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Selective Advantages of Dance: Cognitive and Psychological Well-Being

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Article

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Abstract

Dance is a complex multimodal activity that integrates movement, music, emotion and social interaction, making it a promising context for promoting cognitive and psychological functioning. However, evidence for its cognitive benefits remains inconsistent, particularly in healthy young adults and emotionally salient contexts. The present study examined whether long-term dance training is associated with differences in cognitive functioning, emotional attention, motivational tendencies and psychological well-being. Healthy young adult dancers and non-dancers completed behavioural tasks assessing attention capture, inattentional blindness, attentional disengagement, working memory and delay aversion, together with self-report measures of depression, anxiety, stress, affect, and behavioural inhibition and activation. Compared with non-dancers, dancers demonstrated lower delay aversion and fewer errors under high perceptual load in the presence of happy distractors, while no group differences were observed in inattentional blindness, attentional disengagement or working memory. Dancers also reported significantly lower depression, anxiety and stress, higher positive affect, lower behavioural inhibition, and lower reward responsiveness and fun-seeking. Greater dance experience was associated with lower depression and negative affect. These findings suggest that long-term dance training is associated with enhanced psychological well-being, more adaptive motivational regulation and selective cognitive advantages, particularly in emotionally demanding contexts. Rather than producing broad improvements across cognition, dance may strengthen emotional resilience, self-regulation and goal-directed behaviour, highlighting its potential as a holistic approach for promoting psychological well-being and adaptive functioning.

Introduction

Dance is a complex activity that requires the integration of motor, cognitive, sensory and emotional processes. Successful dance performance involves learning and recalling movement sequences, coordinating actions with music, monitoring spatial relationships and adapting behaviour in response to changing environmental demands. These processes must often be executed simultaneously, placing substantial demands on higher-order cognitive systems that support planning, monitoring and behavioural regulation (Bläsing et al., 2012; Karpati et al., 2015). Unlike many forms of physical activity that rely on repetitive movement patterns, dance frequently requires performers to engage with novel movement combinations, rapidly process multiple sources of information and flexibly adjust their actions in real time. Consequently, dance has been proposed as a cognitively enriching activity that may promote cognitive functioning beyond the benefits associated with physical exercise alone (Kattenstroth et al., 2013; Teixeira-Machado et al., 2019). Supporting this view, behavioural and neuroimaging studies have reported associations between dance participation and cognitive performance, as well as structural and functional adaptations in brain regions implicated in higher-order cognition, including the prefrontal cortex, hippocampus and basal ganglia (Burzynska et al., 2017; Rehfeld et al., 2017, 2018). These findings suggest that dance may be particularly relevant for understanding cognitive processes involved in adaptive and goal-directed behaviour.

One set of processes that may be especially important in this context is executive functioning (EF). Executive functioning refers to a collection of higher-order cognitive processes that enable individuals to regulate their thoughts and actions in pursuit of goal-directed behaviour, particularly in situations requiring planning, monitoring, adaptation and self-regulation (Diamond, 2013). Although executive functioning has been conceptualised in different ways, most theoretical models converge on the view that it comprises multiple interrelated but partially distinct processes. For example, Miyake et al. (2000) proposed a framework consisting of updating, shifting and inhibition, whereas Diamond (2013) identified working memory, inhibitory control and cognitive flexibility as the core components of executive functioning. More broadly, executive functioning encompasses processes involved in attention regulation, information maintenance and manipulation, behavioural self-regulation and the flexible adaptation of behaviour to changing task demands (Friedman & Miyake, 2017). These processes are critical for navigating complex environments in which individuals must maintain task goals while responding to competing sources of information. Given the cognitive demands inherent in dance training and performance, it has been suggested that long-term engagement in dance may be associated with differences in executive functioning.

The cognitive demands inherent in dance training have led researchers to propose that dance may be associated with better executive functioning. Learning and performing dance routines requires individuals to maintain and manipulate information, monitor ongoing performance, adapt to changing environmental demands and regulate behaviour in accordance with task goals (Bläsing et al., 2012; Karpati et al., 2015). Consistent with this view, studies across different age groups and populations have reported associations between dance participation and executive functioning, including improvements in executive processes, cognitive flexibility and memory (Noguera et al., 2020; Meng et al., 2020; Chichinina et al., 2022; Zhang et al., 2026). Neurocognitive accounts further suggest that the integration of motor, cognitive, emotional and social demands during dance may promote neural adaptations that support higher-order cognitive functioning (Basso et al., 2021). However, findings have not been entirely consistent and it remains unclear whether dance is associated with broad improvements in executive functioning or with advantages in specific executive processes. Consequently, further research is needed to identify the particular aspects of executive functioning that may be most closely related to dance experience.

Dance and attention

Attention is fundamental to dance performance, requiring dancers to continuously monitor their movements while responding to music, spatial cues and the actions of others. Given these demands, researchers have increasingly examined whether dance training is associated with enhanced attentional functioning. Findings, however, have been mixed. In cognitively healthy older adults, dance interventions have not consistently produced improvements in task-switching performance beyond those observed following walking, usual activity or fitness training (Merom et al., 2016a, 2016b; Müller et al., 2017). In contrast, more favourable findings have been reported in populations with greater scope for cognitive

improvement. For example, ballroom dance training improved selective attention and attentional switching in older adults with mild cognitive impairment (Lazarou et al., 2017). Similarly, a six-month dance intervention improved concentration and selective attention in healthy older adults (Kattenstroth et al., 2013), while cross-sectional studies have shown that older adults with long-term dance experience demonstrate superior attentional and broader cognitive performance compared to non-dancers (Kattenstroth et al., 2010, 2011).

Evidence from cross-sectional and developmental studies also suggests attentional advantages among dancers. Non-professional salsa dancers demonstrated faster responses across attentional conditions involving alerting, orienting and conflict processing compared to sedentary controls (Noguera et al., 2020). Similarly, street-dance training enhanced executive attention in children (Shen et al., 2020), while creative dance training was associated with improvements in focused attention, accuracy and attention span among school-aged children (Tokay & Akıl, 2025). Experienced Bharatanatyam and Kathak dancers have also shown superior performance on measures of attentional control and mental flexibility relative to non-dancers (Chatterjee et al., 2022). More recently, Pournara et al. (2026) used the *How many–What number* task to examine cognitive flexibility and task-switching performance following Greek traditional dance. Although participants in the low-intensity dance condition demonstrated greater accuracy on switch trials, no differences were observed in switch costs, highlighting continued inconsistency in findings related to switching efficiency. Overall, existing evidence suggests that dance may be associated with enhanced attentional functioning, particularly selective attention, executive attention and attentional switching. However, findings remain mixed and relatively little is known about more specific attentional processes such as attention capture, inattentional blindness and attentional disengagement.

Dance and emotion

Attention and emotion are closely intertwined, as emotionally salient stimuli are prioritised for processing and often capture attention automatically, even when they are irrelevant to current task goals (Carretié, 2014; Mitchell, 2022; Gupta, 2012, 2016, 2019; Gupta et al., 2019). Emotional information can facilitate or interfere with ongoing cognitive processing depending on its salience, motivational significance and the attentional demands of the task (Oliveira et al., 2013; Gupta, 2019; Lodha & Gupta, 2023). According to Load Theory, the influence of emotional distractors depends on the availability of attentional resources, with interference generally reduced under high perceptual load but increased when cognitive control resources are taxed (Lavie, 1995, 2005; Lavie et al., 2004). Although threat-related stimuli have traditionally been the focus of research, accumulating evidence suggests that positive emotional stimuli also possess a privileged ability to capture attention and bias attentional allocation (Gupta et al., 2016; Gupta & Srinivasan, 2015; Srinivasan & Gupta, 2010, 2011; Pandey & Gupta, 2022a, 2022b; Pool et al., 2016). Despite growing evidence that dance is associated with enhanced attentional functioning, little is known about whether dance experience influences attention in emotionally salient contexts.

Dance and working memory

Working memory is essential for dance performance as dancers must learn, retain and update movement sequences while coordinating their actions with music and spatial demands. Consequently, dance has been proposed to engage working memory processes through the continuous storage and manipulation of information during practice and performance. Research examining the relationship between dance and working memory has produced mixed findings. Several intervention studies have reported improvements in working memory following dance training. Children participating in street-dance programmes demonstrated gains in backward digit span performance (Shen et al., 2020), while cognitively demanding choreography-based dance programmes were associated with improvements in working memory capacity (Oppici et al., 2020; Rudd et al., 2021).

Similar findings have been reported in adult populations, with improvements observed following Latin dance (Aguiñaga et al., 2022), street-dance (Wang et al., 2025) and adapted tango interventions (Zhang et al., 2026). Cross-sectional evidence has also shown superior working memory performance among experienced Bharatanatyam and Kathak dancers compared to non-dancers (Chatterjee et al., 2022). However, not all studies have reported positive associations. Bonny et al. (2017) found no relationship between hip-hop dance experience and visuospatial working memory capacity, while Chichinina et al. (2022) reported no differences in working memory between preschool children attending dance classes and their peers. Likewise, acute dance interventions have not consistently improved working memory performance (Pournara et al., 2026; Rutter, 2023). Taken together, the existing literature provides some evidence that dance may benefit working memory, particularly when participation involves sustained and cognitively demanding training. Nevertheless, findings remain inconsistent and relatively little is known about working memory performance in healthy young adult dancers.

Dance, motivation, emotion awareness and psychological wellbeing

Beyond its cognitive benefits, dance is inherently an emotional and embodied activity that engages affective, motivational and social processes. Through the integration of movement, music and social interaction, dance provides opportunities for individuals to express, experience and regulate emotions while fostering emotional awareness, empathy and emotional intelligence (San Juan & Hípola, 2019; Atamturk & Dincdolek, 2021; Narikbayeva et la., 2025). Dance also creates a multisensory environment that facilitates emotional engagement and processing by integrating auditory, visual and kinesthetic information (Quiroga Murcia et al., 2010; Koch et al., 2019). The translation of emotions into expressive movement has been proposed to promote emotional awareness and adaptive emotion regulation, while coordinated and synchronous movement further enhances social connectedness and shared emotional experiences (Tarr et al., 2015; Koch et al., 2019; Foster Vander Elst et al., 2021).

Consistent with these mechanisms, a growing body of evidence suggests that dance contributes to psychological well-being. Participation in dance has been associated with increased positive affect, improved mood and emotional well-being, alongside reductions in stress, anxiety, depressive symptoms

and psychological distress across diverse populations (Koch et al., 2007, 2014, 2019; Mansfield et al., 2018; Moratelli et al., 2023; Fong Yan et al., 2024). Emerging evidence also indicates that dance may strengthen self-regulation and impulse control by promoting behavioural regulation, sustained engagement and adaptive control of thoughts, emotions and actions through rhythmically coordinated movement (Williams, 2018; Williams & Berthelsen, 2019; Yetti et al., 2021; Savina, 2024). In addition, the rewarding, enjoyable and intrinsically motivating nature of dance may further support sustained engagement and adaptive behavioural regulation (Pilote, 2014; Mardani & Oliveira, 2025). Although the emotional and psychological benefits of dance are increasingly well established, considerably less is known about the specific motivational and regulatory mechanisms, such as reward sensitivity, behavioural inhibition and activation, and impulse control, through which these benefits may influence cognitive performance.

The present study

The existing literature suggests that dance may benefit both cognitive and emotional functioning. However, findings remain inconsistent, particularly for attention and working memory, with some studies reporting significant improvements while others have found little or no benefit. Previous research has also tended to examine broad cognitive constructs in isolation, with relatively little attention given to specific processes such as attention capture, attentional disengagement, inattentional blindness and delay aversion. Similarly, although dance has consistently been associated with better psychological well-being, the motivational and psychological processes that may underlie these benefits, including behavioural inhibition and activation, reward sensitivity, affect, and mood, remain relatively underexplored. While previous studies have examined attention and emotional functioning separately, the influence of dance experience on attentional processing in emotionally salient contexts remains largely unexplored.

These inconsistencies may partly reflect methodological differences across studies. Previous research has examined diverse populations, including children, healthy young adults, older adults and individuals with mild cognitive impairment, whose cognitive abilities and potential for improvement differ considerably (Kattenstroth et al., 2010, 2011, 2013; Lazarou et al., 2017; Shen et al., 2020). Studies have also differed in dance style, training duration and intensity and study design, ranging from acute interventions to long-term expertise and from recreational participation to cognitively demanding choreography (Oppici et al., 2020; Rudd et al., 2021; Aguiñaga et al., 2022; Wang et al., 2025; Zhang et al., 2026). Different cognitive paradigms have also been used to assess broad executive functions or individual attentional processes, making direct comparisons difficult (Bonny et al., 2017; Chichinina et al., 2022; Pournara et al., 2026; Rutter, 2023). In addition, most studies have relied on emotionally neutral cognitive tasks, even though dance itself is an emotionally expressive and socially engaging activity. As a result, it remains unclear which cognitive and psychological processes are most consistently associated with long-term dance training.

The present study examined the relationship between long-term dance training, cognitive functioning, motivational tendencies and psychological well-being in healthy young adults. Rather than focusing on a single cognitive domain, the study assessed multiple cognitive processes, including attention capture, inattentional blindness, attentional disengagement, working memory and delay aversion. Emotionally salient behavioural tasks were included to examine attentional processing under conditions that better reflect everyday emotional experiences. The study also assessed psychological well-being, affect and motivational tendencies using standardized self-report measures. Examining these behavioural and psychological domains within the same cohort provides a broader understanding of the characteristics associated with long-term dance training and addresses several limitations of previous research.

Based on the existing literature, it was hypothesised that dancers would demonstrate better cognitive performance to non-dancers across behavioural measures of attention capture, attentional disengagement, working memory, inattentional blindness and delay aversion. It was further hypothesised that dancers would exhibit more favourable emotional and psychological functioning than non-dancers, characterised by better emotion regulation and psychological well-being, lower depression, anxiety, stress, impulsivity and negative affect, higher positive affect and more adaptive motivational profiles.

Methods

Participants

An a priori power analysis was conducted using G*Power (Faul et al., 2007). For the independent-samples *t*-tests, a minimum sample of 72 participants (36 per group) was estimated to detect a medium effect size (d = 0.60; Cohen, 1988) with 80% power at an alpha level of .05. As the inattentional blindness task was analysed using a chi-square test, a separate power analysis indicated a required sample of 122 participants (61 per group) to detect a medium effect size (w = 0.30) with 80% power. The final sample exceeded the required sample size for both analyses.

Participants were recruited through flyer advertisements and word of mouth. Inclusion criteria were: (a) 18–45 years of age, (b) right-handedness and (c) normal or corrected-to-normal vision. Individuals with a history of neurological or psychiatric disorders or those currently undergoing psychotherapy were excluded from the study.

The primary study sample comprised 111 healthy young adults, including 55 dancers (Mage = 21.94 years, SD = 4.12) and 56 non-dancers (Mage = 21.28 years, SD = 3.43). Dancers had received formal dance training or were currently enrolled in formal dance training for at least six months and engaged in dance practice for a minimum of six hours per week. On average, dancers had 8.44 years of dance experience (SD = 4.98). Non-dancers had no formal dance training and reported engaging in dance activities for less than three hours per week. The inattentional blindness task was completed by an additional 45 participants, resulting in a total sample of 156 participants, including 76 dancers (M_age =

22.33 years, SD = 3.90 years; dance experience: M = 7.53 years, SD = 4.95 years) and 80 non-dancers (M_age = 21.80 years, SD = 3.31 years).The same inclusion and exclusion criteria used for the primary study sample were applied to these participants. (See Table 1 for participant demographic details).

Table 1
Demographic information of participants by group (final sample)

N	**Dancers**	**Non-Dancers**
	55	**56**
Male	27	28
Female	28	28
Mean Age (SD)	21.94 (4.12)	21.28 (3.43)
Dance experience (years)	1–20	0
Mean Experience (SD)	8.44 (4.98)	0
Physical activity levels (per day)	30–60 minutes	30–60 minutes
Level of education	28	29
Undergraduate	27	26
Postgraduate		
Note: Final analytic sample consisted of 111 participants (55 dancers, 56 non-dancers). CDT task included an extended sample (N = 156), with 76 dancers (M_age = 22.33 years, SD = 3.90; dance experience: M = 7.53 years, SD = 4.95 years) and 80 non-dancers (M_age = 21.80 years, SD = 3.31 years).		

The study was conducted in India and received ethical approval from the relevant local institutional ethics committee prior to data collection. All participants provided written informed consent before participation and were informed that their participation was voluntary and that they could withdraw from the study at any time without penalty.

Apparatus

The experimental tasks were administered on a 15.6-inch laptop computer with a 60 Hz refresh rate and a screen resolution of 1,920 × 1,080 pixels. Responses were recorded using a standard keyboard. The Letter Search Task and Inattentional Blindness Task were programmed using E-Prime 3.0 (Psychology Software Tools, Pittsburgh, PA). The Working Memory Task was programmed using PsychoPy3 (Peirce et al., 2019), while the Choice Delay Task and Task Switching Task were programmed using GNU Octave using Psychtoolbox (Brainard, 1997; Kleiner et al., 2007).

Letter Search Task

Attention capture was assessed using an emotional letter search task adapted from the perceptual load paradigm developed by Lavie and colleagues (Lavie, 1995; Lavie et al., 2004; Gupta et al., 2016; Gupta & Raymond, 2012; Lodha & Gupta, 2023). The task required participants to identify a target letter while ignoring task-irrelevant emotional distractors. Stimuli consisted of a circular array containing one target letter (X or N) and five non-target letters presented in grey against a black background. The task included two perceptual load conditions. In the low-load condition, all non-target letters were the letter O, whereas in the high-load condition, non-targets consisted of angular letters (H, K, W, M and Z) matched in size to the target. Participants were instructed to identify the target letter as quickly and accurately as possible by pressing the "0" key for X and the "2" key for N. (see Fig. 1)

Each condition began with a practice block of 24 trials without emotional distractors, followed by one experimental block of 48 trials. Within each experimental block, 75% of trials contained no distractor, whereas the remaining 25% contained a task-irrelevant emotional face presented centrally, equally divided between happy (12.5%) and angry (12.5%) expressions. Participants were instructed to ignore the emotional faces and respond only to the target letter. Emotional distractors were selected from the Karolinska Directed Emotional Faces (KDEF) database (Lundqvist et al., 1998) and consisted of 12 grayscale faces (six male and six female identities).

Each trial began with a central fixation cross presented for 500 ms, followed by the stimulus display for 200 ms. Participants had up to 2,000 ms to respond, after which a 1,900 ms inter-trial interval was presented before the next trial. Auditory feedback was provided following incorrect responses or response omissions.

The primary outcome measures were distractor interference scores for reaction time (RT) and error rates. Distractor interference scores were calculated separately for the low- and high-load conditions by subtracting reaction times on no distractor (blank) trials from those on happy and angry distractor trials. Error rates were calculated separately for the happy, angry and no distractor conditions under both perceptual load conditions.

Inattention Blindness Task

The inattentional blindness task assessed inattentional blindness and was adapted from the Letter Search Task described above (Gupta & Srinivasan, 2015). Participants completed one of four conditions (high-load happy, high-load sad, low-load happy or low-load sad) and performed the same letter identification task while ignoring a centrally presented emotional face distractor. The experimental session consisted of 24 trials, with the 24th (critical) trial containing either a happy or a sad face, depending on the assigned condition. Immediately following the critical trial, participants completed an unexpected two-alternative forced-choice recognition test, in which they were presented with two faces matched for emotion and gender but differing in identity, and were asked to identify which face had appeared as the distractor on the immediately preceding trial (see Fig. 2). A 24-trial practice session, identical to the experimental task but without the surprise recognition test, preceded the experimental

session. The primary outcome measure was recognition accuracy, defined as whether participants correctly identified the distractor face presented during the critical trial.

Task Switching Task

The task-switching paradigm assessed attentional disengagement by requiring participants to switch between two task rules based on changing task cues (Gupta et al., 2009, 2011; Jacob & Gupta, 2023). On each trial, one of four stimuli (1, 3, 111 or 333) was presented at the centre of the screen. Above the stimulus, the cue What Number or How Many indicated the task to be performed. In the What Number task, participants identified the numerical value of the stimulus (1 or 3), whereas in the How Many task, they identified the number of digits displayed (1 or 3). Responses were made using the 1 and 3 keys on the numeric keypad. Each digit subtended approximately 1.43° × 0.96° of visual angle. (see Fig. 3)

The task comprised three blocks: a What Number block, a How Many block and a mixed task-switching block. Participants first completed a practice session consisting of 48 trials (12 What Number, 12 How Many and 24 mixed trials), followed by an experimental session of 200 trials (40 What Number, 40 How Many and 120 mixed trials). Within the mixed block, switch and non-switch trials were presented in a predetermined sequence.

The primary outcome measures were within-block switch cost, between-block switch cost, switch accuracy, non-switch accuracy and post-error slowing. Within-block switch cost was calculated as the difference between the mean reaction time (RT) for correct switch trials and the mean RT for correct non-switch trials within the mixed block. Between-block switch cost was calculated as the difference between the mean RT for correct switch trials in the mixed block and the overall mean RT for correct trials across the two single-task blocks. Switch accuracy was calculated as the proportion of correct responses on switch trials in the mixed block, whereas non-switch accuracy was calculated across all non-switch trials. Post-error slowing was calculated as the difference between the mean RT on correct trials immediately following an error and the overall mean RT on correct trials.

Working Memory Task

The change-detection task assessed visual working memory by requiring participants to remember the colours of briefly presented circles and determine whether the colour of any circle changed following a short delay. On each trial, an array of either three or six coloured circles was presented at randomly selected locations within a grid. After a brief retention interval, the array reappeared in the same locations, with either no change or the colour of one circle changed. Participants responded by pressing the Z key if no colour had changed and the / (slash) key if the colour of any circle had changed. (see Fig. 4)

The task consisted of 120 trials administered across six blocks. Arrays containing three or six circles were presented with equal probability and change and no-change trials occurred equally often within each set-size condition, resulting in an equal number of 3-change, 3-no-change, 6-change and 6-no-

change trials. Each trial began with a fixation cross presented for 750 ms, followed by the memory array for 400 ms. After a 900 ms retention interval, the test array was presented and participants had 2 s to respond. Incorrect responses and failures to respond within the response window elicited an auditory feedback tone.

The primary outcome measure was the K-score, calculated separately for the three-item and six-item conditions using the formula $K = N \times (H - F)$, where N represents the set size, H the hit rate and F the false alarm rate. Higher K-scores indicated greater visual working memory capacity.

Choice Delay Task

The Choice Delay Task (Gupta & Kar, 2009, 2010; Gupta et al., 2006; Gupta et al., 2009) assessed delay aversion by requiring participants to choose between a small reward (1 point) delivered after a short delay (1 s) and a larger reward (2 points) delivered after a long delay (20 s). (see Fig. 5) Participants first completed a 5-trial practice session, followed by an experimental session of 30 trials. The duration of the task varied depending on participants' choices, with more selections of the delayed reward resulting in a longer overall testing time. The primary outcome measure was the percentage of long-delay reward choices (%LDR).

Self-report measures

Depression Anxiety Stress Scale – 21 (DASS – 21) (Lovibond & Lovibond, 1995): The DASS-21 is a 21-item self-report questionnaire designed to assess symptoms of depression, anxiety and stress, with seven items representing each subscale. Participants rate the extent to which each statement applied to them over the past week on a 4-point Likert scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Separate scores for depression, anxiety and stress were obtained by summing the responses for the corresponding items.

International Positive and Negative Affect Schedule - Short Form (I-PANAS-SF) (Thompson, 2007): The I-PANAS-SF is a 10-item measure of positive and negative affect. It comprises five positive affect items (active, determined, attentive, inspired and alert) and five negative affect items (afraid, nervous, upset, hostile and ashamed). Participants rated the extent to which they experienced each affective state on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). Positive and negative affect scores were calculated by summing the relevant items.

Behavioral Inhibition System and Behavioral Activation System Scales (BIS/BAS) (Carver & White, 1994): The BIS/BAS scales assess individual differences in behavioural inhibition and behavioural activation associated with sensitivity to punishment and reward. The questionnaire consists of 20 items and yields scores for one BIS subscale and three BAS subscales: Drive, Fun Seeking and Reward Responsiveness. Responses were recorded on a 4-point Likert scale ranging from 1 (very true for me) to 4 (very false for me). Scores for each subscale were computed by summing the corresponding items.

Physical activity

Participants responded to a few questions assessing their engagement in physical activity, including the types of activities performed, weekly frequency, average session duration, primary motivations for participation and involvement in any performing arts activities.

Dance background and experience

Participants with dance experience completed a questionnaire assessing their dance history, including previous and current dance training, years of experience, weekly practice duration, frequency of classes and workshops, professional involvement (e.g., performances and choreography) and subjective experiences related to dance.

Data Analysis

Statistical analyses were conducted using JASP version 0.18.2.0 (JASP Team, 2024). Data were screened prior to analysis and the assumptions underlying the relevant statistical tests were examined. For the Letter Search Task, participants scoring below 65% accuracy in the high-load condition were excluded from further analyses (Gupta et al., 2016). Based on this criterion, 13 participants (3 dancers and 10 non-dancers) were excluded, resulting in a final sample of 52 dancers and 46 non-dancers. Distractor interference scores for reaction time were analysed using a 2 (Group: dancers, non-dancers) × 2 (Load: low, high) × 2 (Emotion: happy, angry) mixed ANOVA. Error rates were analysed using a 2 (Group) × 2 (Load) × 3 (Distractor Condition: no distractor, happy, angry) mixed ANOVA. Where appropriate, planned comparisons were conducted using independent-samples t-tests and one-way ANOVAs.

For the Inattentional Blindness Task, participants who responded incorrectly to the primary letter-search task on the critical trial (last trial of the primary letter-search task) were excluded, as awareness of the distractor could only be assessed when the primary task had been performed correctly. Based on this criterion, 28 participants (12 dancers and 16 non-dancers) were excluded, yielding a final sample of 64 dancers and 64 non-dancers. Recognition accuracy, defined as correct identification of the distractor face presented during the critical trial, was analysed using chi-square tests of independence. An overall chi-square test examined group differences in recognition accuracy, followed by separate chi-square tests for each experimental condition (low-happy, low-sad, high-happy and high-sad). An additional chi-square test examined whether the distribution of correctly recognized happy and sad distractor faces (collapsed across perceptual load) differed between dancers and non-dancers.

For the Task Switching Task, switch cost was analysed using a 2 (Group: dancers, non-dancers) × 2 (Switch Cost: within-block, between-block) mixed ANOVA. Independent-samples t-tests were conducted to compare switch accuracy, non-switch accuracy and post-error slowing between groups. For the Working Memory Task, K-scores for the three- and six-item set sizes were analysed using a 2 (Group: dancers, non-dancers) × 2 (Set Size: 3, 6) mixed ANOVA. For the Choice Delay Task, the percentage of long-delay reward choices (%LDR) was compared between dancers and non-dancers using an independent-samples t-test. Scores on the self-report scales were compared between groups using

independent-samples t-tests. Pearson's correlation analyses were conducted to examine the associations between years of dance experience and cognitive performance, emotional functioning and motivational measures within the dance group. Simple linear regression analyses were subsequently performed to determine whether years of dance experience predicted these outcomes.

Results

There were no significant differences between dancers (M age = 21.94 years, SD = 4.12) and non-dancers (M age = 21.28 years, SD = 3.43) in age, $t(109) = 0.92$, $p = 0.361$, $d = 0.2$, or gender distribution, $\chi^2(1, N = 111) = 0.01$, $p = 0.924$. Participants in both groups reported engaging in approximately 30–60 minutes of physical activity per day.

Letter Search Task:

Distractor Interference

A mixed ANOVA revealed no significant main effects of group, load, or emotion, and no significant two-way or three-way interaction effects (all ps > 0.05). (see Table 2a)

Table 2
a

Load	Emotion	Dancers M(SD)	Non-Dancers M(SD)
Low Load	Happy	56.74 (50.76)	72.38 (78.47)
Low Load	Angry	67.80 (91.38)	52.49 (60.65)
High Load	Happy	59.97 (111.94)	42.94 (107.49)
High Load	Angry	55.05 (89.99)	49.32 (121.93)

Table 2
b

Load	Condition	Dancers M(SD)	Non-Dancers M (SD)
Low Load	Blank	4.92 (3.63)	4.59 (4.47)
Low Load	Happy	5.45 (10.29)	6.88 (11.96)
Low Load	Angry	6.73 (10.57)	6.16 (9.53)
High Load	Blank	17.15 (8.32)	18.60 (7.61)
High Load	Happy	17.95 (15.43)	24.64 (14.80)
High Load	Angry	22.76 (17.16)	23.19 (16.66)

Error Rates: A mixed ANOVA revealed significant main effects of distractor condition, $F(2, 192) = 4.86$, $MSE = 122.79$, $p = 0.009$, $\eta^2 = 0.048$, and load, $F(1, 96) = 249.55$, $MSE = 130.73$, $p < 0.001$, $\eta^2 = 0.722$, indicating that overall error rates varied as a function of distractor condition, and were higher under high perceptual load than under low perceptual load. There was no significant main effect of group and no significant interactions (all ps > 0.05). Follow-up a-priori paired-samples t-tests revealed no significant pairwise differences between distractor conditions; however, a marginal trend was observed between the blank (M = 4.76, SD = 4.03) and angry distractor conditions (M = 6.46, SD = 10.05), t(97) = − 1.73, p = 0.086, d = − 0.18. An a priori independent-samples t-test further showed that dancers committed significantly fewer errors than non-dancers in the high-load happy condition (dancers: M = 17.95, SD = 15.43; non-dancers: M = 24.64, SD = 14.80), $t(96) = -2.18$, $p = 0.031$, $d = -0.44$. (see Table 2b)

Overall, dancers and non-dancers demonstrated broadly comparable performance on the Letter Search Task, although dancers exhibited lower error rates than non-dancers in the high-load happy condition.

Inattentional Blindness Task

A chi-square test of independence showed no significant difference in overall recognition accuracy between dancers and non-dancers, $\chi^2(1, N = 128) = 0.05$, $p = 0.818$. Condition-wise analyses similarly revealed no significant group differences in recognition accuracy for the low-happy, $\chi^2(1, N = 32) = 1.03$, $p = 0.310$, low-sad, $\chi^2(1, N = 32) = 1.03$, $p = 0.310$, high-happy, $\chi^2(1, N = 32) = 0.00$, $p = 1.000$, or high-sad conditions, $\chi^2(1, N = 32) = 0.14$, $p = 0.710$. An additional chi-square test showed no significant association between group and the distribution of correctly recognized happy and sad distractor faces, collapsed across perceptual load, $\chi^2(1, N = 105) = 0.09$, $p = 0.769$. Overall, dancers and non-dancers demonstrated comparable recognition of task-irrelevant emotional stimuli across all experimental conditions. (see Table 3)

Table 3
Inattentional blindness task performance in dancers and non-dancers: recognition accuracy of task-irrelevant emotional stimuli across experimental conditions

Condition	Outcome	Dancers	Non-Dancers	Total
Overall	Correct	53	52	105
	Incorrect	11	12	23
Low-Happy	Correct	15	16	31
	Incorrect	1	0	1
Low-Sad	Correct	16	15	31
	Incorrect	0	1	1
High-Happy	Correct	11	11	22
	Incorrect	5	5	10
High-Sad	Correct	11	10	21
	Incorrect	5	6	11
Collapsed (Emotion)	Correct	53	52	105
	Incorrect	11	12	23

Task Switching Task: Independent-samples t-tests showed no significant group differences in switch accuracy (dancers: M = 46.65, SD = 4.88; non-dancers: M = 46.74, SD = 5.51), $t(109) = -0.09$, $p = 0.928$, $d = -0.02$, non-switch accuracy (dancers: M = 66.58, SD = 3.63; non-dancers: M = 65.78, SD = 4.03), $t(109) = 1.09$, $p = 0.278$, $d = 0.21$, or post-error slowing (dancers: M = 608.38, SD = 494.10; non-dancers: M = 780.11, SD = 845.97), $t(109) = -1.30$, $p = 0.195$, $d = -0.25$. A mixed ANOVA conducted on switch cost revealed a significant main effect of switch-cost type, $F(1, 109) = 506.50$, $MSE = 14598.92$, $p < 0.001$, $\eta^2 = 0.823$, indicating that between-block switch costs were significantly greater than within-block switch costs. There was no significant main effect of group or interaction (all ps > 0.09). Dancers (M = 146.84, SD = 273.01) and non-dancers (M = 115.60, SD = 164.30) showed comparable within-block switch costs, while between-block switch costs were also similar between dancers (M = 514.25, SD = 366.48) and non-dancers (M = 478.24, SD = 256.25). Overall, no significant group differences were observed on any measure of attentional disengagement. (see Table 4)

Table 4
Task switching performance in dancers and non-dancers: switch cost, post-error slowing, and accuracy indices

Within-Switch Cost (ms)	**Dancers M (SD)**	**Non-Dancers M (SD)**
	146.84 (273.01)	**115.60 (164.30)**
Between-Switch Cost (ms)	514.25 (366.48)	478.24 (256.25)
Switch Accuracy	46.65 (4.88)	46.74 (5.51)
Post-Error Slowing	608.38 (494.10)	780.11 (845.97)
Non-switch Accuracy	66.58 (3.63)	65.78 (4.03)

Working Memory Task: A mixed ANOVA conducted on K-scores revealed no significant main effects or interactions (all ps > 0.09). Dancers and non-dancers demonstrated comparable working memory performance in both the three-item condition (dancers: M = 1.86, SD = 0.48; non-dancers: M = 1.81, SD = 0.54) and the six-item condition (dancers: M = 1.96, SD = 1.08; non-dancers: M = 1.97, SD = 1.03). Overall, dancers and non-dancers demonstrated comparable working memory performance across both set sizes. (see Table 5)

Table 5
Working memory performance in dancers and non-dancers: k-value across memory load (set size) conditions

Set size	**Dancers M (SD)**	**Non-Dancers M (SD)**
3	1.86 (0.48)	1.81 (0.54)
6	1.96 (1.08)	1.97 (1.03)

Choice Delay Task

An independent-samples t-test showed that dancers (M = 58.35, SD = 21.98) had a significantly higher percentage of long-delay reward choices (%LDR) than non-dancers (M = 41.35, SD = 27.65), $t(109) = -3.58$, $p < 0.001$, $d = -0.68$. These findings indicate that dancers exhibited lower delay aversion than non-dancers. (see Table 6)

Table 6
Choice delay task performance in dancers and non-dancers: percentage LDR

Measure	**Dancers M (SD)**	**Non-Dancers M (SD)**
%LDR	58.35 (21.98)	41.35 (27.65)

Self-Report Scales: Independent-samples t-tests showed that dancers reported significantly lower levels of depression (dancers: M = 8.62, SD = 6.43; non-dancers: M = 13.43, SD = 8.83), $t(109) = -3.28$, $p < 0.001$,

d = − 0.62, anxiety (dancers: M = 10.87, SD = 6.54; non-dancers: M = 13.57, SD = 7.98), *t*(109) = − 1.95, *p* = 0.027, *d* = − 0.37, and stress (dancers: M = 12.11, SD = 5.96; non-dancers: M = 17.96, SD = 8.58), *t*(109) = − 4.17, *p* < 0.001, *d* = − 0.79, than non-dancers. A marginally significant difference was observed for negative affect, with dancers reporting lower negative affect than non-dancers (dancers: M = 12.24, SD = 2.69; non-dancers: M = 13.09, SD = 3.15), *t*(109) = − 1.53, *p* = 0.064, *d* = − 0.29. In contrast, dancers reported significantly higher positive affect (dancers: M = 19.27, SD = 2.49; non-dancers: M = 17.11, SD = 3.27), *t*(109) = 3.92, *p* < 0.001, *d* = 0.74. Dancers scored significantly lower than non-dancers on the BIS/Punishment Sensitivity Scale (dancers: M = 20.31, SD = 3.02; non-dancers: M = 21.54, SD = 3.28), *t*(109) = − 2.05, *p* = 0.043, *d* = − 0.39, BAS Reward Responsiveness (dancers: M = 15.42, SD = 2.83; non-dancers: M = 16.61, SD = 2.61), *t*(109) = − 2.30, *p* = 0.023, *d* = − 0.44, and BAS Fun Seeking (dancers: M = 10.98, SD = 2.06; non-dancers: M = 12.14, SD = 2.35), *t*(109) = − 2.77, *p* = 0.007, *d* = − 0.53. No significant group difference was observed for BAS Drive (dancers: M = 11.26, SD = 2.17; non-dancers: M = 10.59, SD = 2.36), *t*(109) = 1.55, *p* = 0.125, *d* = 0.29. Overall, compared with non-dancers, dancers exhibited lower psychological distress, higher positive affect, and lower behavioral inhibition and reward-seeking tendencies, while showing comparable levels of BAS Drive. (see Table 7)

Table 7
Independent Samples t-tests between two groups for self-report measures (standard deviations in parentheses)

Measure	Dancers, M (SD)	Non-Dancers, M (SD)	t	p	Cohen's d
Depression	8.62 (6.43)	13.43 (8.83)	-3.28	< 0.001	-0.62
Anxiety	10.87 (6.54)	13.57 (7.98)	-1.95	0.027	-0.37
Stress	12.11 (5.96)	17.96 (8.58)	-4.17	< 0.001	-0.79
Negative Affect	12.24 (2.69)	13.09 (3.15)	-1.53	0.064	-0.29
Positive Affect	19.27 (2.49)	17.11 (3.27)	3.92	< 0.001	0.74
BIS (Punishment Sensitivity)	20.31 (3.02)	21.54 (3.28)	-2.05	0.043	-0.39
BAS Drive	11.26 (2.17)	10.59 (2.36)	1.55	0.125	0.29
BAS Reward Responsiveness	15.42 (2.83)	16.61 (2.61)	-2.30	0.023	-0.44
BAS Fun Seeking	10.98 (2.06)	12.14 (2.35)	-2.77	0.007	-0.53

Additional Analyses:

Pearson's correlation analyses revealed that dance experience was significantly negatively associated with depression, r = − 0.398, *p* = 0.003, and negative affect, r = − 0.365, *p* = 0.006. No significant

correlations were observed between dance experience and other self-report variables. Simple linear regression analyses further showed that higher levels of dance experience was associated with lower levels of depression ($\beta = -0.398$, $p = 0.003$, $R^2 = 0.158$), and lower levels of negative affect ($\beta = -0.365$, $p = 0.006$, $R^2 = 0.133$) (see Table 8).

Table 8
Significant Correlations and Regression Analyses with Dance Experience

Variable	r	F	β	t	R^2	p
Depression	-0.398	9.95	-0.398	-3.16	0.158	0.003
Negative Affect	-0.365	8.15	-0.365	-2.86	0.133	0.006

Data availability:

The datasets generated during and analysed during the current study, including questionnaire data, raw task data, and task-related behavioural data used for statistical analyses, as well as the emotional face stimuli used in the task, are available in the Open Science Framework (OSF) repository:

https://osf.io/fwgha/overview?view_only=6c5f6178350e49e2a2ef217c816def83

Discussion

The present study examined whether dance training is associated with differences in executive functioning and psychological well-being in healthy young adults. To address this question, dancers and non-dancers completed a series of behavioural tasks assessing attention capture, attentional awareness, attentional disengagement, working memory and delay aversion, along with standardized self-report measures of psychological well-being and motivational tendencies. The findings revealed a selective rather than generalized advantage associated with dance training. While dancers and non-dancers demonstrated comparable performance across most measures of executive functioning, dancers exhibited significantly lower delay aversion, indicating a greater preference for delayed over immediate rewards. Dancers also reported lower levels of depression, anxiety, stress and negative affect, together with higher positive affect. In addition, dancers demonstrated lower punishment sensitivity, lower reward responsiveness and lower fun-seeking tendencies. Within the dancer group, greater dance experience was associated with lower depressive symptoms and lower negative affect. Although no consistent cognitive advantage emerged across executive function tasks, dancers committed fewer errors than non-dancers during the high-load happy condition of the Letter Search Task.

The present study found that dancers exhibited significantly lower delay aversion than non-dancers, indicating a greater preference for larger delayed rewards over smaller immediate rewards. Delay aversion reflects an individual's capacity to tolerate delayed gratification in pursuit of long-term goals and is a key aspect of self-regulation (Sonuga-Barke et al., 1992; Marco et al., 2009). This finding suggests that dance training may be more strongly associated with motivational regulation. A plausible explanation lies in the nature of dance training. Developing expertise requires years of disciplined

practice, persistence and continuous refinement before meaningful improvement or external recognition is achieved. Repeated engagement in this process may cultivate and strengthen patience and the ability to prioritise long-term outcomes over immediate rewards (Williams, 2018; Williams & Berthelsen, 2019; Yetti et al., 2021). This interpretation is supported by dancers' lower punishment sensitivity, reward responsiveness and fun-seeking, suggesting reduced reliance on immediate reinforcement and greater behavioural self-regulation.

Neuroimaging studies have shown that dance engages brain regions involved in reward processing, motivation and mood regulation, including the ventral striatum, nucleus accumbens, caudate, medial orbitofrontal cortex and orbitofrontal cortex (Basso et al., 2021; Foster Vander Elst et al., 2023; Hackney et al., 2024). Repeated engagement of these reward-related networks through long-term dance training may reinforce intrinsic motivation, sustained engagement and the ability to prioritise delayed rewards over immediate gratification. These findings suggest that dance may foster adaptive motivational regulation characterised by persistence, self-control and delayed gratification.

Contrary to our hypothesis, long-term dance training did not influence overall attention capture by emotional distractors, as dancers and non-dancers demonstrated comparable distractor interference across perceptual load conditions. The results indicated significant main effects of perceptual load and distractor condition on error rates, indicating that participants made more errors under high than low perceptual load and that error rates varied across distractor conditions. The effect of perceptual load is consistent with Load Theory, which proposes that increasing perceptual demands consume available attentional resources, leaving fewer resources available for efficient task performance (Lavie, 1995, 2005; Lavie et al., 2004). However, follow-up analyses showed only a marginal difference between the blank and angry distractor conditions, suggesting that the overall effect of distractor type was modest. Contrary to our hypothesis, there was no main effect of group and no significant interactions involving group, indicating that long-term dance training did not alter the overall influence of perceptual load or emotional distractors on attentional performance. Similarly, dancers and non-dancers demonstrated comparable distractor interference across all conditions. These findings align with previous research reporting inconsistent attentional advantages following dance training, particularly in healthy adults (Merom et al., 2016a, 2016b; Müller et al., 2017; Pournara et al., 2026). Nevertheless, an a priori comparison showed that dancers committed fewer errors than non-dancers in the high-load happy condition. Although this finding should be interpreted cautiously, it may reflect enhanced positive affect and emotional regulation associated with dance, enabling dancers to maintain response accuracy despite emotionally salient distraction (Koch et al., 2014, 2019; Mansfield et al., 2018; Moratelli et al., 2023; Fong Yan et al., 2024).

Contrary to our expectations, dancers and non-dancers demonstrated comparable performance on the Inattentional Blindness, Task Switching and Working Memory tasks. Although dance has frequently been associated with cognitive benefits, previous findings across these domains remain inconsistent, with several studies likewise reporting no significant advantages in attentional flexibility, task switching or working memory following dance training or among experienced dancers (Merom et al., 2016a, 2016b;

Müller et al., 2017; Bonny et al., 2017; Chichinina et al., 2022; Rutter, 2023; Pournara et al., 2026). Several factors may account for the absence of group differences. First, dance-related cognitive benefits may be domain-specific rather than domain-general, emerging primarily in processes that closely resemble the perceptual, motor, emotional and motivational demands of dance rather than across all executive functions. Second, conventional laboratory paradigms assess isolated cognitive operations under highly controlled and emotionally neutral conditions, which may not adequately capture the embodied, multisensory and context-dependent nature of cognition developed through dance training (Miyake & Friedman, 2012; Hackney et al., 2024). For example, the Working Memory Task primarily assessed abstract visual storage despite dance relying heavily on integrated visuospatial, motor and procedural memory, while the Task Switching Task required rapid reconfiguration between arbitrary stimulus-response mappings that differ substantially from the highly practised movement transitions characteristic of dance (Monsell, 2003).

Similarly, the Inattentional Blindness Task assessed conscious awareness of entirely unexpected emotional faces rather than the ability to suppress emotional distraction, suggesting that dance-related improvements in attentional control may facilitate goal-directed performance without enhancing awareness of unattended stimuli (Mack & Rock, 1998; Simons & Chabris, 1999; Lavie, 1995, 2005; Lavie et al., 2004). Finally, the present study involved cognitively healthy young adults whose executive functions are generally near their developmental peak, potentially limiting the sensitivity of behavioural tasks to detect subtle expertise-related differences (Salthouse, 2009; Best & Miller, 2010).

Overall, the present findings suggest that dance is unlikely to produce broad improvements across all cognitive functions. Instead, its benefits appear to be strongest for abilities that are closely linked to the emotional, motivational and behavioural demands of dance. This interpretation is consistent with previous work demonstrating enhanced emotional response inhibition in dancers (Mehta & Gupta, 2026). Together, these findings suggest that the cognitive benefits of dance may be selective, emerging most consistently in tasks involving emotional and motivational processing rather than across all domains of executive functioning. Beyond the cognitive findings, dancers demonstrated a more favourable psychological profile than non-dancers, characterised by lower levels of depression, anxiety and stress, together with higher positive affect. These findings are consistent with growing evidence that dance promotes psychological well-being across both clinical and healthy populations by reducing emotional distress while enhancing positive emotional functioning (Mansfield et al., 2018; Koch et al., 2019; Moratelli et al., 2023; Fong Yan et al., 2024). Similar patterns have also been reported previously, with dancers demonstrating lower psychological distress, greater positive affect and a more adaptive motivational profile than non-dancers (Mehta & Gupta, 2026). The unique characteristics of dance may help explain these outcomes. Unlike many forms of physical activity, dance combines movement, music, rhythm, creativity, emotional expression and social interaction, creating repeated opportunities to experience, communicate and regulate emotions within a rewarding and supportive environment (Bläsing et al., 2012; Foster Vander Elst et al., 2021). Over time, these experiences may strengthen emotional awareness, behavioural regulation and self-control, consistent with previous findings linking

dance to enhanced self-regulation and reduced impulsive tendencies (Walter & Sat, 2006; Lykesas et al., 2022).

Neurobiological evidence further supports these behavioural outcomes, with dance shown to influence neurotransmitter systems associated with reward and mood regulation, including dopamine, serotonin, endorphins and oxytocin, while also engaging brain regions involved in emotional regulation and cognitive control, such as the prefrontal cortex, anterior cingulate cortex and insula (Lopez-Nieves & Jakobsche, 2022; Grosbras et al., 2012, 2017; Gomes et al., 2021; Klaperski-van der Wal et al., 2025). These findings may also be understood through Borowski's (2021) Theory of Change, which proposes that dance enhances social-emotional competence through embodied learning, non-verbal expression, synchrony and supportive social environments. Taken together, the present findings suggest that the psychological benefits of dance arise from the combined influence of its emotional, cognitive, social and artistic components, contributing to greater emotional resilience and overall well-being.

The present findings should be interpreted in light of several limitations. First, the cross-sectional design precludes causal inferences regarding the relationship between long-term dance participation and the observed cognitive and psychological outcomes. Longitudinal and intervention-based studies are therefore needed to determine whether these differences emerge as a consequence of dance training or reflect pre-existing individual characteristics that influence sustained participation. Second, although the study employed a broad range of behavioural tasks, conventional laboratory paradigms assess relatively isolated cognitive processes under highly controlled conditions and may not fully capture the complex, embodied nature of dance. Dance involves the continuous integration of movement, emotion, music, spatial awareness, sensory feedback and social interaction. Future research should therefore incorporate more ecologically valid paradigms or develop dance-specific assessments that better reflect the cognitive demands of dance performance. Third, participants were classified according to dance experience without considering factors such as dance genre, training intensity, years of experience or level of expertise. As different dance forms vary substantially in their cognitive, emotional and motor demands, future studies should examine how these characteristics influence cognitive and psychological outcomes. Finally, the present study relied on behavioural measures and self-report questionnaires, which cannot directly elucidate the neural mechanisms underlying the observed findings. Future research combining behavioural paradigms with neuroimaging techniques such as EEG and fNIRS, while also examining emotional processing and regulation as potential mediators, would provide greater insight into the mechanisms through which long-term dance training influences cognition and psychological well-being.

The present findings highlight the potential of dance as a holistic activity that extends beyond physical fitness to promote psychological well-being, adaptive motivation and selected aspects of cognitive functioning. Although improvements were not observed across all cognitive domains, dancers demonstrated lower delay aversion, reduced emotional interference under demanding attentional conditions, and a more favourable psychological profile characterised by lower depression, anxiety and stress together with higher positive affect. These findings suggest that dance may strengthen emotional

resilience, behavioural regulation and long-term goal-directed behaviour. From an educational perspective, incorporating structured dance programmes within schools, colleges and universities may provide an engaging approach to promoting emotional well-being, self-regulation and healthy lifestyle behaviours while encouraging regular physical activity. Such programmes may be particularly valuable during adolescence and early adulthood, when individuals experience increasing academic demands and emotional challenges. The findings also have implications for mental health promotion. Given its enjoyable and socially engaging nature, dance may serve as an accessible complementary approach for enhancing emotional well-being and fostering sustained participation in health-promoting activities. Dance-based programmes may therefore be considered within educational, community and healthcare settings as part of broader mental health promotion and prevention initiatives. Overall, the present findings support the growing recognition of dance as more than an artistic or recreational activity. Instead, dance represents a promising approach for promoting emotional well-being, adaptive motivation and positive behavioural functioning while simultaneously encouraging physical activity, creativity and social connectedness across the lifespan.

Conclusion

The present study examined the relationship between long-term dance training and cognitive functioning, motivational tendencies, emotional processing, and psychological well-being in healthy young adults. Although dancers and non-dancers performed similarly across several cognitive tasks, dancers demonstrated reduced emotional interference under demanding attentional conditions, lower delay aversion and a more favourable psychological profile characterised by lower depression, anxiety and stress, higher positive affect, and more adaptive motivational tendencies. Greater dance experience was also associated with lower depression and negative affect, further highlighting the relationship between sustained dance participation and emotional well-being. Collectively, these findings suggest that the benefits of dance are not reflected in broad improvements across all cognitive functions but rather in selective advantages related to emotional processing, motivational regulation and behavioural self-regulation. As a multidimensional activity integrating movement, music, emotion, creativity and social interaction, dance appears to support psychological well-being while fostering adaptive behavioural characteristics that may enhance everyday functioning. Overall, the present findings add to the growing evidence that dance is more than an artistic or physical activity and represents a valuable approach for promoting emotional well-being, adaptive self-regulation and selective cognitive functioning across the lifespan.

Declarations

Data availability: The datasets generated during and analysed during the current study, including questionnaire data, raw task data, and task-related behavioural data used for statistical analyses, as well as the emotional face stimuli used in the task, are available in the Open Science Framework (OSF) repository:

https://osf.io/fwgha/overview?view_only=6c5f6178350e49e2a2ef217c816def83

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Figures

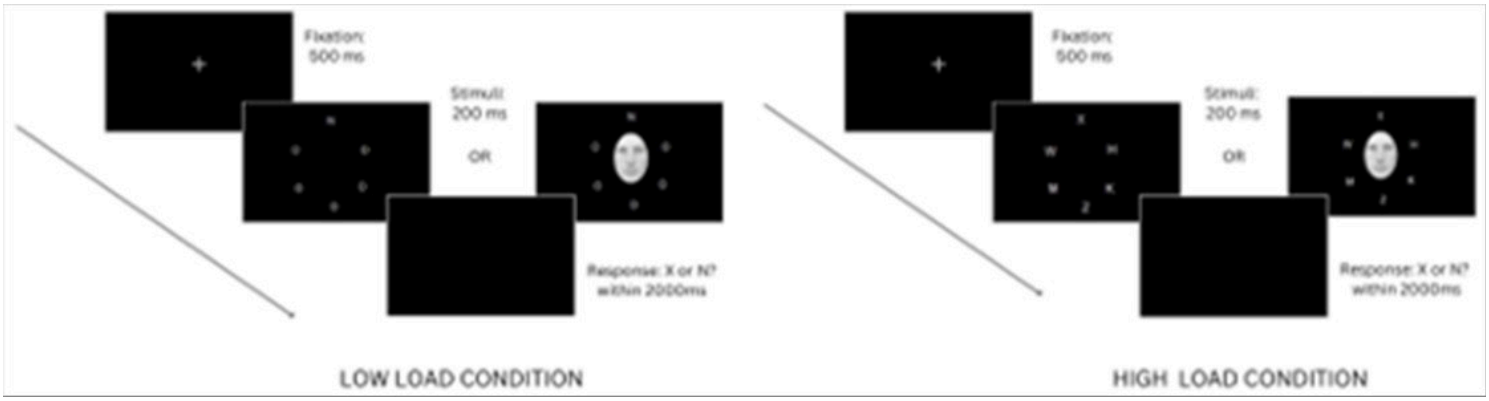

Figure 1

Letter Search Task: Example of the trial sequence under the low- and high-perceptual load conditions, with and without a task-irrelevant emotional face distractor.

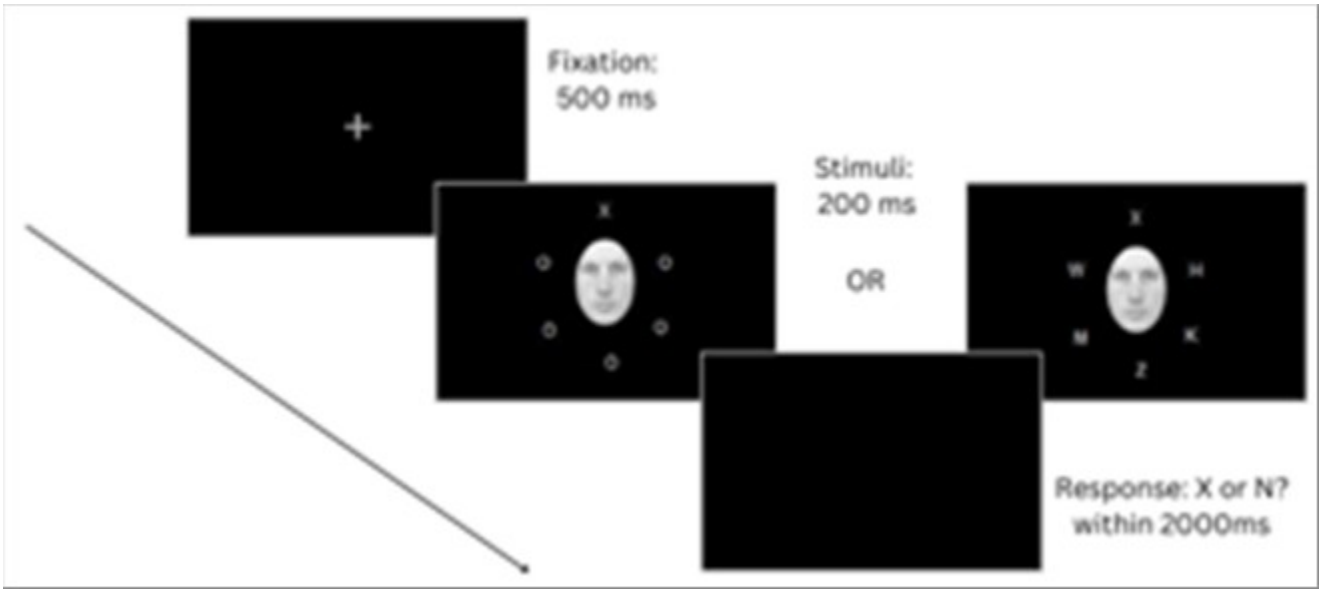

Figure 2

Inattentional Blindness Task: Example of the trial sequence under the low- and high-perceptual load conditions. Following the critical (final) trial, participants completed a surprise two-alternative forced-choice face recognition test to assess awareness of the task-irrelevant emotional face.

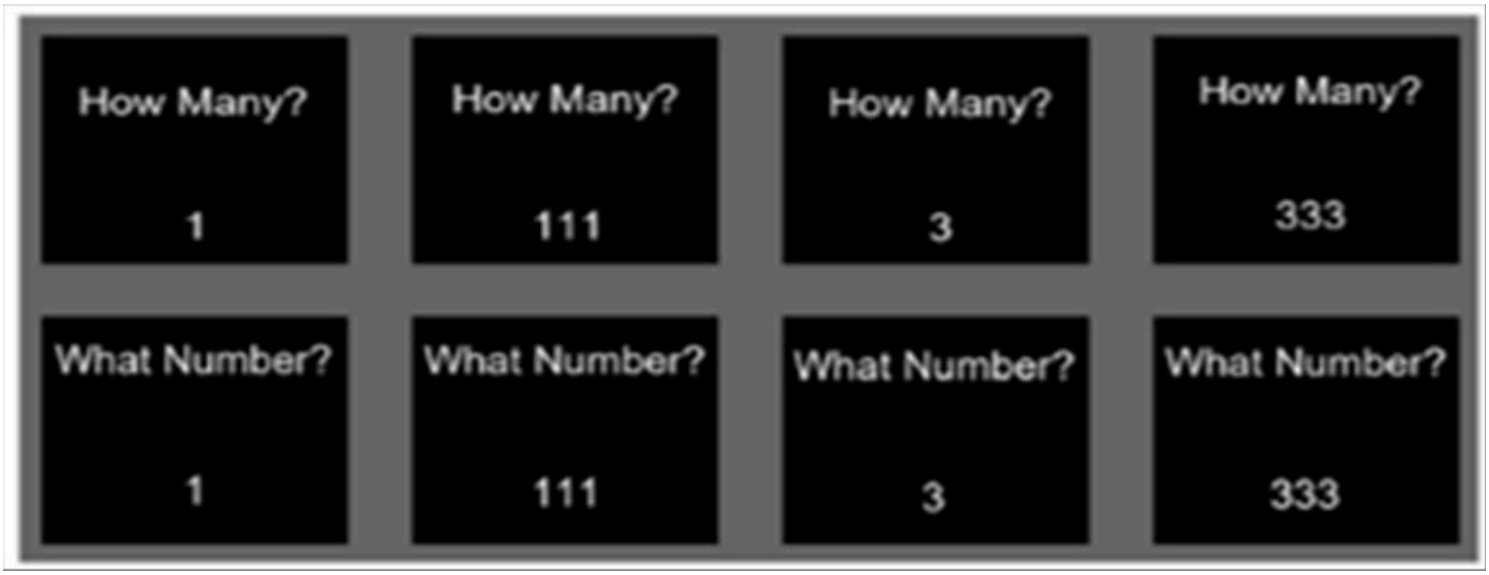

Figure 3

Task Switching Task: Example of the trial sequence for the What Number, How Many and mixed task-switching conditions.

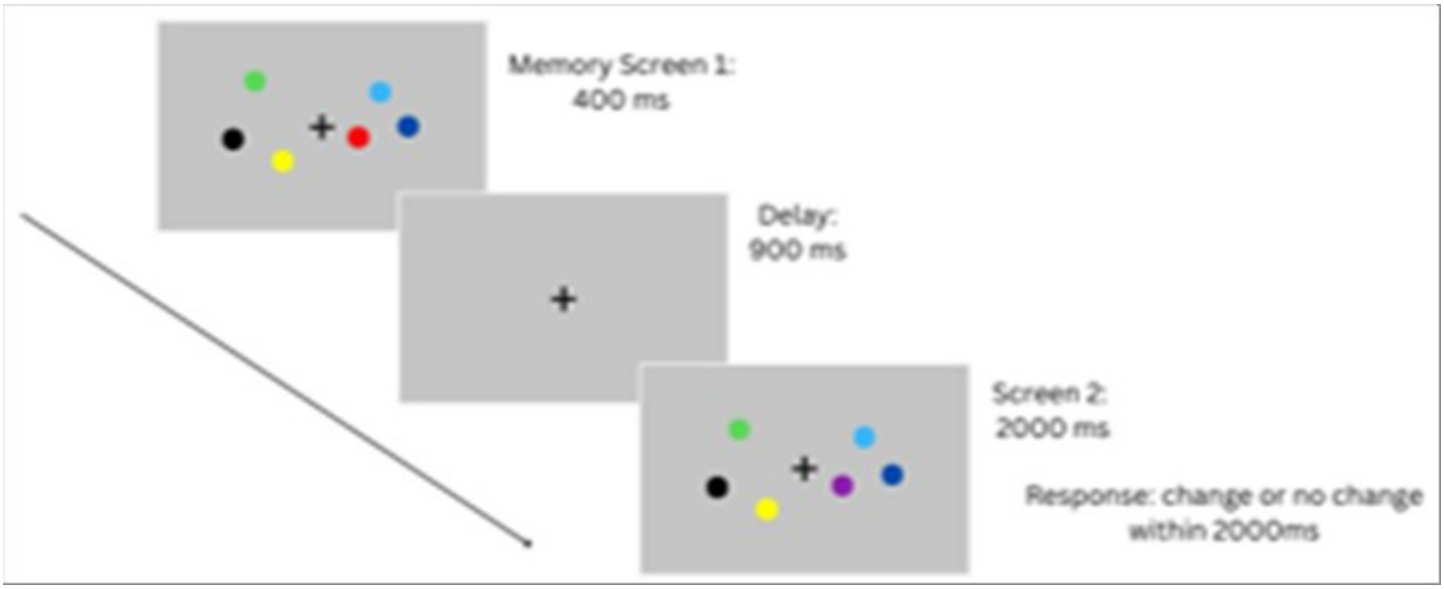

Figure 4

Working Memory Task: Example of the visual change-detection task showing the memory array, retention interval and test array for the three- and six-item conditions.

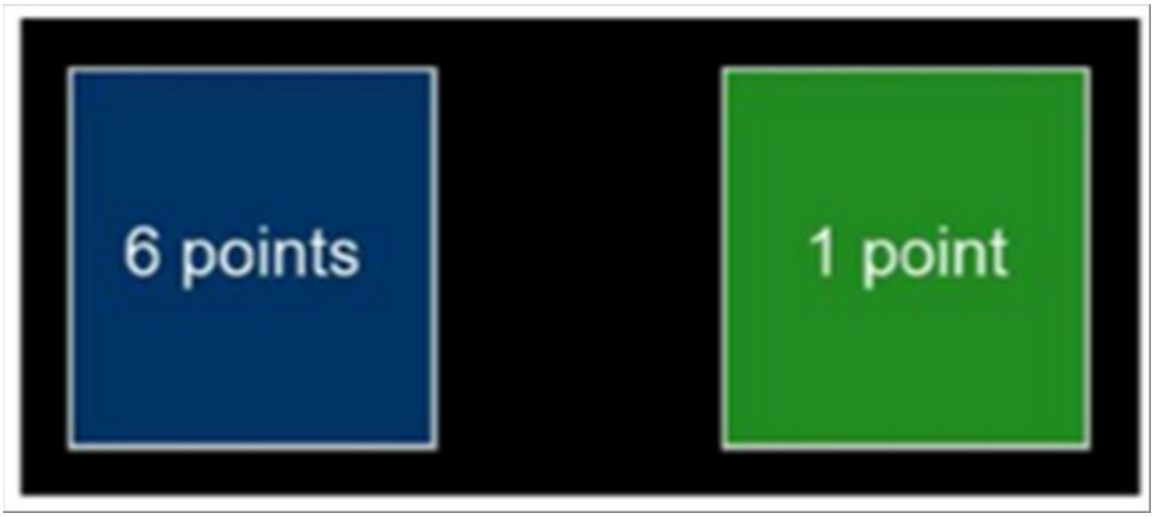

Figure 5

Choice Delay Task: Example of the trial sequence illustrating the choice between a smaller immediate reward and a larger delayed reward.