

DIGITAL LONELINESS, BEDTIME PROCRASTINATION AND PSYCHOLOGICAL WELL-BEING AMONG MIDLIFE WORKING WOMEN: A CORRELATIONAL AND PREDICTIVE STUDY

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KEYWORDS:

Digital Loneliness, Bedtime Procrastination, Psychological Well-being, Mid-life Working Women

CITE THIS ARTICLE:

Fatima, E., Abbas, A., & Shahid, H. (2026). Digital loneliness, bedtime procrastination and psychological well-being among midlife working women: a correlational and predictive study. *Pakistan Journal of Positive Psychology*, 3(9), 39-47.

ABSTRACT

The present study aimed to investigate digital loneliness, bedtime procrastination and psychological wellbeing among midlife working women. The primary objective was to examine relationship between the digital loneliness and psychological wellbeing. It was hypothesized that the digital loneliness would be linked positively with bedtime procrastination and negatively with wellbeing. A cross-sectional, correlational design was used in this research study. The sample consisted of 300 midlife working women selected through the purposive sampling technique. The data was collected by using standardized questionnaires such as UCLA Loneliness Scale, Bedtime Procrastination Scale and WHO-5 Wellbeing Index, measuring all of our study variables. Statistical analysis was conducted using SPSS, including correlation, and regression. Our results indicated significant relationships among the study variables. Specifically, digital loneliness was associated with bedtime procrastination positively and on the other hand, negatively with psychological wellbeing. The regression analysis further showed that digital loneliness significantly predicted lower levels of wellbeing and higher bedtime procrastination.

I. INTRODUCTION

Over time, digital technologies are becoming ingrained into our lives on a daily basis. The use of online platforms means that people can communicate, work and stay connected no matter the distance between them. According to a global report on the total number of people using the Internet worldwide, around 5.5 billion people are using the Internet with over 5.2 billion of those people using actively using social media (Statista, 2025). This demonstrates just how much digital communications and messaging have now become an ordinary part of daily life. Digital loneliness is described as a unique state by researchers (Szawarnoga et al., 2025), and digital loneliness indicates a personal sense of emotional separation even when online interaction occurs frequently. Digital communication fails to provide the deep feeling and significant exchange that human beings require for mental health because the interaction stays shallow. Bedtime procrastination refers to the act of delaying your sleep time for no external reason (Kroese et al. 2014). Many people use digital devices at night after a long day of routine so they can relax, communicate or do something for entertainment rather than going to bed. These disrupt the sleeping patterns and can affect psychological functioning negatively.

Midlife working women can face many challenges because they are trying to manage their job with other responsibilities such as caregiving and other social obligations such as their careers, family duties, and social pressures. Balancing all these responsibilities can put stress on their emotional health and as a result it will lead them to spend more time on technology for relaxation or socialisation. It has been observed that midlife working women are at risk of suffering from digital loneliness, developing sleep disruptions, and reduced well-being when these different pressures grow too large. Thus, this research study will explore the existence of the relationship between digital loneliness, bedtime procrastination, and well-being among midlife working women.

Digital Loneliness

Over the past two decades, rapid advancements in digital technology have significantly reshaped patterns of human communication. Smartphones, social media platforms, online workplaces, and even digital mental health services have become embedded in everyday life. As a result, the ways in which individuals connect, express emotions, maintain relationships and seek psychological support have evolved alongside these technological changes. Digital platforms have changed the subjective experience of social interaction. Many people believe that online communication frequently lacks physical signs, emotional speed, and physical existence. Because digital platforms allow constant contact, the quality and depth of social interaction vary significantly. It has been observed that individuals stay online constantly and talk with others during the sun's cycle, but individuals still feel emotional distance. Researchers say that the existence of high connectivity alongside personal isolation creates a specific situation. Digital loneliness is identified as a form of loneliness that comes from technology inside environments full of digital tools. The conceptualization of digital loneliness by Szawarnoga et al. (2025) is based on the idea that people feel socially isolated even when they interact with digital platforms repeatedly. Instead of eradicating solitude, virtual communication can co-exist with, and possibly even escalate, the subjective loneliness.

Similarly, Gubler et al. (2021) describe loneliness as a distressing emotional experience that arises when there is a discrepancy between desired relationships and actual social relationships. This definition applies broadly to digital environments, where frequent communication does not always translate into meaningful or emotionally fulfilling connections. Loneliness is not determined by the quantity of interaction, but by the perceived quality and depth of relational bonds. It has been reported that loneliness has a significant association with psychological distress, emotional difficulties and lower levels of well-being (Gubler et al., 2021; Korkmaz et al., 2025). When these perspectives are considered together, digital loneliness can be understood as a multi-dimensional construct including emotional, social and cognitive components. Emotionally, it reflects a perceived lack of intimacy or closeness; socially, it involves the sense that one's online networks lack depth; cognitively, it includes negative appraisals of one's connectedness. In this sense, digital loneliness refers to the subjective perception that technology-based relationships lack emotional closeness and meaningful connection. Social Displacement Theory suggests that excessive online engagement takes the place of deeper face-to-face interactions. This displacement is believed to make digital loneliness stronger. On the other hand, the Social Compensation Hypothesis says that digital platforms are used as helping spaces for people who have trouble with physical connection. Regarding digital loneliness, many strong psychological outcomes are connected to digital loneliness in various ways. Direct connections have been found between digital loneliness and delaying the time of rest (Trost & Hast, 2024) and low quality of sleep, while thinking too much about problems acts as a middle factor (Wang et al., 2025). Evidence shows that digital loneliness causes harmful nighttime habits with electronic gadgets, because digital loneliness hurts how people handle feelings and lowers their state of health.

Bedtime Procrastination

Sleep is a basic need for human body. It helps the body to recover physically along with maintenance of mental health. When people get sufficient sleep, they usually experience better emotional control, improved mental abilities and stronger immune system, resulting in better overall health. On the other hand, poor sleep can lead to higher stress together with difficulties in controlling and managing emotions. This often leaves people feeling less satisfied with their lives. Sleep problems are becoming more widespread in the modern society, mainly because people do not recognize and prioritize the importance of consistent sleep routines. Most people choose procrastinate when there are no external demands that may prevent sleep.. This raises an important question: why do people willingly sacrifice their sleep?

Procrastination involves three self-control difficulties which people face; to handle their emotions, their impulsive behaviour and their capacity to reach their future and long-term objectives. Researchers introduced the concept of bedtime procrastination to explain why people struggle to manage their sleep despite having control over their schedules. Trost and Hast (2024) model highlights that there is a strong connection between a person's psychological state and delayed bedtime behaviours. Bozkurt et al.'s study also highlights two main ideas about bedtime procrastination: (1) people do not intend to go to bed and (2) people have trouble managing their own behaviour (Bozkurt et al., 2024). The three characteristics that distinguish bedtime procrastination from other types of sleep delays are: (a) the individual willingly chooses to delay going to bed; (b) there are no external reasons preventing them and (c) the individual is aware that delaying bedtime may result in them experiencing negative consequences.

In the literature, bedtime procrastination is explained through a few different types of delays. One is active delay, where a person actively/deliberately stays awake to engage in leisure activities and/or entertainment. Another type is passive delay, which happens when someone unintentionally loses track of time. There is also a related concept called "revenge sleep delay". This happens when people delay sleep as a way to create a personal time after a long-busy day filled with other commitments (Bozkurt et al., 2024; Fuentes Chavez et al., 2025). Recent studies show that bedtime procrastination is linked with several serious psychological outcomes. Wang et al. (2025) reported that rumination and related emotional processes are closely associated with poor sleep. Bozkurt et al. (2024) also showed that excessive smartphone use is connected to both poor-self control and sleep problems.

Psychological Well-being

Wellbeing is not just an absence of mental illness but also includes positive emotions, satisfaction with life, adaptive coping and sense of fulfilment. It has various dimensions, including cognitive, affective and psychological aspects. To fully understand wellbeing, researchers emphasize the need to look at both how people feel and evaluate their lives. A more classical view suggests that wellbeing is a state of optimal psychological functioning or positive state of mental health. In their study on loneliness and wellbeing during the COVID-19 pandemic, Gubler et al. (2021) explain that wellbeing includes positive emotions, lower psychological distress and the ability to regulate emotions effectively. Their findings also suggest that wellbeing is closely connected to emotional and personality processes. Therefore, it is dynamic and context sensitive. Another perspective focuses on how people personally evaluate their lives; subjective evaluation. Diener describes subjective wellbeing as a combination of two things: how satisfied a person feels with their life and the balance between positive and negative emotions they experience over time. Research also supports this idea, showing that a person's sense of wellbeing is strongly influenced by their emotions and how much they are able to manage them (Gubler et al., 2021).

In the literature, wellbeing is often divided into two main types: hedonic and eudaimonic. The hedonic wellbeing is about pleasure and comfort focusing on feeling good and avoiding distress; Eudaimonic wellbeing, on the other hand, is about meaning and personal growth. The Self-Determination Theory explains that wellbeing depends on fulfilling three basic psychological needs such as autonomy, competence, and relatedness (Ryan & Deci, 2000). When these needs are met, individuals are more likely to experience personal growth and a greater sense of vitality. The Cognitive Discrepancy Theory of Loneliness posits that loneliness arises when there is a discrepancy between an individual's desired and actual social relationships (Perlman & Peplau, 1981). According to this theory, loneliness does not merely means the absence of social interaction but it is the subjective perception that one's social needs are unmet. In the modern era, individuals interact through frequent online communication while still experiencing emotional disconnect. For midlife working women balancing occupational and caregiving responsibilities, digital interaction serves as a replacement for meaningful social connection, yet it fails to fulfill deeper relational needs. This inconsistency results in digital loneliness, which can negatively impact psychological well-being and daily functioning. Self-Regulation Theory proposes that individuals regulate their thoughts, emotions, and behaviors to achieve long-term goals (Baumeister & Vohs, 2007). Effective self-regulation enables individuals to resist short-term temptations in favor of long-term benefits, such as maintaining healthy sleep routines.

Bedtime procrastination represents a lapse in self-regulation, where individuals postpone going to bed despite intending to sleep (Kroese et al., 2014). Emotional distress, such as that arising from digital loneliness, can deplete self-regulatory resources, and result in the inability to regulate impulses and discontinue digital activity. Previous

studies have looked at the way that how each of these variables occur in isolation, for example, digital loneliness, bedtime procrastination and well-being, but they have not examined that how these variables may interact with each other. Additionally, most of the existing literature focuses on the adolescent, university, or young adult population. Middle-aged working women are under-studied group looking at digital loneliness; bedtime procrastination; emotion regulation; and well-being. Midlife working women are typically responsible for managing their families at home as well as bringing their families closer together, so that connecting with other women is often very difficult. Some experts claim that mid-life women who find solace and social connections via technology, will have an increased chance of developing depression from the internet, leading to poor sleeping habits as well as develop cognitive deficits. The findings may contribute to a better understanding about the effects of digital technology on their emotional well-being and may help in developing better interventions. The objectives of the study are;

1. To explore the relationship between emotional intelligence, gratitude and forgiveness among university students.
2. To explore the gender differences and differences in public and private sector universities in terms of emotional intelligence, gratitude and forgiveness among university students.

II. METHOD

Participants

The participants of this study were mid-life working women aged 40-55, employed in various sectors such as education, healthcare, administration, and private organisations. Purposive sampling technique was used select only those participants who meet the inclusion criteria. Inclusion criteria include women who are currently employed full-time or part-time for at least 1 year, fall within the age bracket of 40–55 years, use digital devices regularly, and social media platforms before sleep, and consent to participate in the study. Exclusion criteria includes women who are younger than 40 or older than 55 years, are not currently employed, don't use digital devices daily, either don't use social media platforms or not before sleep, work permanent night shifts that significantly disrupt sleep cycles, have a diagnosed severe psychiatric disorder that substantially impairs daily functioning, or provide incomplete responses.

Measures

Following measures were used for data collection. **[1]** The UCLA Loneliness Scale was used to measure digital loneliness. It consists of 20 items, each item is rated on a 4-point Likert scale from *Never (1)* to *Often (4)*. Some items are reverse-coded. After scoring, all item scores are summed to give a total score ranging roughly from 20 to 80. Higher scores predict greater feelings of loneliness and social isolation, whereas lower scores suggest a stronger sense of social connection. This scale has excellent psychometric properties, with internal consistency typically around $\alpha = .89-.94$. **[2]** The BPS was used to measure bedtime procrastination. It is a 9 item self-report questionnaire used to assess the tendency to delay going to bed without any external reason. The items are usually rated on a 5-point Likert scale ranging from *Never (1)* to *Always (5)*. Some items are reverse-scored. After reverse scoring the items, sum of all 9 items is taken. Higher scores predict frequent bedtime procrastination and lower scores suggest better sleep-related self-regulation. Psychometric evaluations show good reliability (Cronbach's $\alpha \approx .84$) and solid validity. **[3]** The WHO-5 was used as a brief measure of emotional wellbeing and quality of life. It contains 5 positively worded items which are rated on a 6-point scale ranging from *0 (At no time)* to *5 (All of the time)*. The raw score (0–25) is usually multiplied by 4 to produce a final score between 0 and 100. Higher scores show better mood and overall wellbeing. A score below 50 is often considered as a predictor of poor wellbeing. The WHO-5 has strong reliability (α around .82–.88).

Procedure

The participants of this study were mid-life working women aged 40–55 years. Participants were recruited using purposive sampling, which allows the researcher to select individuals who meet specific inclusion criteria. Inclusion criteria include women who are employed, use digital devices daily, and social media platforms before sleep, and are willing to participate in the study. who are younger than 40 or older than 55 years, are not currently employed, don't use digital devices daily, either don't use social media platforms or not before sleep, work permanent night

shifts that significantly disrupt sleep cycles, have a diagnosed severe psychiatric disorder that substantially impairs daily functioning. Recruitment took place through workplaces, social media platforms, and professional networks to reach a diverse group of participants. Participants were provided with detailed information about the study and were included only after providing informed consent, ensuring voluntary participation and adherence to ethical guidelines. After data collection, responses were coded and entered into SPSS for statistical analysis. The study employed a quantitative cross-sectional correlational design. Descriptive statistics was used to summarize the characteristics of participants and study variables. It included mean, standard deviation and frequency distributions for psychological variables including digital loneliness, bedtime procrastination, and wellbeing. Regression analysis was used to examine the direct predictive effects of digital loneliness on bedtime procrastination and wellbeing. Correlation analysis was conducted to examine the bivariate relationships among digital loneliness, bedtime procrastination, and wellbeing. Ethical considerations, such as confidentiality, the right to withdraw, and voluntary participation, were maintained throughout the research process.

III. RESULTS

Table I: Frequency and Percentage Distribution of Participants' Demographic and Lifestyle Characteristics (N=300)

Demographics	Categories	<i>f</i>	%
Age	40-44	123	41
	44-49	125	41.7
	50-55	52	17.3
Marital status	Single	14	4.7
	Married	246	82
	Divorced	26	8.7
	Widowed	14	4.7
No. of children	No children	18	6
	1 child	54	18
	2 children	87	29
	3 or more children	141	47
Daily screen time	Less than 2 hours	47	15.7
	2-4 hours	101	33.7
	5-7 hours	99	33
	More than 7 hours	53	17.7
Bedtime routine	Fixed routine	40	13.3
	Mostly fixed routine	106	35.3
	Irregular routine	99	33
	No routine	45	18.3
Worklife balance	Good	84	28
	Moderate	151	50.3
	Poor	65	21.7
Primary device used at night	Smartphone	246	82
	Laptop	18	6
	Tablet	6	2
	Multiple devices	30	10
Primary caregiving responsibilities	No caregiving responsibilities	98	32.7
	Childcare	87	29
	Eldercare	43	14.3
	Both childcare &eldercare	72	24
Evening emotional state	Calm/relaxed	104	34.7
	Stressed	90	30
	Emotionally drained	109	35.3
Social media platform frequently used	WhatsApp	96	32
	Instagram	151	50.3

Profession	Snapchat	9	3
	Tiktok	44	14.7
	Education sector	71	23.7
	Healthcare sector	62	20.7
	Corporate sector	80	26.7
	Business/ Self-employed	38	12.7
	Government sector	49	163

Table II: Descriptive Statistics and Reliability Coefficients of Study Variables (N = 300)

Scales	<i>M</i>	<i>SD</i>	Range	α
University of California, Los Angeles Loneliness Scale	2.83	.37	46-67	.76
Bedtime Procrastination Scale	3.07	.20	24-32	.75
WHO-5 Wellbeing Index	2.34	.99	0-23	.83

Descriptive statistics for all study variables are presented in Table 2. Overall, participants reported moderately high digital loneliness with moderate levels of bed-time procrastination, while overall well-being was comparatively low. All scales demonstrated acceptable to good internal consistency. This indicates that the measurement instruments are reliable and suitable for further analysis.

Table III: Correlation Matrix of Study Variables (N=300)

Variable	1	2	3
1. Digital Loneliness	--	.166**	-.256**
2. Bedtime Procrastination		--	-.154**
3. Wellbeing			--

$p < .01^{**}$

As shown in Table 3, digital loneliness showed significant associations with bedtime procrastination and psychological well-being.

Table IV: Regression Analysis Predicting Wellbeing and Bedtime Procrastination (N=300)

	<i>B</i>	<i>SE</i>	β	<i>p</i>	95% CI	
					LL	UL
Well-Being (DV)						
(Constant)	21.34	2.13	--	< .001	17.5	25.52
Digital Loneliness	-.17	.04	-.26	< .001	-.24	-.10
Bed Procrastination (DV)						
(Constant)	24.40	.79		< .001	23.84	26.94
Digital Loneliness	.04	.01	.17	< .001	.01	.07

The results indicated that digital loneliness significantly predicted well-being, $B = -.17$, $SE = .04$, $\beta = -0.26$, $p < .001$, explaining 7% of the variance ($R^2 = .07$). The negative association suggests that higher levels of digital loneliness are related to lower levels of well-being. Furthermore, digital loneliness significantly predicted bedtime procrastination, $B = .04$, $SE = .01$, $\beta = 0.17$, $p = .004$, explaining 3% of the variance ($R^2 = .03$). This positive relationship indicates that higher digital loneliness is associated with greater bedtime procrastination.

IV.DISCUSSION

This chapter interprets the current findings in light of existing literature, explores possible explanations for the observed relationships, and discusses their theoretical and practical implications.

Correlational Findings

The present study examined the correlation among digital loneliness, emotion regulation, bedtime procrastination, and psychological well-being. The correlation findings revealed meaningful and theoretically coherent patterns across all four variables. Bedtime procrastination was also directly related to digital loneliness; this relationship was positive, while with psychological well-being was negative. The results are consistent with Cognitive Discrepancy Theory (Perlman & Peplau, 1981) which states that loneliness is a result of the gap between the available social resources and the need for social resources. While people are connected in the digital world, they are disconnected in the real world, which impacts their psychological health. The results are in line with previous studies (Szawarnoga et al., 2025; Khan et al., 2025). Finally, there was a negative correlation between bedtime procrastination and overall well-being, which is aligned with Self-Regulation Theory and the idea of Kroese et al. (2014, 2016) that bedtime procrastination is related to problems in behavioral regulation. Overall, the results indicate that digital loneliness is associated with increased use of expressive suppression, increased bedtime procrastination, and decreased well-being, while cognitive reappraisal seems to serve as a protective factor to improve psychological outcomes in midlife working women. All these results prove hypothesis 1.

Predictive Relationships

a) Digital loneliness as a Predictor of Well-Being

Results of regression analysis showed that digital loneliness predicts wellbeing among mid-life working women, such that higher levels of digital loneliness are associated with lower wellbeing scores. This finding is consistent with prior researches which prove loneliness as a strong predictor of psychological health outcomes. Gubler et al. (2020) found that loneliness is negatively associated with wellbeing during periods of social disruption. This indicates how experience of social disruption can negatively affect psychological health. Korkmaz et al. (2025) demonstrated that loneliness predicted elevated stress, anxiety and depression among remote workers, proving that loneliness felt within digital environments has psychological consequences. Kreye et al. (2025) described digital loneliness as an important and emerging concern in digital environments. He argued that digital interactions lack real social connection. This leads to emotional isolation which negatively impacts mental health. This finding is consistent with the previous research studies stating that, spending excessive hours on digital and social media is linked with increased loneliness and decreased wellbeing (Khan et al., 2025; Szawarnoga et al., 2025).

This finding is widely supported by Cognitive Discrepancy Theory of Loneliness (Peplau & Perlman, 1982), which states that loneliness arises when an individual perceives discrepancy between desired and actual levels of social connectedness. For midlife working women, this discrepancy may particularly occur due to the competing demands of professional responsibilities, domestic roles, and caregiving obligations that often characterize this life stage. In context of digital interactions, individual may be surrounded by digital activity and communication but still perceive digital interactions as shallow and lacking real social interactions, causing perceived inadequacy of digital social connection. This perceived inadequacy of digital social connection creates cognitive discrepancy which leads to feelings of emptiness and reduced subjective wellbeing. Present findings suggest that it is the quality and meaningfulness of a digital interaction that affects wellbeing rather than its quantity. In many regions in Middle East and South Asia, including Pakistan, women's social interaction are often structured around family and role-based contexts. Thus, women may appear to be surrounded socially although, the lack of emotionally fulfilling and self-directed relationships contributes to feelings of loneliness. Therefore, digital channels may serve as a substitute environment for making connections, however, these connections and interactions remain superficial. Consequently, this lack of emotional reciprocity leads to reduced overall wellbeing.

All of these findings provide strong support for Hypothesis (2a).

b) Digital Loneliness as a Predictor of Bedtime Procrastination

Another significant regression finding indicated that digital loneliness significantly predicts bedtime procrastination among mid-life working women which suggests that individuals who have higher levels of digital loneliness are more likely to procrastinate at bedtime without any valid reason. This finding is particularly meaningful in context of mid-life working women who already face sleep related vulnerabilities due to hormonal changes, work stress and psychological burden of multiple roles. Wang et al. (2025) found that loneliness significantly predicted sleep quality and bedtime procrastination, where loneliness played a partially mediating role in relationship between digital

loneliness, poor sleep outcomes and bedtime procrastination. These findings strengthen the claim that digital loneliness predicts bedtime procrastination among midlife working women. Theoretically, Cognitive Discrepancy Theory supports this finding. Individuals who perceive the discrepancy between desired and actual levels of meaningful digital connection feel heightened emotional arousal and ruminative thinking during late night hours (when domestic and professional demands temporarily subside). Digitally lonely women seek to prolong their digital engagement as a compensatory strategy to fill in the perceived social gap. This pattern of delaying sleep is closely linked to bedtime procrastination. All these evidences show strong support for Hypothesis (2b). Collectively, both regression findings highlight significant role of digital loneliness as a multidimensional predictor of both wellbeing and bedtime procrastination among mid-life working women.

CONCLUSION

The study findings provided strong empirical support, affirming positive correlation between digital loneliness and bedtime procrastination and negative correlation between digital loneliness and wellbeing. The findings highlight the importance of digital habits, sleep routines, and work-life balance in the well-being of midlife working women. At the individual level, awareness of healthy screen use, meaningful social connections, and balanced sleep routines may help reduce digital loneliness and bedtime procrastination. Workplaces can support well-being through manageable workloads, flexible schedules, and clear work-life boundaries. Mental health professionals should consider digital loneliness and bedtime procrastination when addressing emotional discomfort and stress. At the policy level, digital well-being campaigns, workplace support, and initiatives promoting meaningful online and offline social connections may help improve working women's psychological well-being. In today's world that is always online, this study highlights that being connected is not enough to guarantee a true wellbeing and happiness. Instead, our wellbeing depends on the quality, meaning and management of that connection.

The present study has several limitations that should be taken into consideration. Firstly, our study relied on self-report data collected through an online questionnaire, which may introduce social desirability bias. Secondly, study used purposive sampling technique and the sample comprised of urban midlife working women from South Asian and Middle Eastern contexts which limits its generalizability. Lastly, the study focused on a limited aspect; such as emotion regulation sleep quality, personality traits were not studied, which could provide a more holistic understanding of the relationships. Future research may consider conducting a comparative study to examine how these variables differ across mid-life working women from different professional domain.. Furthermore, a mixed method approach can also be adopted to get a comprehensive understanding of the participant's lived experiences and quantitative insights. Additionally, digital behaviour should be studied more explicitly as an emotion regulation strategy to understand how individuals use digital engagement to manage or avoid negative emotions and examine how it may reinforce bedtime procrastination. Researchers should also study the mediating role of emotion regulation on these variables. Mental health professionals should incorporate emotion regulation training, especially cognitive reappraisal, into counselling and therapy sessions. Lastly, digital mental health tools (apps, online sessions) should be developed to provide accessible support for emotion regulation and wellbeing.

Disclosure Statement

No potential conflict of interest was reported by the authors.

Funding

The authors received no funding from any organizations.

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