but if not try to imagine what a relationship like this might be like.

Now take a moment to imagine what it would be like to be in such a relationship:

* What would it be like to be with a person who makes you feel safe and secure?
* Imagine you are actually with this person.
* Try and get a mental image in your mind. What would he or she say to you?
* What would you say in return?
* How do you feel when you are with this person?
* How would you feel if they were here with you now?

Please write your thoughts on the piece of paper provided and whilst you are writing try hard to visualise this type of relationship. You will have 10 minutes to complete this task and the researcher will let you know when the time is up.

Table 1

*Linguistic Analysis Descriptives*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  Secure prime |  |  Neutral prime |  |  |  |
| Word type | *M* | *SD* |  | *M* | *SD* | *F* | *p* | ηp2 |
| Felt-security  | 1.66 | 1.82 |  | 0.03 | 0.22 | 40.777 | .001\*\* | .294 |
| Affect | 10.48 | 4.45 |  | 1.44 | 1.63 | 187.489 | .001\*\* | .657 |
| Positive emotions  | 8.56 | 0.57 |  | 1.14 | 1.45 | 124.376 | .001\*\* | .559 |
| Negative emotions  | 1.80 | 1.78 |  | 0.27 | 0.57 | 34.411 | .001\*\* | .260 |
| Anger  | 0.20 | 0.45 |  | 0.03 | 0.15 | 6.917 | .010\* | .066 |
| Anxiety  | 0.90 | 1.16 |  | 0.10 | 0.32 | 23.039 | .001\*\* | .190 |
| Sad | 0.42 | 0.89 |  | 0.08 | 0.24 | 7.045 | .009\* | .067 |
| Social  | 15.50 | 4.26 |  | 4.95 | 4.58 | 141.490 | .001\*\* | .591 |
| Family | 1.30 | 1.81 |  | 0.59 | 1.17 | 5.423 | .022\* | .052 |
| Friend | 0.50 | 0.84 |  | 0.32 | 0.79 | 1.160 | .284 | .012 |

Note: The amount of felt-security, social and affect-related words used in the written texts of both prime conditions; descriptive data and group differences are presented.

\**p* < .05; \*\**p* < .001.



\*\*

*Figure 1.* Means for felt-security in each prime

\*\* Significant difference between prime group condition (*p* < .001; ηp2 = .252).