Research Article

Psychological Science
1–9

DOI: 10.1177/09567976211042008
www.psychologicalscience.org/PS

Safe and Sound: The Effects of Experimentally Priming the Sense of Attachment Security on Pure-Tone Audiometric Thresholds Among Young and Older Adults

Shir Nagar[1], Mario Mikulincer[1], Gal Nitsan[1,2], and Boaz M. Ben-David[1,3,4]

[1]Baruch Ivcher School of Psychology, Reichman University (IDC Herzliya); [2]Department of Communication Sciences and Disorders, University of Haifa; [3]Department of Speech-Language Pathology, University of Toronto; and [4]Toronto Rehabilitation Institute, University Health Network

Abstract

Attachment security has consistently been found to correlate with relaxed exploration, openness, and mindful attention to incoming information. The present studies explored whether contextually infusing a sense of attachment security (security priming) can improve hearing in young and older adults. In Study 1, participants (29 young, 30 older) performed a standardized pure-tone audiometric-thresholds test twice. In the security-priming condition, a picture of a participant's security-enhancing figure was presented throughout the task. In the control condition, a picture of an unknown person (matched in sex, age, and facial expression) was used as a neutral prime. Study 2 (14 young, 14 older) was almost identical, except that it was preregistered and the neutral prime was a circle. In both studies, participants performed better (had lower hearing thresholds) in the security-priming condition. The current study is the first to show that attachment security improves sensory perception, and these results have meaningful implications for theory and clinical hearing tests.

Keywords

aging, social cognition, auditory perception, priming, preregistered

Received 4/9/20; Revision accepted 8/2/21

It is relatively easy to imagine that feeling loved, protected, and secure will make oneself more open to the flow of current experience and more attuned to one's surroundings. Can these feelings also heighten the sensitivity of one's physical senses? In the current study, we examined this question through the lens of attachment theory (Bowlby, 1969/1982) and focused on the psychological benefits of the sense of attachment security. Specifically, we explored the possibility that a contextual infusion of attachment security might increase hearing sensitivity.

According to Bowlby (1973), interactions with supportive individuals (*attachment figures*) in times of need contribute to the formation of a sense of attachment security (confidence that support will be available when needed). In contrast, interactions with attachment figures who behave in a rejecting manner are frustrating and disrupt one's sense of security, promoting more insecure attachment orientations. These orientations are conceptualized and measured along two dimensions: attachment anxiety (worries about one's lovability) and attachment-related avoidance (distrust of other people's goodwill and inhibition of relational closeness; e.g., Brennan et al., 1998).

Corresponding Author:
Boaz M. Ben-David, Reichman University (IDC Herzliya), Baruch Ivcher School of Psychology, Communication, Aging and Neuropsychology Lab (CANlab)
Email: boaz.ben.david@idc.ac.il

Attachment orientations can be conceptualized as the top node in a hierarchical network of attachment-related mental representations (e.g., Overall et al., 2003). This network also includes more specific attachment-related representations that apply only in certain relational contexts and can be activated by the actual or symbolic presence of an attachment figure, even if they are not congruent with the dominant attachment orientation. This activation can then temporarily shift a person's cognitions and behaviors (Mikulincer & Shaver, 2020). For example, the presence of a supportive figure can create a momentary sense of security (what Mikulincer & Shaver, 2007, called *security priming*) even among chronically insecure people and lead them to think and behave like a secure person (Gillath & Karantzas, 2019).

Research has shown that attachment security has beneficial effects on distress management and mental health and positively biases the processing of attachment-relevant information (Dykas & Cassidy, 2011; Mikulincer & Shaver, 2016). Mikulincer and Shaver (2003) proposed that attachment security also facilitates the processing of attachment-unrelated information. Theoretically, attachment security creates a calm and confident mental platform that reduces worries and distress and allows people to be fully attuned to any kind of incoming information and to explore new affordances.

In support of this view, correlational studies have shown that a sense of attachment security is positively associated with novelty seeking, curiosity, cognitive openness, and mindful attention (e.g., Carnelley & Ruscher, 2000; Mikulincer, 1997; Stevenson et al., 2017). There is also experimental evidence that security priming (e.g., exposure to the name or picture of a loving partner) increases liking of novel pictures and willingness to learn and improves mindful attention and creative problem solving (e.g., Green & Campbell, 2000; Luke et al., 2012; Melen et al., 2017; Mikulincer et al., 2011). Our question is whether the calm and mindful mental platform that results from security priming also facilitates the early stages of sensory information processing and heightens sensitivity to physical stimuli.

To date, there is no direct evidence linking security priming and sensory perception. However, we know that perceptual sensitivity is improved when people maintain a state of mindfulness, such as that provided by attachment security (e.g., Brown et al., 1984; Starrett, 1982; Tarrasch et al., 2017). For example, Langer et al. (2010) found that experimentally fostering a confident mindset improved visual acuity. In addition, Sakman and Sümer (2018) revealed that participants with greater attachment security detected attachment-unrelated visual stimuli with higher accuracy.

Statement of Relevance

Previous studies have consistently related attachment security to exploration, openness, and mindful attention to incoming information. We found that contextually infusing a sense of attachment security (security priming), by presenting the picture of a security-enhancing figure, improved performance on even a seemingly objective, routine sensory test—pure-tone audiometric thresholds. The study's most important contribution is that a cognitive-affective state (attachment security) has a direct impact on the primary sensory system in both young and older adults. It also casts a shadow on the reliability of standardized hearing tests, suggesting that psychological factors should be taken into consideration. Specifically, because older adults' hearing thresholds are lower, small changes can cross boundaries of clinically normal hearing, leading to false positives. Finally, hearing loss is one of the most commonly reported health problems in older adults; results suggest possible novel paths for hearing rehabilitation that may expand to other sensory and perceptual processes.

The current study followed this line of research and explored the possibility that security priming would result in more accurate sensory perception and improved thresholds. An examination of sensory thresholds can by itself heighten self-related worries that impair task performance (Ben-David et al., 2018); security priming can calm these worries and allow improved performance. Because of the negative psychosocial outcomes associated with hearing disabilities (e.g., Bakare, 2012), we focused on the auditory sense and examined whether security priming can lower detection thresholds of pure tones around 250 to 4000 Hz (stimuli most associated with speech perception; e.g., Aguilar et al., 2015) among young and older adults.

Hearing loss is one of the most commonly reported health problems in adults ages 55 years and older (e.g., Heinrich et al., 2016). Therefore, it is possible that older individuals may be more worried than young individuals during an auditory examination, and security priming will have more positive effects on their auditory thresholds. Indeed, previous studies have shown that the psychological benefits of security priming are particularly evident under conditions of stress and among people who harbor self-related worries (Gillath & Karantzas, 2019). Even if security priming is similarly effective in both age groups, its implications for older

adults are more important because their hearing acuity is lower on average and small changes can cross boundaries of clinical diagnosis.

These ideas were explored in two three-session studies. In the first session, young and older adults provided a facial picture of one of their security-enhancing attachment figures. In the two remaining sessions, participants performed the standardized pure-tone audiometric-thresholds test and were instructed to indicate the presence of pure tones from 250 to 4000 Hz that were presented monaurally to both ears. In one session, participants performed the task with the photo of their security-enhancing attachment figure appearing on the computer screen (*security priming*). In the other session, participants performed the task with the photo of an unknown person appearing on the screen (*neutral priming*). The order of the sessions was counterbalanced across participants. In Study 2, we replicated Study 1's protocol while making the following changes: (a) The neutral prime was a picture of a circle, (b) the audiometric test was conducted by a registered audiologist who was blind to the priming condition, and (c) the study was preregistered. We made two predictions. The first was that security priming, compared with neutral priming, would lead to improved audiometric functions (lowered thresholds) across the frequency spectrum. Our second prediction was that the effects of security priming on audiometric functions would be stronger among older adults than among young adults.

Study 1

Method

Participants. We conducted an a priori power analysis using G*Power (Version 3.1; Faul et al., 2009) to detect whether there was a significant interaction between condition and participant groups in a mixed-model repeated measures analysis of variance (ANOVA) with age group (young adults, older adults) as a between-participants factor and priming condition (security, neutral), tested ear (left, right), and tone frequency (250 Hz, 500 Hz, 1000 Hz, 1500 Hz, 2000 Hz, 3000 Hz, 4000 Hz) as within-participants factors. To be conservative, we chose a small effect size ($\eta_p^2 = .05$) and a small estimate of correlation ($r = .25$), and we assumed that thresholds in the separate ears would not differ; therefore, a sample size of at least 14 participants in each group was the minimal requirement for a power of .95.

For Study 1, 59 participants were recruited, given that it was a preliminary exploration of the effect and we anticipated participant attrition. The sample consisted of 29 young Israeli adults (16 women, 13 men; age: $M = 24.93$ years, $SD = 2.10$, range = 20–35) and 30 older Israeli adults (16 women, 14 men; age: $M = 70.23$ years, $SD = 6.60$, range = 60–75). Young adults were psychology undergraduates who completed the study for partial course credit. Older adults were recruited from community centers and received the equivalent of $30 (U.S.) for their participation. We included only native Hebrew speakers with good ocular health and no auditory or language problems, as assessed by a self-report questionnaire (Ben-David et al., 2019). No significant difference in gender distribution was found between the two age groups, $\chi^2(1) = 0.020$, $p = .887$. The study received ethics approval from the university's academic ethics committee, and all participants provided written informed consent.

Procedure and materials. The study consisted of three sessions with a 1- to 2-week interval between each of them. In the first session, participants signed an informed consent form, provided demographic information, and completed questions on ocular health and auditory and language problems. They were also asked to provide a picture of a security-enhancing attachment figure. Specifically, they received the following instructions: "Please send us a digital, high-quality picture of the face of a person you love; someone you feel you can trust, that makes you feel secure, and who will be available and responsive should you be in need."

In the next two sessions (each consisting of a different condition), participants performed a pure-tone audiometric-thresholds test. Participants were seated in a single-walled sound-attenuated booth (IAC Acoustics, Naperville, IL; Model 1938) approximately 60 cm away from a color 17-in. computer touch screen. Pure tones were presented monaurally first for the right ear and again, after a short break for the left ear, via an audiometer and headphones (MAICO Diagnostics, Eden Prairie, MN; Model MA 51). The following seven frequencies were tested in each ear: 250 Hz, 500 Hz, 1000 Hz, 1500 Hz, 2000 Hz, 3000 Hz, and 4000 Hz (see Ben-David et al., 2012). The standard staircase method was administered to assess thresholds (4 dB up, 2 dB down), with one exception—participants were instructed to touch the screen to indicate that they detected a tone rather than clicking on a handheld button.

In the security-priming condition, the picture of the participant's security-enhancing figure was presented at the center of the computer screen (cropped to size) on a white background during the entire session. This is a common security-priming procedure (Gillath & Karantzas, 2019). In the neutral-priming condition, the presented picture was that of an unknown person matched in age, gender, and facial expression to the participant's own security-enhancing figure. The order of the two conditions was counterbalanced across

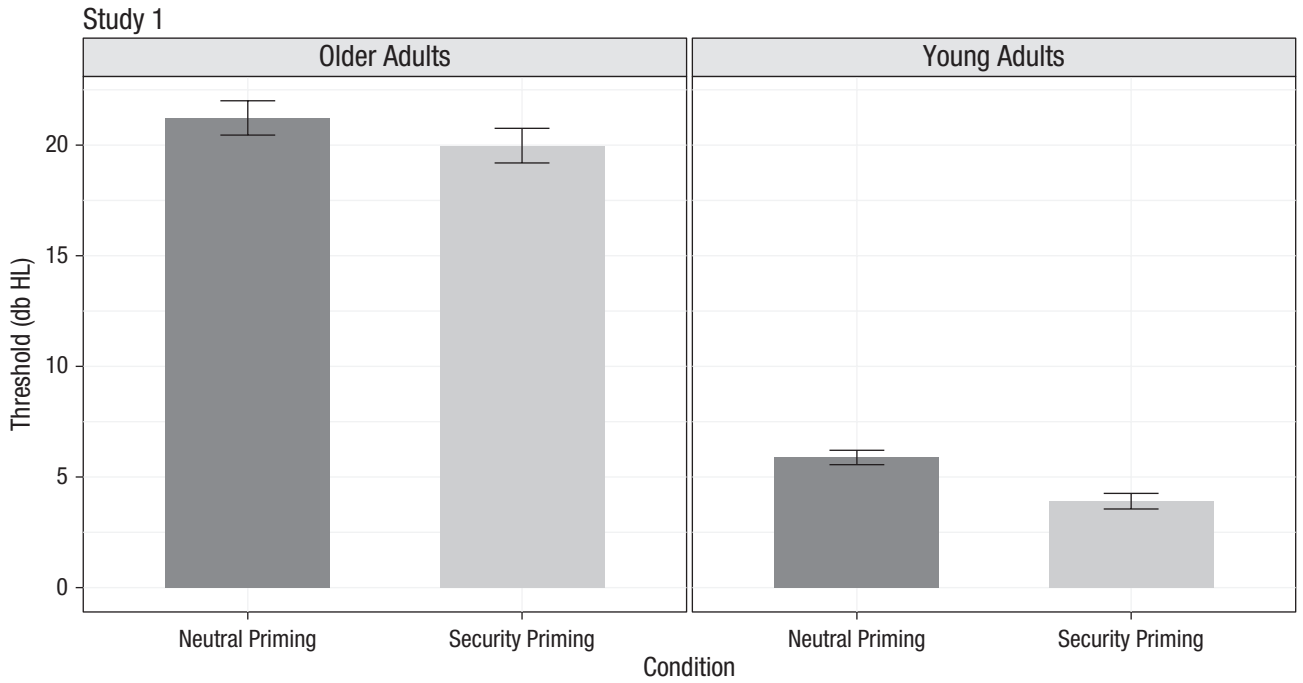

Fig. 1. Mean auditory threshold for older adults (left) and young adults (right) in the experimental and control conditions (Study 1). Error bars represent ±1 *SEM*. db HL = decibels of hearing level.

participants. No significant effect of condition order (security priming first, neutral priming first) was found on age-group distribution, $\chi^2(1) = 0.151$, $p = .698$.

Results

A preliminary mixed-effects repeated measures ANOVA, with condition order (security priming first, neutral priming first) as a between-participants factor, revealed no significant order effect on auditory thresholds (decibels), $F(6, 330) = 1.105$, $p = .359$, $\eta_p^2 = .02$, 95% confidence interval (CI) = [.0, .032]. In addition, this factor did not significantly interact with age group, priming condition, tested ear, and tone frequency (as within-participants factors) in affecting thresholds (all Fs < 1.1, all ps > .36). On this basis, we dropped the condition-order factor from the analysis.

The main analysis conducted on auditory thresholds (measured in decibels of hearing level, or dB HL) was a mixed-model repeated measures ANOVA with age group (young adults, older adults) as a between-participants factor and priming condition (security, neutral), tested ear (left, right), and tone frequency (250 Hz, 500 Hz, 1000 Hz, 1500 Hz, 2000 Hz, 3000 Hz, 4000 Hz) as within-participants factors (for relevant means and standard deviations, see Table S1 in the Supplemental Material available online). This ANOVA revealed a significant main effect of priming condition, $F(1, 57) = 19.240$, $p < .001$, $\eta_p^2 = .252$, 95% CI = [.102, .390]. In line with the study's first prediction, auditory thresholds (across frequencies) were lower in the security-priming condition ($M = 12.077$ dB HL, $SE = 0.516$) than in the neutral condition ($M = 13.685$ dB HL, $SE = 0.502$). Interestingly, all the double interactions between priming condition and other factors were not significant—priming and age group: $F(1, 57) = 0.965$, $p = .330$, $\eta_p^2 = .017$, 95% CI = [.0, .1]; priming and tested ear: $F(1, 57) = 1.331$, $p = .254$, $\eta_p^2 = .023$, 95% CI = [.0, .118]; and priming and tone frequency: $F(6, 342) = 0.370$, $p = .898$, $\eta_p^2 = .006$, 95% CI = [.0, .007]. These findings imply that security priming improved auditory detection (lowered auditory thresholds), regardless of the tested ear and tone frequency (see Fig. 1). Findings do not support the study's second prediction because the effects of security priming were not significantly moderated by age group.

Beyond the significant priming effect, the ANOVA also revealed significant main effects of age group, $F(1, 57) = 47.032$, $p < .001$, $\eta_p^2 = .452$, 95% CI = [.288, .567], and tone frequency, $F(6, 342) = 33.324$, $p < .001$, $\eta_p^2 = .369$, 95% CI = [.294, .418]. In line with past findings, results showed that older adults had higher (worse) auditory thresholds ($M = 20.602$ dB HL, $SE = 0.560$) than did young adults ($M = 4.894$ dB HL, $SE = 0.238$), and auditory thresholds were higher at 4000 Hz and 3000 Hz ($M = 20.314$ dB HL, $SE = 1.245$ and $M = 17.280$ dB

HL, *SE* = 1.111, respectively) than at lower tested frequencies (means ranged from 9.661 dB HL, *SE* = 0.678, for 250 Hz to 12.051 dB HL, *SE* = 0.937, for 2000 Hz). These two main effects were qualified by a significant interaction of age group and tone frequency, $F(6, 342) = 18.597$, $p < .001$, $\eta_p^2 = .246$, 95% CI = [.172, .296]. Follow-up analyses conducted separately for each age group indicated that the source of this interaction was the high-frequency hearing loss in older age. Specifically, whereas a significant linear trend for frequency (indicating an increase in threshold as frequency increases) was found among older adults, $F(1, 29) = 50.109$, $p < .001$, $\eta_p^2 = .633$, 95% CI = [.426, .735], the linear trend was not significant among young adults, $F(1, 28) = 0.905$, $p = .350$, $\eta_p^2 = .031$, 95% CI = [.0, .184]. None of the other interactions were significant. In sum, pure-tone audiometric thresholds, administered by asking participants to press on a person's picture, replicated well-known age-related effects, supporting the validity of the findings.

Study 2

Method

Participants. The sample-recruitment and compensation methods in Study 2 did not differ from those in Study 1. For Study 2, 28 participants were recruited. Sample size was set at 14 participants per group on the basis of the a priori analysis described in Study 1. Note that we planned to recruit 16 participants in each age group (as written in the preregistration) in anticipation of attrition, yet after 14 participants in each group had been recruited, we stopped recruitment (because of circumstances beyond our control).

Twenty-eight adults were recruited: 14 young adults (nine women, five men; age: *M* = 24.0 years, *SD* = 1.57, range = 22–26) and 14 older adults (nine women, five men; age: *M* = 69.43 years, *SD* = 2.56, range = 65–74).

Procedure and materials. On July 30, 2018, we preregistered Study 2 on As Predicted (https://aspredicted.org/f7fc6.pdf). The preregistration included a brief description of the design and procedure, hypothesis, sample size, and outlier-exclusion criteria.

The research protocol of Study 2 was identical to that of Study 1 with two minimal changes. First, the neutral prime was changed from a picture of an unknown person (Study 1) to a picture of a simple tan-colored circle. This was done to address the alternative hypothesis that the significant priming effect reflected deteriorated auditory detection (higher decibel thresholds) resulting from exposure to an unknown person rather than improved (lower) dB thresholds resulting from the symbolic presence of a security-enhancing figure. Second, the experimenter was a registered audiologist (the third author), who is licensed to administer pure-tone audiometric tests as a clinical assessment. She was blind to the priming condition, which was determined by the first author. As in Study 1, no significant effect of condition order was found on age-group distribution, $\chi^2(1) = 0.62$, $p = .43$.

Results

A preliminary mixed-effects repeated measures ANOVA as described in Study 1, with condition order (security priming first, neutral priming first) as a between-participants factor, revealed no significant order effect on auditory thresholds (db HL), $F(6, 138) = 1.647$, $p = .139$, $\eta_p^2 = .067$, 95% CI = [.0, .105], and no significant interactions with condition order. On this basis, we dropped the condition-order factor from the analysis.

Auditory thresholds (dB HL) were analyzed with the mixed-model repeated measures ANOVA described in Study 1 (for relevant means and standard deviations, see Table S2 in the Supplemental Material). This analysis revealed a significant main effect of experimental condition, $F(1, 26) = 30.64$, $p < .001$, $\eta_p^2 = .541$, 95% CI = [.295, .671]. Auditory thresholds were lower in the security-priming condition (*M* = 11.316 dB HL, *SE* = 0.650) than in the neutral condition (*M* = 13.724 dB HL, *SE* = 0.629), in line with our predictions and Study 1's findings. All the double interactions between priming condition and other tested factors were not significant—priming and age group: $F(1, 26) = 0.71$, $p = .406$, $\eta_p^2 = .027$, 95% CI = [.0, .181]; priming and tested ear: $F(1, 26) = 0.66$, $p = .425$, $\eta_p^2 = .025$, 95% CI = [.0, .177]; and priming and tone frequency: $F(6, 156) = 1.76$, $p = .111$, $\eta_p^2 = .063$, 95% CI = [.0, .099]. Again, security priming improved auditory detection (lowered auditory thresholds) regardless of participants' age, tested ear, or tone frequency (see Fig. 2).

As expected, significant main effects were also found for age group, $F(1, 26) = 53.61$, $p < .001$, $\eta_p^2 = .673$, 95% CI = [.465, .767] (older adults: *M* = 20.551 dB HL, *SE* = 0.638; young adults: *M* = 4.49 dB HL, *SE* = 0.298), and tone frequency, $F(6, 156) = 7.78$, $p < .001$, $\eta_p^2 = .230$, 95% CI = [.115, .295]. As in Study 1, these two main effects were qualified by a significant interaction of age group and tone frequency, $F(6, 156) = 10.12$, $p < .001$, $\eta_p^2 = .280$, 95% CI = [.161, .346]. Follow-up analyses conducted separately for each age group indicated that the source of the Age Group × Tone Frequency interaction was the high-frequency hearing loss in older age. A significant linear trend for frequency (indicating an increase in threshold as frequency increases) was found

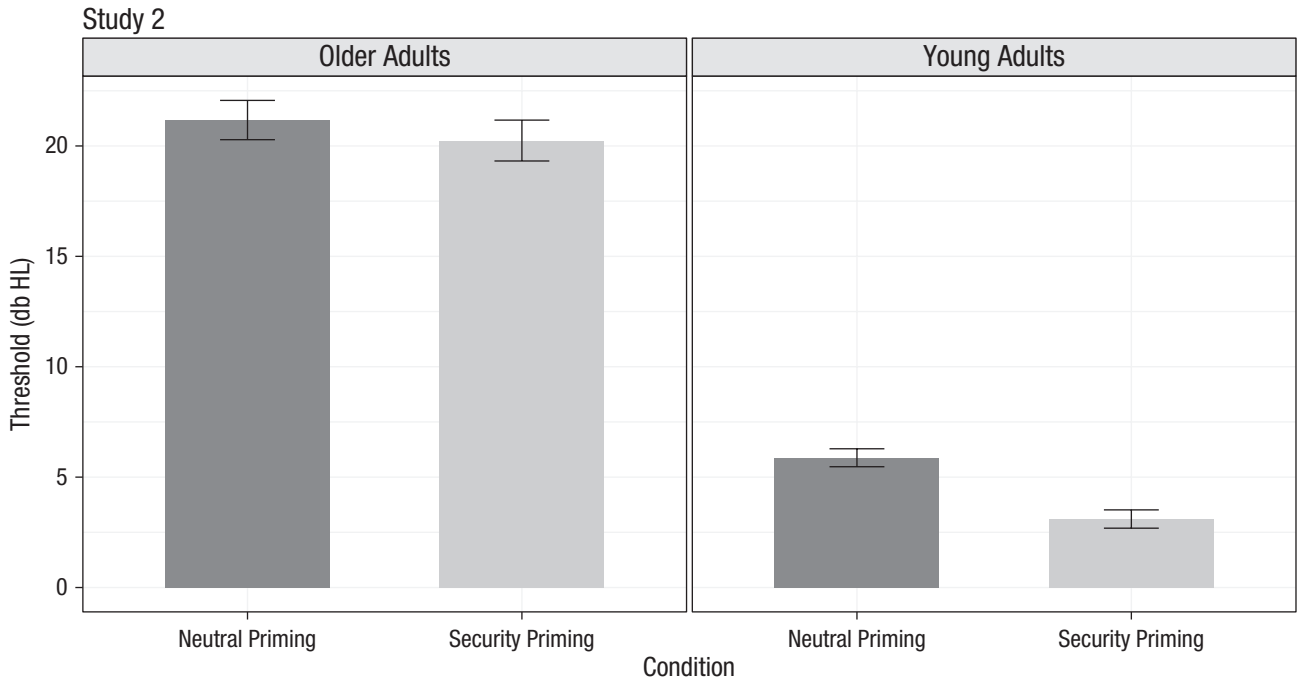

Fig. 2. Mean auditory threshold for older adults (left) and young adults (right) in the experimental and control conditions (Study 2). Error bars represent ±1 *SEM*. db HL = decibels of hearing level.

among older adults, $F(1, 13) = 16.709$, $p = .001$, $\eta_p^2 = .562$, 95% CI = [.199, .715], but not among young adults, $F(1, 13) = 3.078$, $p = .103$, $\eta_p^2 = .191$, 95% CI = [.0, .444]. None of the other interactions were significant.

In sum, the results of Study 2 replicated those of Study 1, suggesting that the security-enhancing picture lowered hearing thresholds compared with either a picture of an unfamiliar person or a familiar geometrical shape. At odds with our second prediction, and replicating Study 1's findings, security-priming effects were not moderated by age group.

General Discussion

Across two independent samples, security priming, compared with neutral priming (a picture of an unknown person or a circle), reduced pure-tone audiometric thresholds among both young and older adults. The effect was robust: Security priming improved hearing thresholds regardless of the tested frequency or ear. Study 2 was preregistered, and a clinical audiologist (licensed to conduct audiometric tests) administered the test while blind to the priming condition.

The novel and most important contribution of our findings is that a cognitive-affective state (attachment security) affected a seemingly objective primary sensory system. It also suggests that psychological factors, such as attachment security, should be taken into consideration when testing hearing difficulties, even when the test is conducted in a most rigorous manner (professional audiometer, sound-attenuated booth, and a licensed audiologist).

There are a few possible explanations for the findings. First, previous studies have shown that security priming results in lowered levels of distress (Gillath & Karantzas, 2019) and that attachment insecurities are positively associated with test-related anxiety (Erzen & Odaci, 2016). Therefore, security priming may have reduced test-related anxiety, which, in turn, may have led to better hearing acuity. Alternatively, the findings might reflect improved attention to the surroundings. Attachment security is associated with the capacity to maintain mindful attention (e.g., Caldwell & Shaver, 2012), and this mindful attentional state seems to improve sensory perception (e.g., Hodgins & Adair, 2010). Therefore, the calm and mindful state that stems from attachment security might have increased sensitivity to auditory stimuli. In addition, security priming is associated with heightened activation in the medial frontal cortex and prefrontal cortex, known to have a key role in cognitive and attentional control, as well as in the parietal lobe, related to sensory attention and processing (Canterberry & Gillath, 2013)—these activations possibly improve hearing acuity.

Contrary to our hypothesis, results showed that security priming did not affect older adults more than it did young adults. Because older adults fear hearing decline more than do young adults, this finding might imply

that security priming does not affect hearing thresholds via anxiety reduction. Theoretically, it could be argued that attachment security is relevant throughout life and that security-priming effects remain the same in all stages of life. On a practical level, because older adults' hearing thresholds are much worse than those of young adults, small changes of 2 dB HL can cross boundaries of normal hearing, leading to false positives. In other words, poor performance in hearing tests may in some cases result from emotional factors.

This preliminary exploration suffers from some methodological limitations. First of all, no manipulation check was conducted to ensure the psychological effects of security priming. Nevertheless, the presentation of an attachment figure's picture is a frequently used security-priming technique in both psychological and neuroscience studies, and the instructions that participants received are the gold standard for nominating a security-enhancing figure (Gillath & Karantzas, 2019). Moreover, one should also be aware that Study 1's finding might reflect heightened familiarity with the picture of a security-enhancing figure (compared with the picture of a stranger), calling for fewer cognitive resources. Yet because the effect was replicated in Study 2, in which the neutral priming was a well-known geometrical figure, this familiarity explanation appears less likely.

In addition, the picture of a security-enhancing figure may have elicited more positive affect than the picture of a stranger or a geometrical figure, possibly explaining the observed effects. However, in a recent review, Gillath and Karantzas (2019) concluded that security primes still had unique effects when compared with attachment-irrelevant primes aimed at enhancing positive affect and that variations in positive affect do not account for most of the observed security-priming effects. Of course, to increase our confidence that the observed effects are derived from enhanced security, future research should include a picture of a stranger with a gentle smile in the control condition, which may provide participants with positive emotions. In this context, it is important to note that in Study 1, both the security-enhancing figure and the unknown-person pictures were matched in age, gender, and facial expression. That is, if a smile appeared in the picture of the security-enhancing person, a similar smile appeared in the unknown person's picture. Therefore, we cannot attribute the observed effects of security priming to differences in emotional expressions of the primed faces in the two conditions. In any case, future studies should attempt to replicate the current findings while using different security-priming techniques and different control primes.

Because of the within-participants design, participants might be likely to estimate what the study is about and what researchers are examining, possibly biasing their expectation on the direction of results and affecting their behaviors. However, one should be aware that the order of the conditions was counterbalanced, and the main and interactive effects of order were not significant. Moreover, even if participants were able to guess that they were expected to perform better in the presence of their security-enhancing figure, this could not have affected the first session. In addition, in a follow-up debriefing, none of the participants were aware of the study's goals or predictions, yet they clearly noticed the presence or absence of their attachment figure.

One should also note that only participants with good auditory health were included. Moreover, participants were asked to respond by clicking on a touch screen instead of the clicker used in standard hearing-threshold assessments. We also want to note that because of statistical power limitations, we did not include an assessment of participants' attachment orientations and then examine whether the security-priming effect was moderated by these traitlike orientations. Despite these limitations, one may view the current findings as a pioneering step in examining the positive effects of security priming on hearing thresholds. We believe that security-priming effects are not exclusive to any specific sense and call for further exploration of these effects on other senses (e.g., vision) as well as on other sensory and perceptual processes.

Transparency

Action Editor: M. Natasha Rajah
Editor: Patricia J. Bauer

Author Contributions

S. Nagar, M. Mikulincer, and B. M. Ben-David developed the study concept and study design. S. Nagar conducted testing and data collection under the supervision of B. M. Ben-David in his lab. G. Nitsan conducted testing and data collection for Study 2. S. Nagar, M. Mikulincer, and B. M. Ben-David analyzed and interpreted the data. S. Nagar, M. Mikulincer, and B. M. Ben-David drafted the manuscript, and G. Nitsan provided critical revisions. All the authors approved the final manuscript for submission.

Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

Open Practices

The design and analysis plan for Study 2 was preregistered on AsPredicted and can be accessed at https://aspredicted.org/f7fc6.pdf. Data and materials for this study have not been made publicly available. This article has received the badge for Preregistration. More information about the Open Practices badges can be found at http://www.psychologicalscience.org/publications/badges.

ORCID iDs

Mario Mikulincer https://orcid.org/0000-0003-3639-0146
Boaz M. Ben-David https://orcid.org/0000-0002-0392-962X

Supplemental Material

Additional supporting information can be found at http://journals.sagepub.com/doi/suppl/10.1177/09567976211042008

References

Aguilar, E., Johannesen, P. T., & Lopez-Poveda, E. A. (2015). Contralateral efferent suppression of human hearing sensitivity. *Frontiers in Systems Neuroscience*, *8*, Article 251. https://doi.org/10.3389/fnsys.2014.00251

Bakare, A. O. (2012). Meaningful causal model among psycho-sociological factors on psychological well-being of the hearing-impaired adolescents in Southwest, Nigeria. *Gender & Behavior*, *10*, 4998–5021.

Ben-David, B. M., Gal-Rosenblum, S., van Lieshout, P. H. H. M., & Shakuf, V. (2019). Age-related differences in the perception of emotion in spoken language: The relative roles of prosody and semantics. *Journal of Speech, Language, and Hearing Research*, *62*, 1188–1202.

Ben-David, B. M., Malkin, G., & Erel, H. (2018). Ageism and neuropsychological tests. In L. Ayalon & C. Tesch-Römer (Eds.), *Contemporary perspectives on ageism* (pp. 277–297). Springer.

Ben-David, B. M., Tse, V. Y. Y., & Schneider, B. A. (2012). Does it take older adults longer than younger adults to perceptually segregate a speech target from a background masker? *Hearing Research*, *290*, 55–63.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. Basic Books.

Bowlby, J. (1982). *Attachment and loss: Vol. 1. Attachment* (2nd ed.). Basic Books. (Original work published 1969)

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult romantic attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). Guilford Press.

Brown, D., Forte, M., & Dysart, M. (1984). Visual sensitivity and mindfulness meditation. *Perceptual and Motor Skills*, *58*, 775–784.

Caldwell, J. G., & Shaver, P. R. (2012). Exploring the cognitive-emotional pathways between adult attachment and ego-resiliency. *Individual Differences Research*, *10*, 141–152.

Canterberry, M., & Gillath, O. (2013). Neural evidence for a multifaceted model of attachment security. *International Journal of Psychophysiology*, *88*, 232–240.

Carnelley, K. B., & Ruscher, J. B. (2000). Adult attachment and exploratory behavior in leisure. *Journal of Social Behavior and Personality*, *15*, 153–165.

Dykas, M. J., & Cassidy, J. (2011). Attachment and the processing of social information across the life span: Theory and evidence. *Psychological Bulletin*, *137*, 19–46.

Erzen, E., & Odaci, H. (2016). The effect of the attachment styles and self-efficacy of adolescents preparing for university entrance tests in Turkey on predicting test anxiety. *Educational Psychology*, *36*, 1728–1741.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149–1160.

Gillath, O., & Karantzas, G. (2019). Attachment security priming: A systematic review. *Current Opinion in Psychology*, *25*, 86–95.

Green, J. D., & Campbell, W. (2000). Attachment and exploration in adults: Chronic and contextual accessibility. *Personality and Social Psychology Bulletin*, *26*, 452–461.

Heinrich, A., Gagné, J.-P., Viljanen, A., Levy, D. A., Ben-David, B. M., & Schneider, B. A. (2016). Effective communication as a fundamental aspect of active aging and well-being: Paying attention to the challenges older adults face in noisy environments. *Social Inquiry Into Well-Being*, *2*, 51–68.

Hodgins, H. S., & Adair, K. C. (2010). Attentional processes and meditation. *Consciousness and Cognition*, *19*, 872–878.

Langer, E., Djikic, M., Pirson, M., Madenci, A., & Donohue, R. (2010). Believing is seeing: Using mindlessness (mindfully) to improve visual acuity. *Psychological Science*, *21*(5), 661–666. https://doi.org/10.1177/0956797610366543

Luke, M. A., Sedikides, C., & Carnelley, K. (2012). Your love lifts me higher! The energizing quality of secure relationships. *Personality and Social Psychology Bulletin*, *38*, 721–733.

Melen, S., Pepping, C. A., & O'Donovan, A. (2017). Social foundations of mindfulness: Priming attachment anxiety reduces emotion regulation and mindful attention. *Mindfulness*, *8*(1), 136–143.

Mikulincer, M. (1997). Adult attachment style and information processing: Individual differences in curiosity and cognitive closure. *Journal of Personality and Social Psychology*, *72*, 1217–1230.

Mikulincer, M., & Shaver, P. R. (2003). The attachment behavioral system in adulthood: Activation, psychodynamics, and interpersonal processes. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 35, pp. 53–152). Academic Press.

Mikulincer, M., & Shaver, P. R. (2007). Boosting attachment security to promote mental health, prosocial values, and inter-group tolerance. *Psychological Inquiry*, *18*, 139–156.

Mikulincer, M., & Shaver, P. R. (2016). *Attachment in adulthood: Structure, dynamics, and change* (2nd ed.). Guilford Press.

Mikulincer, M., & Shaver, P. R. (2020). Broaden-and-build effects of contextually boosting the sense of attachment security in adulthood. *Current Directions in Psychological Science*, *29*(1), 22–26. https://doi.org/10.1177/0963721419885997

Mikulincer, M., Shaver, P. R., & Rom, E. (2011). The effects of implicit and explicit security priming on creative problem solving. *Cognition and Emotion*, *25*, 519–531.

Overall, N. C., Fletcher, G. J. O., & Friesen, M. D. (2003). Mapping the intimate relationship mind: Comparisons

between three models of attachment representations. *Personality and Social Psychology Bulletin*, *29*, 1479–1493.

Sakman, E., & Sümer, N. (2018). Attachment (in)security and threat priming influence signal detection performance. *Journal of Social and Personal Relationships*, *35*, 889–916.

Starrett, R. H. (1982). Absolute auditory thresholds related to trait vs state emotionality. *Personality and Individual Differences*, *3*, 17–25.

Stevenson, J. C., Emerson, L.-M., & Millings, A. (2017). The relationship between adult attachment orientation and mindfulness: A systematic review and meta-analysis. *Mindfulness*, *8*, 1438–1455.

Tarrasch, R., Margalit-Shalom, L., & Berger, R. (2017). Enhancing visual perception and motor accuracy among school children through a mindfulness and compassion program. *Frontiers in Psychology*, *8*, Article 281. https://doi.org/10.3389/fpsyg.2017.00281