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The Goldsmiths Dance Sophistication Index (Gold-DSI): a new psychometric tool to assess individual differences in dance experience.

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Abstract

Dance has become an important for research in empirical aesthetics, social and motor cognition, and as an intervention for neurodegenerative and neurodevelopmental disorders. Despite this growing scientific interest in dance, no standardised psychometric instrument exists to assess people's dance experience. Here, we introduce the Goldsmiths Dance Sophistication Index (Gold-DSI), a 26-item questionnaire to measure individual differences in active and passive dance experience on a continuous scale. The Gold-DSI was developed in three stages. In the first stage, a set of 76 items was generated; a) by adapting questions from the Goldsmiths Musical Sophistication Index (Müllensiefen et al., 2014), and b) through a stakeholder workshop using a grounded theory approach. The second stage focused on item reduction. Using a large-scale online survey (N=424), hierarchical factor analysis was used to fit a model comprising of one general and six secondary factors (28 items in total). In stage three, six new items were added to specifically capture individual differences in dance spectatorship. We then collected data from two samples for final model estimation (N=127) and evaluation (N=190). The final version of the Gold-DSI comprises 26 items; 20 items relate to one general factor that captures *Active Dance Experience*. This includes four secondary factors: Body Awareness, Social Dancing, Urge to Dance, and Dance Training. A further six items separately measure dance spectatorship, thus capturing *Passive Dance Experience*. In sum, the Gold-DSI provides a brief, standardised and continuous assessment of both active and passive dance experience.

Keywords: Dance and dancing, active and passive experience, psychometric measurement tool, sophistication index.

Introduction

The scientific study of dance has become an increasingly important topic in psychology and cognitive neuroscience. Dance has been applied to study how we perform, perceive and remember complex whole-body actions (Bläsing et al., 2012; Brown & Parsons, 2008; Christensen, Gaigg, & Calvo-Merino, 2018; Kirsch, Snagg, Heerey, & Cross, 2016; Cross, & Ticini, 2012; Orgs, Calvo-Merino, & Cross, 2018; Stevens, Vincs, Delahunta, & Old, 2019). Dancing has also formed the basis of new therapeutic interventions for a range of psychological and neurological conditions, including Parkinson's disease (Earhart, 2009; Shanahan et al., 2015, 2017; Prado, Hadley & Rose, 2020), dementia (Koch & Fuchs, 2011) and autism (Mateos-Moreno & Atencia-Doña, 2013; Scharoun, Reinders, Bryden & Fletcher, 2014). Moreover, studying dance enables interdisciplinary discourse about the human body between the sciences, the arts and the humanities (Reason et al., 2016). Yet, no standardised psychometric instrument exist to assess individual differences in dance experience. To fill this gap, we developed the Goldsmiths Dance Sophistication Index (Gold-DSI) that distinguishes experiences of *doing dance* (active dance experience), from experiences with *watching dance* (passive dance experience).

Research on dance broadly falls into two categories; either studying dance as a *topic* or using it as a *tool*. As a topic, dance is relevant to research that investigates how and why humans develop culture and cultural artefacts (Hagen & Bryant, 2003; Lovatt, 2018; Woolhouse, Tidhar, & Cross, 2016). For instance, dance is part of religious and other rituals across all known cultures, and has been argued to play an important role in group formation and communication (Dissanayake, 2017; Hanna, 1987; Vicary, Sperling, von Zimmermann, Richardson, & Orgs, 2017; von Zimmermann, Vicary, Sperling, Orgs, & Richardson, 2018). In addition to this functional role, dance and dancing have been described as an 'aesthetic experience, and a creative process, through which the body, brain and personality combine to

express and communicate thoughts and feelings’ (H’Doubler, 1940). Traditionally however, research in empirical aesthetics and creative cognition have largely focused on the visual arts and music. Only in recent years have scientists begun to study aesthetic and creative cognition in dance more systematically (Christensen & Calvo-Merino, 2013; deLahunta et al., 2018; Giguere, 2011; Kirsch, Ugesi & Cross, 2016; Orgs, Caspersen, & Haggard, 2016; Stevens & Leach, 2015; Stevens, Malloch, McKechnie, & Steven, 2003; Weber, 2016).

As a tool, dance enables scientific studies to engage with other aspects of human cognition. Principles from dance and choreography, for example, have been applied to the study of body awareness (interoception) and emotion perception, selective attention, implicit learning, working memory, creativity and divergent thinking, personality, and motor learning (Bläsing, 2010; Christensen, Gomila, Gaigg, Sivarajah, & Calvo-Merino, 2016; Christensen, Gaigg, & Calvo-Merino, 2018; Fink, Graif, & Naubauer, 2009; Hänggi, Koenke, Bezzola, & Jäncke, 2010; Karpati, Giacosa, Foster, Penhune, & Hyde, 2015; Lovatt, 2018; Sowden, Clements, Redlich, & Lewis, 2015; Willard & Lavalley, 2016). In particular, studying expertise in dance has provided a fruitful approach to understanding the neural mechanisms of action observation (Calvo-Merino et al., 2004, 2006; Cross et al., 2009; Orgs et al., 2008; Orlandi, Zani, & Proverbio, 2017). Furthermore, regular dancing has been linked to a reduced risk for dementia (Karkou & Meekums, 2017; Verghese et al., 2003), and can improve gait and mood in Parkinson’s disease (e.g., Ghai, Ghai, Schmitz, & Effenberg, 2018; Earhart, 2009; Lewis et al., 2016; Lyons et al., 2018; Shanahan et al., 2015; Rose et al., 2019b).

For any psychological study on dance, it is important to assess people’s prior engagement with dance to provide context. Here, we introduce the concept of *dance sophistication* to quantify individual differences in active and passive dance experience, in loose analogy to the assessment of musical sophistication in the general population (Müllensiefen, Gingras, Musil & Stewart, 2014).

In contrast to the limited scientific literature on individual differences in dance experience, research on musical abilities has a long history in psychology, musicology and educational studies (e.g. Bentley, 1966; Gordon, 1989; Seashore, 1919). Yet, these tests of musical ability overlook a variety of musical achievements or skills; being able to verbally communicate about music at a high level, to use music effectively to manipulate the emotional states of one's self and others, and to classify sounds and precisely recognize and categorize features of musical styles (Honing, 2017). To measure musical skills and achievements in a more comprehensive way, Müllensiefen and colleagues (2014) devised the Goldsmiths Musical Sophistication Index (Gold-MSI), a psychometric tool to measure individual differences of musical behaviours in the general population. Focussing on musical sophistication rather than musical expertise acknowledges that musical behaviours are multifaceted and do not necessarily involve extensive training in playing an instrument. Moreover, the measurement construct of musical sophistication allows a continuous assessment of people's diverse engagement with music on different subscales, and thus avoids a simplistic binary distinction between musicians and non-musicians. Similarly, we introduce the concept of dance sophistication as a multifaceted and continuous construct of both knowledge and skill (e.g., Ericsson, Hoffman, Kozbelt & Williams, 2018; Sternberg, 2018), that differentiates between active and passive components of dance experience.

The *active component* of dance sophistication relates to how much a person dances. It encompasses social dancing, as well as formal and informal dance training. Regular dancing should develop visual and sensorimotor expertise (Calvo-Merino et al., 2006), improve memory for learning new movements (Bläsing et al. 2012; Stevens et al., 2019), increase expressive nonverbal communication abilities (Lewis, 2006) and also bodily awareness (Christensen, Gaigg, & Calvo-Merino, 2018). Frequent dancing also improves physical fitness across all ages (e.g., Burkhardt & Brennan, 2012; Hwang & Braun, 2015; Koutedakis

& Jamurtas, 2004). Moreover, dancing in groups encourages interpersonal interactions and promotes social bonding (Overy & Molnar-Szakacs, 2009; Ravignani & Cook, 2016; Whyatt & Torres, 2017). The extent of a person's active engagement with dance might therefore relate to a person's sociability (Kreutzmann, Zander & Webster, 2018).

The *passive component* of dance sophistication relates to knowledge about, and engagement with dance that does not involve dancing oneself. For example, it encompasses how frequently a person attends dance performances, and how interested someone is in dance and choreography. It also includes knowledge about dance making and choreographic practice including the history of dance as an artform. Research on dance in the context of motor cognition typically focuses on active dance experience alone, whilst controlling for the influence of passive dance experience (Calvo-Merino et al., 2010; Kirsch & Cross, 2015). In contrast, research on dance appreciation should require careful assessment of passive dance experience as a predictor of aesthetic judgement, in keeping with the importance of cognitive mastering for visual art appreciation (Leder & Nadal, 2014).

Dance sophistication may relate to specific personality traits as these have been shown to predict a person's engagement with art, in particular 'openness to experience'. Judge, Higgins, Thoresen and Barrick (2006) found that this trait is a predictor for working in the artistic sector and it correlates with a range of measures of creativity. Openness to experience has been shown to be higher in professional dancers than in novices and also correlate with people's aesthetic preferences for complexity and novelty (Fayn, MacCann, Tiliopoulos & Silvia, 2015; Fink, Graif, & Naubauer, 2009). Other studies have also suggested that musicality is linked to openness (Corrigall, Schellenberg, & Misura, 2013; Gibson et al., 2009; Kemp, 1996; Vuoskoski & Eerola, 2011). In relation to the concept of musical sophistication, Greenberg, Müllensiefen, Lamb, & Rentfrow (2015) have shown that higher self-reported musical sophistication is linked to higher openness to experience, and

this is equally true of musicians whether they have learned informally, or been formally taught (Rose, Jones Bartoli, & Heaton, 2019a). Therefore, openness to experience may be an important personality trait related to both the active and passive components of dance sophistication.

The Gold-DSI was developed in three stages. In Stage 1, a workshop was undertaken with stakeholders in the dance and the dance research community, including professional dancers, dance teachers, choreographers, dance practitioners and dance academics. In this workshop we developed a preliminary set of dimensions of dance sophistication, and generated a pool of items for testing. In Stage 2, we conducted an online study to reduce the number of items and developed a preliminary model of dance sophistication. In Stage 3, two further online studies (new samples) served to finalise the factorial structure of the Gold-DSI and assess validity and reliability of the measure.

Methods

All individual studies were approved by the local ethics committees at the University of Hertfordshire and Goldsmiths, University of London. All participants provided written informed consent prior to the study in accordance with the recommendations of the Helsinki Declaration.

Stage 1 – Item generation

A one-day workshop brought together nine academics and dance professionals from different backgrounds, including musical theatre, ballroom dancing, dance therapy and performing dance (i.e., two choreographers, and one dance teacher, a trainee dance teacher, a dance student, two psychologists with expertise in dance and two psychologists with expertise in music). The agenda for the workshop was based on principles of Grounded Theory (GT; Bryant & Charmaz, 2007; Glaser, 1978; Strauss & Corbin, 1990) and aimed to

uncover a stable overall structure of the dance sophistication construct (Charmaz & Belgrave, 2012) and to identify relevant themes (Glaser, 2002).

Stage 1 Method

As an initial task, attendees considered and, where appropriate, re-worded question items from the Gold-MSI in relation to dance (see Supplementary Table A, MSI $\approx$ DSI). This process was instigated in order to generate discussions around the concept of dance sophistication prior to specifically addressing the following questions: *'What is dance sophistication?'*, *'Why do we need a tool to assess it?'*, *'What information does it need to capture (e.g. dimensions of dance, range of abilities, types of engagement, universals vs style-specific elements of dance)?'*. Following these tasks, attendees generated novel question items based on ideas raised during the discussion about the concept of dance sophistication. All tasks were recorded and later transcribed and analysed by three researchers using GT to compile and edit the pool of question items on which to base the construct of dance sophistication (see Supplementary Table B for full list of items).

Stage 1 Results

All 39 questions from the Gold-MSI were reformulated to apply to dance and the results of the paired work undertaken during the one-day workshop are provided in Appendix B. In response to the question asking what the term 'dance sophistication' might encompass, attendees described twenty-five potential characteristics, which were reduced to five themes and fifteen subthemes using GT analyses, as presented in Table 1. Workshop attendees also provided thirteen suggested reasons for, and ways they would use and apply an instrument that could measure dance sophistication. Following GT coding, these were reduced to five key reasons (see Table 2), mapping onto the five themes from Table 1.

207 Table 1. *Grounded Theory generated themes and subthemes of dance sophistication.*

Themes	Subthemes	Reasons for Inclusion
1 Reasons for Engaging with Dance	Motivation to Dance; Urge to Move/Pleasure in Moving/Natural responses to music/others; Context of dancing (groups/intimacy/solitary)	Current dance practice (formal/informal), exercise, professional, fun/social, inhibition, accessibility (time and money)
2 General Fitness and Ability	Coordination ability; Athleticism/Fitness/Physicality	Dance Training and Ability, Bodily Awareness,
3 Dance as Art	Structures vs. non-structured (Choreographed vs. improvisation). Aesthetic appeal of dance (watching); Self-expression through dance	Inclination to dance, engage with dance, Attitudes to dance, Affective properties of dance, Association between music and dance
4 Dance Expertise	Amount of dance practice; Present and peak engagement; Dance Training	Training and qualifications, experience, competitions/teaching
5 Creativity and Teaching	Ability to teach/instruct; Ability to imagine/visual/create dance; Ability to judge dance (performance/choreography)	Formal/informal learning, personality

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Table 2. *Key reasons to develop a tool for quantifying dance sophistication derived from Grounded Theory.*

Name of Reason	Description of Reason	Link to DSI Theme in Table 1.
Individualize Training	To be able to tailor dance training/lessons for the participants	1, 2, 5
Ensure Diversity	To consider provision in terms of diversity and accessibility	2, 3, 4, 5
Document Development	To enable practitioners to understand how people learn (formally and informally)	1, 2, 5
Evaluate Interventions	To enable evaluation of the efficacy of dance-based interventions for health and wellbeing (i.e. how much does previous dance experience affect outcomes)	1, 2, 3, 4, 5
Understand Audiences	To provide a way to understand audience experience in terms of engagement and expertise	3, 4, 5

Finally, a list of 140 potential questions and statements pertinent to the concept of dance sophistication was compiled from the workshop attendees. In a subsequent step using GT analysis, and through screening for redundancy, that initial list was reduced to a pool of 76 questions and statements (see Supplementary Table B) that were grouped and aligned to the five themes forming the concept of dance sophistication (see Table 1). The questions and statements were edited to be useable within a survey inventory by balancing positive and negative statements and adapting items to work with a seven-point agreement scale.

Stage 2 – Item Reduction

The primary aim of Stage 2 was to reduce the large item pool generated in Stage 1 in order to obtain a smaller set of items that still contained suitable dimensional structure. Hence, an online survey was conducted to produce the dataset in this study which only served the purpose of variable selection, while the dataset of the subsequent study (Stage 3) was used for model estimation, evaluation, and validation in order to avoid model overfitting on individual datasets.

Stage 2 – Method

Participants

After excluding participants that completed less than 50% of the survey questions, 424 participants with a mean age of 33.4 years ($SD = 13.4$) remained in the sample. Most of the participants were female (80%), half (54%) were in full time or part time employment, 23% were at university, 10% were self-employed, and the remaining 13% were unemployed, at school or retired.

Materials

In addition to the 76 items asking for different aspects of dance sophistication generated in Study 1, the online survey contained four questions on the demographic

background of participants (as used in the Gold-MSI). The survey was implemented through the Qualtrics (Provo, Utah) online survey platform.

Procedure

To reach a large audience an online questionnaire was set up and promoted through a variety of different channels, including promotion through radio features, social media contacts, and a dedicated YouTube video. Participants were offered the chance to be included in a prize draw to win a Samsung Galaxy tablet. Participants were directed to the survey's landing site and gave their consent for participating in the study after being briefed about its content. All data was collected anonymously.

Stage 2 – Results

The purpose of the data analysis of Stage 2 was to identify the factorial dimensions and reduce the number of items, following an exploratory factor analysis strategy similar to the one described by Fancourt, Garnett, Spiro, West, Müllensiefen (2019). Twelve variables with skewness or kurtosis $> \pm 2$ were excluded. Subsequently, the hierarchical omega coefficient was computed for the set of remaining variables using the function *omega* from the R package psych (Revelle, 2018) which yielded a value of 0.69. According to the guidelines given by McDonald (2013) hierarchical omega values > 0.6 indicate the presence of a general factor. Therefore, a series of hierarchical factor models (minimum residual factoring with oblimin rotation) were computed where each model contained a general factor and between three and 10 secondary group factors (i.e., so-called Schmid-Leiman models).

Models were compared on the Bayesian Information Criterion and a model with six secondary group factors had the best model fit (the difference in BIC values to next best model was 11.2, and therefore substantial). In order to reduce the number of items further we selected only those 33 items with a communality of $h^2 \geq 0.5$ and ran the model

comparison step again. The model, again with six secondary group factors, showed again the best model fit (BIC difference to second best model was 15.9).

Finally, in order to obtain a simple factorial structure where each item has a strong loading only on one group factor and low loadings on all other group factors, we excluded five further items where the ratio of the loading of the strongest group factor to the loading on the second strongest group factor was ≥ 1.5 . This resulted in a final set of 28 items in the model, consisting of one primary (Active Dance Experience) and six secondary factors. The six factors in this preliminary DSI model were interpreted as 1. Predilection/Social Anxiety, 2. Embodied Awareness, 3. Past Dance Training, 4. Dedication to Dance, 5. Present Dance Training, and 6. Urge to Dance.

Stage 2 – Discussion

Data reduction (i.e., variable selection) was successful because the number of items was reduced from 76 to 28, all with strong intercorrelations with other variables. In addition, the factor model had a simple factorial structure where each item was related to the general factor and loaded strongly on a single group factor and only weakly on any other group factors.

Hence, the quantitative, data-driven item reduction was successful in producing a model with a much smaller number of items and an interpretable factor structure. However, the results from Stage 2 were not intended to represent the final measurement model of dance sophistication. In fact, the exclusion of many items due to high skewness or kurtosis and the lack of a factor reflecting passive dance experience limited the resulting model. To overcome these limitations, we used the reduced item set to serve as the basis for Stage 3, and added six items specifically targeting passive dance experience (through a continuum of expertise from formal to professional) to achieve a more balanced distribution of responses in relation to the construct of dance sophistication as produced in Stage 1.

Stage 3 - Construction, evaluation, and validation of a factor model of dance sophistication

The aim of Stage 3 was the construction, evaluation, and validation of a factor model of dance sophistication with a new sample of participants. The reduced set of items generated in Stage 2 served as the main item input, in addition to six new items to specifically assess different aspects of passive dance experience. For Stage 3 we intended to collect two separate samples for model estimation and model evaluation in order to avoid overfitting and thus obtain generalisable indicators of model fit.

Stage 3 – Method

Participants

Participants for both samples were recruited from among Goldsmiths undergraduate students who received course credits for their participation. After excluding participants who had completed less than 50% of the survey questions, or who had given constant ratings to all items, sample 1 comprised 127 participants (82.7% female) with a mean age of 20.8 years ($SD = 5.21$) and sample 2 had 190 participants (76.7% female) with a mean age of 19.6 years ($SD = 2.83$).

Materials

The 28 items of the reduced item set that resulted from the study in Stage 2 were used for the dance sophistication questionnaire. Additionally, six items which assessed different forms of passive dance experience were included. These were created by rewording some of the original items that had been excluded due to an imbalanced distribution of responses. Hence, in total the full set of dance sophistication questions for Stage 3 comprised of 34 items. The survey for sample 1 also contained seven questions on the demographic background of participants and two additional questionnaires to validate individual aspects of the Gold-DSI. The first of these was The Multidimensional Assessment of Interoceptive

Awareness scale (MAIA; Mehling et al., 2012). This includes eight scales related to dimensions of body awareness: Noticing, Not-distracting, Not-worrying, Attention Regulation, Emotional Awareness, Self-regulation, Body listening and Trusting. Trusting relates to the belief that the sensations of the body provide safe and trustworthy feedback, which is helpful in terms of making decisions and having a sense of self. Attention regulation reflects the ability to “sustain and control attention to body sensations” (p. 16), whereas Self-regulation is related to “a strong ability to regulate distress by attention to the body” (p. 16). Not-distracting refers to the way in which individuals resist using distraction to cope with discomfort, and noticing assesses the awareness of a range of body sensations. We also included the Openness subscale from the Big Five Inventory (BFI; John, Naumann, & Soto, 2008).

Finally, the survey for sample 2 contained the Gold-MSI (Müllensiefen et al., 2014), for correlational comparison. In addition to a general scale of musical sophistication, the Gold-MSI includes subscales of Active Musical Engagement, Perceptual Abilities, Singing Abilities, Musical Training and Emotional Engagement with Music. The internal consistency for the MAIA scales ranged from .66 to .82, for the Openness to experience scale, and for the Gold-MSI scales, .79 to .93. Both surveys were implemented through the Qualtrics (Provo, Utah) online survey platform.

Procedure

Participants were directed to the survey’s landing site during a lecture on practical issues in psychology. They gave consent for participating in the study after receiving a short explanation about the survey’s purpose and content. All participants received a comprehensive debrief in class after the completing the survey.

Stage 3 – Results

Sample 1 was used for constructing the factorial model of dance sophistication and sample 2 was used for model evaluation using confirmatory factor analysis.

Model construction

The construction of the factor model followed the analytic procedure described in the study in Stage 2. Only one variable was excluded due to a skewness value > 2 . All of the remaining 33 variables had skewness and kurtosis values < 2 . Subsequently the hierarchical omega coefficient was computed and yielded a value of 0.64, which indicated the presence of a general factor. Therefore, a series of hierarchical factor models (minimum residual factoring with oblimin rotation) were computed where each model contained a general factor and between three and 10 secondary group factors (i.e., so-called Schmid-Leiman models).

Models were compared on the Bayesian Information Criterion and a model with four secondary group factors showed the best model fit. The difference in BIC values to next best model was 19.4 and therefore substantial. As a next step, 11 items with a low communality (< 0.5) were removed and the model comparison step was run again. The model with four sub-factors showed again the best model fit according to the BIC (the difference to the second-best model was 20.4). In order to ensure a simple factorial structure, we excluded one further item where the ratio of the loading of the strongest group factor to the loading on the second strongest group factor was ≤ 1.5 . This resulted in a final set of 21 items in the model having one primary and four secondary factors. Finally, we removed one item which had a negative coefficient estimate on its group factor despite being worded positively. Thus, the final model comprised 20 items, each loading on one secondary group factor and the general factor of active dance experience. The secondary group factors were interpreted as 1. Body awareness (6 items), 2. Social dancing (6 items), 3. Urge to dance (5 items), 4. Dance training (3 items).

However, none of the factors in the models measured any aspects of passive dance experience. Therefore, we selected nine items from the initial set of Study 3 comprising 34

items that assessed behaviours related to passive dance experience and ran a separate factor modelling procedure on this set of variables to potentially identify a common factor. None of the nine variables was part of the final model of active dance experience. Similar to the analytical procedures described before we screened for variables with high skewness or kurtosis and excluded one variable. This was followed by a minimum residual factor analysis requesting only a single factor. From this model we excluded two items with a low communality of < 0.3 , which yielded the final set of six items measuring passive dance experience. Running the factor analysis again showed that each of the items had a loading > 0.55 on the single factor and a communality of > 0.31 .

Model Evaluation

Model fit and internal consistency

Sample 2 was used for model evaluation. The factorial model of dance sophistication was evaluated using a minimum residual confirmatory factor analysis with robust maximum likelihood estimation. The four factors were specified to be orthogonal because the general factor already accounts for correlations between factors. All robust fit measures indicated an acceptable to good fit of the model to the data of sample 2 ($\chi^2 = 242.3$, $df = 150$, $p < 0.001$, $CFI = 0.957$, $TLI = 0.946$, $RMSEA = 0.059$ [90% CI : 0.045, .072], $SRMR = 0.054$).

The single-factor model of passive dance experience was similarly evaluated by a *CFA* with robust maximum likelihood. The robust measures of model fit were in an acceptable range ($\chi^2 = 24.1$, $df = 9$, $p = 0.004$, $CFI = 0.918$, $TLI = 0.863$, $RMSEA = 0.094$ [90% CI : 0.052, 0.137], $SRMR = 0.06$).

Reliability of the individual subscales was in a good to very good range according to the common benchmarks given for Cronbach's alpha as shown in Table 3.

Table 3. *Internal Validity of the Goldsmiths Dance Sophistication Index*

Subscale	Number of items	Cronbach's alpha
General Factor (FG): Active Dance Experience	20	.93
Factor 1 (F1), Body Awareness	6	.90
Factor 2 (F2), Social Dancing	6	.91
Factor 3 (F3), Urge to Dance	5	.83
Factor 4 (F4), Dance Training	3	.82
Passive Dance Experience (FP)	6	.79

Correlational assessment of concurrent and divergent validity

Openness to Experience and Body Awareness

While no measure of dance sophistication in the academic literature exists as yet, the subscales of the DSI can be hypothesised to be related to several other constructs. These include bodily awareness and openness to experience (sample 1) and musical sophistication (sample 2) as presented in the following section. Table 4 presents the correlations with DSI factors and the Openness to experience subscale from the BFI and the MAIA inventory.

Only one positive correlation between subscales of the Gold-DSI and the MAIA inventory was revealed, $r = .33, p = .04$. This was between the Gold-DSI subscale Body Awareness (Factor 1) and the MAIA subscale for Trusting. No significant correlations were found between the DSI active (general or subscales) and passive factors with Openness to experience.

Table 4. *Sample 1: Pearson Correlation Coefficients and p values between Dance Sophistication Index factors, BFI Openness to experience and MAIA.*

	F1: Body Awareness		F2: Social Dancing		F3: Urge to Dance		F4: Dance Training		FG: Active Dance Experience		FP: Passive Dance Experience	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
BFI												
Openness to Experience	0.11	0.66	0.14	0.66	0.15	0.66	0.02	0.84	0.14	0.66	0.20	0.24
MAIA												
Noticing	0.19	1.00	0.09	1.00	0.08	1.00	0.17	1.00	0.16	1.00	0.08	1.00
Not Distracting	0.20	1.00	0.11	1.00	0.07	1.00	0.16	1.00	0.16	1.00	0.19	1.00
Not Worrying	0.12	1.00	0.06	1.00	-0.04	1.00	0.06	1.00	0.06	1.00	0.11	1.00
Attention Regulation	0.23	0.99	-0.02	1.00	-0.08	1.00	0.09	1.00	0.07	1.00	0.01	1.00
Emotional Awareness	0.14	1.00	0.16	1.00	0.27	0.33	0.11	1.00	0.21	1.00	0.24	0.88
Self-regulation	0.22	1.00	0.12	1.00	0.23	0.89	0.13	1.00	0.21	1.00	0.26	0.44
Body Listening	0.08	1.00	0.02	1.00	0.13	1.00	-0.02	1.00	0.07	1.00	0.18	1.00
Trusting	0.33	0.04	0.15	1.00	0.20	1.00	0.09	1.00	0.25	0.62	0.19	1.00

Goldsmiths Musical Sophistication Index (Gold-MSI)Table 5. *Sample 2: Pearson Correlation Coefficients and p values for Dance and Music Sophistication Factors*

	F1: Body Awareness		F2: Social Dancing		F3: Urge to Dance		F4: Dance Training		FG: Active Dance Experience		FP: Passive Dance Experience	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Gold MSI												
Active Engagement	0.21	0.03	0.35	0.00	0.40	0.00	0.35	0.00	0.39	0.00	0.28	0.01
Musical Training	0.24	0.03	0.22	0.03	0.27	0.01	0.38	0.00	0.32	0.00	0.15	0.08
Emotion	0.38	0.00	0.39	0.00	0.41	0.00	0.41	0.00	0.48	0.00	0.30	0.00
General Music Sophistication	0.39	0.00	0.35	0.00	0.46	0.00	0.39	0.00	0.47	0.00	0.34	0.00

Correlations between the Gold-DSI (general active dance experience and subscales, and passive dance experience) and the Gold-MSI (general and subscales) are shown in Table 5. Almost all subscales of the DSI correlate significantly (before correction for multiple comparison) and with small to medium effect sizes with the four subscales of the Gold-MSI. The highest correlations for the DSI subscale of Body Awareness (Factor 1) are General Musical Sophistication and Emotional Music Sophistication. The Gold-DSI subscales of Social Dancing (Factor 2) and Urge to Dance (Factor 3), and the Passive Dance Experience scale all correlate most highly with the General Musical Sophistication factor of the Gold-MSI and the subscales of Emotional Music Sophistication and Active Engagement with music. Finally, the general dance sophistication factor of Active Dance Experience and the subscale of Dance Training (Factor 4) of the Gold-DSI and have substantial correlations ($.31 < r < .49$) with all four subscales of the Gold-MSI.

Discussion

Dance has become an increasingly important topic in psychology and neuroscience research and is providing new impetus for developing movement-based interventions for health and wellbeing. In order to evaluate the effect of dance on physical, psychological and socio-emotional wellbeing, it is important to assess individual differences in dance experience. The Gold-DSI as a self-report measure of dance sophistication distinguishes between active and passive components of dance experience and provides a continuous, rather than categorical, measure of a person's engagement with dance.

Active vs. Passive Dance experience

Our findings support the notion of active and passive dance experience as distinct constructs of dance sophistication that share little common variance. Active dance experience captures the amount and type of dancing a person does, including dance classes or

professional dance training, but also social dancing. These formal and informal components of active dance experience are captured in the subfactors dance training and social dancing, respectively. We identified two additional subcomponents of active dance experience, a person's motivation or urge to dance, and body awareness.

Dancing has been shown to improve proprioceptive (Jola, Davis, & Haggard, 2011) and interoceptive (Christensen, Gaigg, Calvo-Merino, 2018) perception. These effects of dance experience are captured as the body awareness subfactor in the Gold-DSI. Body awareness was validated with the MAIA survey. The only correlation between Gold-DSI and the MAIA inventory was between the Gold-DSI subscale of Body Awareness and the MAIA subscale for Trusting. Trusting relates to the belief that the sensations experienced within one's body provide safe and trustworthy feedback, which is thought to be helpful in terms of having a sense of self, and for making decisions about one's health (Mehling et al., 2012). This relationship then suggests that body awareness is linked to confidence in perceiving one's body's signals. Future studies should validate whether this heightened confidence translates to greater accuracy in heart beat perception and proprioception. Individual differences in body awareness, might help to explain how dance training impacts on body image (Robbeson, Kruger, & Wright, 2015) and differential strategies for coping with pain and injury among professional dancers (Alexias & Dimitropoulou, 2011).

Interestingly, some studies suggest that professional dancers are at a greater risk for body dissociation (Thompson & Jaque, 2013), suggesting a negative rather than positive relationship between dance expertise and body awareness. Passive dance experience was not associated with any of the subscales of the MAIA, suggesting that watching dance alone is not sufficient to permanently alter a spectator's experience of their own bodily signals; this seems to require either dance training or regular social dancing.

Comparing dance and music sophistication

The Gold-DSI subscales of social dancing, urge to dance, and the separate factor of passive engagement with dance were all associated with the Gold-MSI factors of emotional and active engagement with music, as well as with general music sophistication. From an evolutionary perspective, music making and dancing share a common origin in promoting and communicating social cohesion between groups (Grahn & MacAuley, 2009; Koelsch, 2014; Sevdalis, & Keller, 2011). In this way, both dance and music are intrinsically social activities. Interestingly, the social dancing factor of the DSI was not associated with any of the MAIA scales, nor with openness to experience, suggesting a *self*-related aspect of dance sophistication that encompasses active dance experience and body awareness as opposed to an *other*-related aspect of dance sophistication captured by the urge to dance and social dancing factors; both are captured by the Gold-DSI.

The relationship between music and the ‘urge to move’ has been of interest since studies showed that music can prime the motor areas of the brain for movement (Phillips-Silver, 2009; Zatorre, Chen & Penhune, 2007). Specifically, studies of *groove* in music have linked the pleasurable experience of listening to music with the urge to move (Janata, Tomic, & Haberman, 2012; Senn et al., 2019; Witek et al., 2014). For future studies, combining both the Gold-DSI and Gold-MSI may thus help to explain individual differences in preferences for, and responses to, groovy music. Similarly, music and dance sophistication may be closely linked in individuals who perform well on rhythm and beat perception tasks (Dalla Bella et al., 2017; Grahn & Brett, 2007; Phillips-Silver et al., 2010; Sowiński & Dalla Bella, 2013).

Whilst both active and passive dance experience were positively associated with the general factor of the Gold-MSI and the subfactors of emotional music sophistication and active engagement with music, no significant relationship was found between passive dance experience and music training. This suggests a close relationship between dance and music

sophistication overall, yet the appreciation of dance does not appear to depend on musical training.

Limitations

It is important to note that although our mixed methods approach ensured content validity, the data reported here for studies two and three are largely based on student samples. Further research will be necessary in order to provide normative data to assess differences in specialist populations, such as professional dancers, and also for evaluation of dance-based interventions. Similarly, the social cultural value of dance varies substantially across cultures and so future studies should endeavour to find suitable translations of these concepts in order to explore cross-cultural similarities and differences.

Somewhat surprisingly, we did not observe any significant correlations between active or passive dance experience and openness to experience, which is interesting because this personality trait has been associated with aesthetic appreciation of movement-based arts (e.g. Luck, Saarikallio, & Toivianen, 2009; McCrae, 2007). We speculate that this may be due to the fact that items to assess passive dance experience were specifically designed to include watching dance on television, YouTube and other streaming platforms, as well as live dance performances. Future studies should explore the relationship between passive dance experience, socio-economic status, presentation format and dance style and personality variables in greater detail.

Conclusions

The Gold-DSI is the first standardised psychometric tool to assess individual differences in dance sophistication as a continuous and multifaceted variable. This will enable the systematic study of dance and dancing which play an increasingly important role in rehabilitation programmes for a range of pathologies, as well as in psychological and

cognitive neuroscience research. Importantly, active and passive dance experience did not show much common variance, in line with the idea that it is possible to be an avid fan of dance without dancing oneself. As such, we offer a definition of dance sophistication as concept encompassing both active and passive dance experience including active engagement with dance, body awareness, the urge to move and the social aspects of dancing.

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Appendix A: The Dance Sophistication Index

The Goldsmiths Dance Sophistication Index (Gold-DSI)
Question Items and Factor Structure

The Gold-DSI comprises two separate inventories. 1) A questionnaire on *Active Dance Experience* with 4 subscales and 1 general scale which comprises all items from the 4 subscales. Thus, this questionnaire has a 4+1 factor structure. 2) A scale measuring *Passive Dance Experience*. This scale has only 1 underlying factor which is not directly related to the 4+1 factor structure of the *Active Dance Experience* inventory. Hence, scores of the two inventories should be used as separate variables of the Dance Sophistication Index and not be averaged.

We suggest randomizing the presentation of the items across participants. We also suggest using the means of the aggregated scores for analyses (so they all have the same 1-7 range).

The response scale for all items (except F4.2 and P.3) has seven response options. Unless indicated otherwise, the response scale is an agreement scale with the following labels and numeric codes:

Completely Agree	7
Strongly Agree	6
Agree	5
Neither Agree Nor Disagree	4
Disagree	3
Strongly Disagree	2
Completely Disagree	1

(+) and (–) indicate positive and negative items. Negative items need to be reverse coded.

F4.2 and P.3 have 5-point response scales where options are numerically coded as 1, 2, 4, 6, 7 to match the range of the 7-point response scales.

Factor 1 – Body awareness (6 items)

F1.1	I find it easy to learn new movements. (+)
F1.2	I feel like I have two left feet. (-)
F1.3	I find it easy to control my movements. (+)
F1.4	I am not very coordinated. (-)
F1.5	I am aware of my body and how I hold myself. (+)
F1.6	I find it easy to learn or imitate other people's movements. (+)

Factor 2 – Social dancing (6 items)

973		
974	F2.1	If someone asks me to dance, I usually say yes. (+)
975		
976	F2.2	I would rather go to a pub than a club so that I don't have to dance. (-)
977		
978	F2.3	I like dancing in front of people. (+)
979		
980	F2.4	I find dancing really embarrassing. (-)
981		
982	F2.5	Dancing with other people is a great night out as far as I'm concerned. (+)
983		
984	F2.6	You normally have to drag me onto the dance floor because I'm not really
985		sure what to do. (-)
986		
987	<u>Factor 3 – Urge to dance (5 items)</u>	
988		
989	F3.1	When I dance, I feel better. (+)
990		
991	F3.2	I do not spend much of my time doing dance related activities. (-)
992		
993	F3.3	When I hear a great track, it just makes me want to dance. (+)
994		
995	F3.4	When I imagine music in my mind, my body wants to move. (+)
996		
997	F3.5	Sometimes I feel like I just have to dance. (+)
998		
999		
1000	<u>Factor 4 – Dance training (3 items)</u>	
1001		
1002	F4.1	I have taken regular dance classes at least once a week for:
1003		0 years; 1 year; 2 years; 3 years; 4-5 years; 6- 9 years; 10 or more years. (+)
1004		
1005	F4.2	I would classify my level of experience with dancing as:
1006		None at all; Beginner; Intermediate; Advanced; Professional
1007		(+: 5 response options, code as 1,2,4,6,7)
1008		
1009	F4.3	I have had formal training in any dance style for:
1010		0 years; 0.5 years; 1 year; 2 years; 3 years; 4-6 years; 7 or more years (+)
1011		
1012	General factor: <i>Active Dance Experience</i> includes all items from the 4 subfactors:	
1013		
1014		
1015	<u>Separate Scale: Passive Dance Experience (6 items)</u>	
1016		
1017	P.1	I like watching people dance. (+)
1018		
1019	P.2	If I had to choose, I'd rather watch a theatre play than a dance performance. (-)
1020		
1021	P.3	How often do you watch dance performances/shows/videos on TV or the
1022		Internet?

1023		Almost Never; Once a year; Every few months; Once a month; multiple times
1024		a month (+; 5 response options, code as 1,2,4,6,7)
1025		
1026	P.4	I'd rather be a good singer than a good dancer. (-)
1027		
1028	P.5	I know a lot about dance and choreography. (+)
1029		
1030	P.6	I am prepared to travel to watch dance or take part in dance classes. (+)
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Supplementary Table A
MSI V1 ≈ DSI V1

Question Number	Gold MSI	Factor	DSI Analogue
1	I spend a lot of my free time doing music-related activities.	Active Engagement	I spend a lot of my free time doing dance-related activities.
2	I sometimes choose music that can trigger shivers down my spine	Emotions	Sometimes I choose to dance and it can trigger shivers down my spine
3	I enjoy writing about music, for example on blogs and forums.	Active Engagement	I enjoy writing about dance, for example on blogs and forums.
4	If somebody starts singing a song I don't know, I can usually join in.	Singing Abilities	If somebody starts doing a dance I don't know, I can usually join in.
5	I am able to judge whether someone is a good singer or not.	Perceptual Abilities.	I am able to judge whether someone is a good dancer or not.
6	I usually know when I am hearing a song for the first time.	Perceptual Abilities.	I usually know when I am seeing a dance for the first time.
7	I can sing or play music from memory.	Singing Abilities	I can dance a piece from memory.
8	I'm intrigued by musical styles I'm not familiar with and want to find out more.	Active Engagement	I'm intrigued by dance styles I'm not familiar with and want to find out more.
9	Pieces of music rarely evoke emotions for me.	Emotions	Pieces of dance rarely evoke emotions for me.
10	I am able to hit the right notes when I sing along with a recording.	Singing Abilities	I am able to follow the movements when someone shows me a new dance routine.
11	I find it difficult to spot mistakes in a performance of a song even if I know the tune.	Perceptual Abilities.	I find it difficult to spot mistakes in a dance performance even if I know the moves.
12	I can compare and discuss differences between two performances or versions of the same piece of music.	Perceptual Abilities.	I can compare and discuss differences between two performances or versions of the same dance.
13	I have trouble recognising a familiar song when played in a different way or by a different performer.	Perceptual Abilities.	I have trouble recognising a familiar dance when performed in a different way or by a different performer.
14	I have never been complimented for my talents as a musical performer.	Musical Training	I have never been complimented for my talents as a dancer.

15	I often read or search the internet for things related to music.	Active Engagement	I often read or search the internet for things related to dance.
16	I often pick certain music to motivate or excite me.	Emotions	I often pick certain dances to motivate or excite me.
17	I am not able to sing in harmony when somebody is singing a familiar tune.	Singing Abilities	I am able to synchronise with other people when dancing.
18	I can tell when people sing or play out of time with the beat.	Perceptual Abilities.	I can tell when people dance out of time with the music.
19	I am able to identify what is special about a given piece of music.	Emotions	I am able to identify what is special about a given dance performance.
20	I am able to talk about the emotions that a piece of music evokes for me.	Emotions	I am able to talk about the emotions that a dance evokes for me.
21	I don't spend much of my disposable income on music.	Active Engagement	I don't spend much of my disposable income on dance.
22	I can tell when people sing or play out of tune.	Perceptual Abilities.	I can tell when people make mistakes when they're dancing.
23	When I sing, I have no idea whether I am in tune or not.	Perceptual Abilities.	When I dance, I have no idea whether I am doing it right or not.
24	Music is a kind of addiction for me - I couldn't live without it.	Active Engagement	Dance is a kind of addiction for me - I couldn't live without it.
25	I don't like singing in public because I'm afraid that I would sing the wrong notes.	Singing Abilities	I don't like dancing in public because I'm afraid that I would get it wrong.
26	When I hear a piece of music I can usually identify its genre.	Perceptual Abilities.	When I dance, I usually know what style it is.
27	I would not consider myself a musician.	Musical Training	I would not consider myself a dancer.
28	I keep track of new music that I come across (e.g. new artists or recordings).	Active Engagement	I keep track of new dance artists and/or performances.
29	After hearing a new song two or three times, I can usually sing it by myself.	Singing Abilities	After watching a dance routine two or three times I can usually perform it by myself.
30	I only need to hear a new tune once and I can sing it back hours later.	Singing Abilities	I only need to see a dance sequence once and I can repeat the movements hours later.
31	Music can evoke my memories of past people and places.	Emotions	Dance can evoke memories of people and places.

32	I engaged in regular, daily practice of a musical instrument (including voice) for 0/1/2/3/4-5/6-9/10 or more years.	Musical Training	I engaged in regular, daily dance practice for 0/1/2/3/4-5/6-9/10 or more years.
33	At the peak of my interest, I practiced 0/0.5/1/1.5/2/3-4/5 or more hours per day on my primary instrument.	Musical Training	At the peak of my interest, I practiced dancing 0/0.5/1/1.5/2/3-4/5 or more hours per day.
34	I have attended 0/1/2/3/4-6/7-10/11 or more live music events as an audience member in the past 12 months.	Active Engagement	I have attended 0/1/2/3/4-6/7-10/11 or more live music events as an audience member that I haven't danced during in the past 12 months. I have attended 0/1/2/3/4-6/7-10/11 or more live music events that I have danced during in the past 12 months.
35	I have had formal training in music theory for 0/0.5/1/2/3/4-6/7 or more years.	Musical Training	I have had formal training in dance for 0/0.5/1/2/3/4-6/7 or more years.
36	I have had 0/0.5/1/2/3-5/6-9/10 or more years of formal training on a musical instrument (including voice) during my lifetime.	Musical Training	I have studied dance?
37	I can play 0/1/2/3/4/5/6 or more musical instruments.	Musical Training	I can dance in 0/1/2/3/4/5/6 styles.
38	I listen to music for 0-15 min/15-30 min/30-60 min/60-90 min/2 hrs/ 4 hrs or more per day.	Active Engagement	I currently dance for 0/.5/1/2/3/4/5 or more hours per week.
39	The instrument I play best (including voice) is...	NA	The dance style I do best is...

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Supplementary Table B: Questions used in DSI v1.2

Final List of Questions for Pilot Study DSI 1.2

Current dance practice

Please select the most appropriate category:			
1	Currently I engage into regular dance practice:		
	1	Everyday	
	2	Two to three times per week	
	3	Once per week	
	4	Once a month	
	5	Never	
2	Do you currently take part in a dance class/classes?		
	Yes	My classes in this style are at the following level... - Dance Style 1,2,3,4,5,6,7 allowed	
		1	Beginner
		2	Intermediate
		3	Advanced
		4	Professional
		I attend this class...	
		1	Everyday
		2	Two to Three times per week
		3	Once per week
		4	Every fortnight
		5	Occasionally
		6	Once
	No		

Social dancing

3	Do you currently go dancing for fun, for example to dance with friends, or on social occasions?
	Yes How often do you currently go dancing for fun/social reasons? (e.g. clubbing, parties, with friends etc)
	1 Once per day
	2 Two to three times per week
	3 Once per week
	4 Once a fortnight
	5 Once a month
	6 Every couple of months
	7 A few times a year
	8 I only dance at weddings, or parties - so whenever they happen
	No

Professional dancing

4	Do you currently dance at a professional level (paid or unpaid)?
	Yes How often do you currently dance at a professional level?
	1 Everyday
	2 Two to three times per week
	3 Once per week
	4 A few times per month
	5 Once or twice per year (e.g. Pantomime, shows etc.)
	No

Dancing for exercise

5	Do you currently go dancing for exercise? For example, Zumba, Dance for Parkinson's, etc...
	Yes How often do you currently go dancing to exercise?
	1 Everyday
	2 Two to three times per week
	3 Once per week

4 Once a fortnight
5 Once a month

No

Dance History

6 Have you ever attended a dance class?

Yes My classes in this style are at the following level... - Dance Style
1,2,3,4,5,6,7 allowed

1	Beginner
2	Intermediate
3	Advanced
4	Professional

I attend this class...

1	Everyday
2	Two to Three times per week
3	Once per week
4	Every fortnight
5	Occasionally
6	Once

I started this when I was _____ years old

I attended classes in this style for years

7 At the peak of my interest, I engaged in regular dance classes at least once a week for:

0 years
1 year
2 years
3 years
4 - 5 years

6 - 9 years

10 or more years

Learning & Training

8 Have you ever watched dancing (for example online or in DVDs) to learn moves or routines (other than in a dance class)?

Yes

How do you learn new dance moves from watching?

1

Online streaming e.g. YouTube

2

Through watching films or documentaries

3

Through television programmes

4

At live dance events

No

9 Have you taken any dance exams?
For example, ISTD, Ballet Grades 1-6, Advanced 1 in Jazz, etc.
If yes - please note them in the box below - Selected Choice

Yes

Please note which here...

No

Qualifications

10 Have you taken any dance teacher training qualifications?
For example, a diploma (DDI, DDE), or VGDE?
If yes - please note them in the box below - Selected Choice

Yes

Please note which
here...

No

11 Have you ever studied dance academically?
For example, studied for a GCSE, further or higher qualification in dance.
If yes - please note in the box below - Yes - Text

Yes

Please note which here...

No

Competition

12	Have you ever taken part in a dance competition? If yes - please note in the box below - Selected Choice
	Yes Please note which here...
	No
13	Have you ever travelled further away than a local town to dance, either at an event, or a show, or to learn a new style or something else about dance?
	Yes
	No

Teaching

14	Have you ever taught dance?
	Yes How have you taught dance?
	1 Occasionally to help out, I'm still learning.
	2 I teach a regular class such as ballet, tap, jazz, Zumba, Dance for Parkinson's etc.
	3 I have my own dance school
	4 I teach dance in educational institutions, such as school, college
	No

Affective properties of dance

How much do you agree on the following statements?						
Completely disagree (1)	Strongly disagree (2)	Disagree (3)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (6)	Completely agree (7)
15		1	Dancing makes me feel free			
16		2	I have never been 'moved' emotionally by watching a person, or group of people, dance.			
17		3	I have felt emotionally moved when dancing by myself, on my own.			
18		4	I don't understand what people mean when they say they can lose themselves in dance			
19		5	I have felt emotionally moved when dancing with others.			

20	6	My dancing is best when I am in the flow
21	7	When I dance I feel better
22	8	I often go to watch dance performances and/or documentaries.
23	9	I do not spend much of my time doing dance related activities.
24	10	Dancing is an important part of my life.
25	11	I try to avoid dance shows on tv/online
26	12	I enjoy reading about dance (reviews etc.)
27	13	My friends and I rarely talk about dance.
28	14	I know a lot about dance and dancing.

Association between music and dance

How much do you agree on the following statements?

Completely disagree (1)	Strongly disagree (2)	Disagree (3)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (6)	Completely agree (7)
29		1	You do not need music to dance.			
30		2	When I hear a great track, it just makes me want to dance.			
31		3	You have to have rhythm to dance.			
32		4	Music influences the way you dance.			
33		5	I can't tell whether my moves fit the beat of the music when I dance.			
34		6	When I imagine music in my mind, my body wants to move.			
35		7	I never feel the urge to tap, or nod my head along with music I hear.			

Inclination to dance

How much do you agree on the following statements?

Completely disagree (1)	Strongly disagree (2)	Disagree (3)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (6)	Completely agree (7)
36		1	I only really dance when I've had a few drinks and feel more relaxed.			
37		2	If someone asks me to dance, I usually say yes.			

38	3	I often imagine myself dancing when I'm listening to music.
39	4	I never dance at home.
40	5	Sometimes I feel like I just have to dance.
41	6	If someone shows me a dance move I can normally copy it after a couple of goes.

Attitudes to dance

How much do you agree on the following statements?			Slider scale - percentage
42	1	Anyone can dance	
43	2	To dance well, a person must be coordinated	
44	3	To dance well, a person must be elegant	
45	4	To dance well, a person must be trained	

Physical Awareness

How much do you agree on the following statements?						
Completely disagree (1)	Strongly disagree (2)	Disagree (3)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (6)	Completely agree (7)
47		2	I feel like I have two left feet.			
48		3	It is hard for me to know my left from my right.			
49		4	I never warm up or cool down when I dance.			
50		5	I find it easy to control my movements.			
51		6	Often, I can tell how a person is feeling by the way they move.			
52		7	I prefer to walk around bare foot.			
53		8	I am not very coordinated.			

Context

How much do you agree on the following statements?						
Completely disagree (1)	Strongly disagree (2)	Disagree (3)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (6)	Completely agree (7)
54		1	I go to clubs to dance.			

55	2	I would rather go to a pub than a club so that I don't have to dance.
56	3	I love dancing in front of people.
57	4	Dancing is a great way to 'pull' (i.e. impress a potential mate).
58	5	I find dancing really embarrassing.
59	6	Dancing with other people is a great night out as far as I am concerned.
60	7	You normally have to drag me onto the dance floor because I'm not really sure what to do.

Accessibility

61	The amount of money I have prohibits how much I can engage with dance and dancing as much as I would like.	
	1	Never
	2	Sometimes
	3	About half of the time
	4	Most of the time
	5	Always
62	The amount of time I have prohibits how much I can engage with dance and dancing as much as I would like.	
	1	Never
	2	Sometimes
	3	About half of the time
	4	Most of the time
	5	Always

Dance Ability

How much do you agree on the following statements?						
Completely disagree (1)	Strongly disagree (2)	Disagree (3)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (6)	Completely agree (7)
63		1	I can dance.			
64		2	I know many styles of dance.			
65		3	I am not a very experienced dancer.			

66	4	My balance is poor.
67	5	I have trained long and hard to be good at dancing.
68	6	I am good at teaching people how to move and dance.
69	7	I am very aware of my body and how I move and hold myself.

Dance Appreciation

How much do you agree on the following statements?						
Completely disagree (1)	Strongly disagree (2)	Disagree (3)	Neither agree nor disagree (4)	Agree (5)	Strongly agree (6)	Completely agree (7)
70		1	I like to watch dancers move effortlessly.			
71		2	When I see people moving out of time with each other, and/or the music, it irritates me.			
72		3	Dance cannot be defined.			
73		4	You can dance without moving.			
74		5	Dancers are highly skilled.			
75		6	Dancers express emotions with their bodies and movements.			
76		7	I do not understand dance themes and narratives.			

END