

Making Space for the Psychology of Creativity in Dance Science

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ABSTRACT

Creativity is commonly recognized as a complex phenomenon; one which entails a range of debates around definition, process and product, domain specificity, cross-discipline generalisability, and appropriate testing measures. The psychology of creativity appears to find a fitting home in dance science, a field concerned with understanding and enhancing dancers' health and performance. Yet dance psychology has been predominated by research which focuses on the mental processes underpinning optimal skill execution and technical performance. This paper outlines an argument for a greater focus on the creative demands of dance within dance science, highlighting some the challenges of, and barriers to, research in the psychology of creativity in dance, before making a number of recommendations to encourage the growth of this important research area.

KEYWORDS

Cognitive Psychology, Collaboration, Creativity, Dance Science, Imagination, Interdisciplinary, Psychology

INTRODUCTION

The study of the psychology of creativity in dance appears to find a fitting home in dance science, a field invested in the application of a broad range of sciences to understand and enhance the art of dance. Dance science is concerned with encouraging safe practice, enhancing well-being, and optimizing performance through “scientific knowledge and evidence-based practice” (National Institute of Dance Medicine and Science, 2015). As such, psychology forms one subset of dance science (International Association of Dance Medicine and Science, 2017). The study of creativity, as a research discipline unto itself, is situated in the field of cognitive psychology; therefore, with its melding of psychological sciences and dance, research on creativity in dance should find a suitable home in the dance science field. In recognition of, and in response to, a concern that creativity as an area has been neglected in dance science, this article presents a status quo review (Noguchi, 2006) of creativity research. We are informed, in equal parts, by peer-reviewed literature from the science and dance fields to make an argument for the necessity of creativity at a topic in dance science. First, we outline our ideas regarding the field’s existing emphasis on technique over creativity enhancement in dance. Next, we discuss the perceived issues and challenges of studying creativity in dance science, with a particular focus on definition, measurement and the non-verbal, embodied and gestalt nature of dance. We then propose some recommendations for future research, drawing on our experience as both dancers and scientists.

BACKGROUND

The current dance ecology sees the relationship between choreographer and dancer as blurred, with the choreographer no longer deemed the sole creative (Farrer, 2014). It is common within contemporary dance that dancers contribute to the development of movement material (Butterworth, 2004; Rowe & Smith, 2011), and in many contemporary practices, the hierarchical norm and dichotomous separation of dancer and choreographer is dissolved. As more dance professionals seek a portfolio career, dance education programmes emphasize the dual aims of developing technique and creativity (Bennett, 2009). Indeed, creativity is considered an important facet of talent in dance (Redding, Nordin-Bates & Walker, 2011). Thus, we argue that creativity is of relevance for all dance artists, and is a pertinent topic for dance science.

Despite its importance and the fact that dance is recognized as a creative activity, there is a lack of research on the psychology of creativity in the dancer’s training and career. The relevance of inter- and intrapersonal, environmental, and situational psychology in achieving optimal creativity in dance is unknown. Unsurprisingly then, dance science is yet to recognize the dancer as a creative artist, and further still, to understand the relevance of creativity within the health and well-being of dancers. It is clear that there is a place for creativity research within dance science. Potential areas of investigation include:

- The identification of creative talent
- Understanding environments and teaching methods that nurture creativity
- The relationship between technical ability and creativity
- Dancer's understanding of their creativity
- The impact of particular training forms such as somatics on creative ability
- The possibility of training creative skills while a dancer is injured.

If dance is inherently creative, there are countless possibilities for undertaking creativity research within dance, and a logical starting place for a dance scientist is to look to the psychology of creativity, where considerable expertise and publications exist. Next, informed by peer-reviewed literature from both science and dance, the authors consider the perceived causes of the neglect of creativity within the field historically, and identify current barriers to the future development of this area of dance science.

BARRIERS TO CREATIVITY RESEARCH

Issues, Controversies, Problems

What is Dance Science?

We argue that creativity is neglected and that this neglect stems from the medicalized focus that predominates dance science (often referred to as “dance medicine and science;” note, we remove the emphasis on medicine). Historically, dance and dance science have viewed the roles of choreographer and dancer as separate, with a clear tendency to consider optimal performance from an athletically focussed perspective, emphasizing enhancing technical skill and accomplishment – to the neglect of the dancer as a creative artist. We note that this is due, partially, to dance science's genealogy, which has generally followed in the path of its parent disciplines of sports science and sports psychology. Sport often seeks to assess performance in ways that reduce to objective values or numbers, such as finishing position, rank in a race or league, distance traveled, or time taken to complete an action. So, dance science's predominant emphasis has become, and now remains on, scientifically quantifiable, easily measurable aspects of a dancer. Subsequently, this emphasis on objective measures reflects a possible bias towards a particular ideal in dance technique, namely a “classical” western performative preference characterized by upright alignment heavily influenced by ballet technique (Volinsky, 1983).

Gardner (1994, p. 34) states that, “still today, in mainstream culture the body appears as the product of a number of discourses and institutions that are essentially positivistic and objectifying: they create the biological body, the medicalised body, the sporting body, the marketable body of advertising, to name but a few.” We note that these “bodies” appear to be the ones who dance science has, so far, been predominantly interested in engaging. This is to the neglect of the everyday dance artist; to demonstrate objective “improvement” carries a value judgment on what an improved, or “better” dancer looks like physically, which reflects a narrowed view of who can be a “good”

or professional dancer. Further still, this ideal (which emphasises dancer-as-athlete and a slant toward physical prowess and spectacles of flexibility and strength) is not always in congruence with the ideal of other dance genres. In particular, these implicit values are arguably counter to the widening of the field supported in post-modern, new dance, and somatic practice approaches. While noting the importance of the need for performance enhancement of elite, athletic bodies, focussing solely on this might perpetuate an external and medicalized perspective to dance and the body. This focus is counter to the aims of some dance practices, such as somatic practices, which seek to support individual autonomy and first-person phenomenological knowledge and perspectives (Weber, in press). We argue then for the expansion of dance science to include dance forms less traditionally explored in this area, and recognize that creativity is one facet where such dance practices are arguably those where the creative process is heavily emphasized.

Further, despite general agreement that optimal performance in dance is assessed through objective factors such as turnout, flexibility, strength, stamina, muscular power, or alignment, dancing is also evaluated through less objective criteria (Warburton, 2002). These less objective criteria (such as stage presence, emotional responses, the fluidity of movement, inventiveness, and execution of conceptual work, creativeness of movement invention, individuality, authenticity, political or community impact, or risk-taking), whereby alternative values beyond the physical are primary, pose a challenge for a dance scientist. However, the inclusion of such criteria has been of increasing interest for dance researchers, cognitive psychologists, and neuroscientists, who have, in particular, begun to (successfully) study and measure the ways that dance impacts the spectator (e.g. Calvo-Merino, et al., 2005; Reynolds & Reason, 2012; Stevens, 2005a). We argue then, that dance is not only a technical pursuit but also a creative endeavor – yet this has been seemingly forgotten within current dance science approaches. We do not mean to say that dance scientists cannot measure or quantify creativity, but that dance practice must inform any such measurement and recognize both the objective and subjective nature of dance. Below we discuss our ideas for developing research and tackling this challenge.

What is Creativity?

Perhaps the most commonly cited challenge in the psychology of creativity is that, contrary to norms within psychology research, creativity has typically resisted definition or clear operationalization (Runco, 2014). The layman's view of creativity is often equated to "thinking outside of the box" (Kaufman & Beghetto, 2013); as one researcher vividly comments, "what creativity is, and what it is not, hangs as the mythical albatross around the neck of scientific research on creativity" (Prentky, 2001, p. 97). Indeed, Farrer (2014) notes that were used as an outcome, creativity is a complex and dynamic term which remains amorphous.

Failing to provide a definition, however difficult it may be, impedes any effort to meaningfully research creativity, mainly when researching a previously underexplored area of creativity such as dance. Within cognitive psychology, where the discipline of

creativity research lies, an operational definition has consistently been used for more than six decades (Guilford, 1950; Stein, 1953) and remains widely recognized today (e.g., Kaufman, 2016; Sawyer, 2012; Stevens, Malloch & McKechnie, 2001). This definition comprises two main criteria, namely that creativity involves the production of something both novel and useful. This definition highlights further complication for dance science as it necessarily designates creativity as productive, where dance is emphasized as process based.

Process Vs. Product

This emphasis on the product is inherently related to the popularity of product dominant measures in creativity literature and raises criticism of the neglect of the process and a lack of interest in the relationship between the two. The creative product is arguably more tangible and therefore more accessible to measure than the creative process or person. Much standardized creativity testing predominantly asserts that creativity is measurable through the quantifiable assessment of divergent thinking. In divergent thinking, individuals seek atypical responses that are useful, numerous, and varied instead of the convergent (or ‘correct’) answer, which is more common in psychometric testing (Kaufman & Sternberg, 2006). Few studies have used these common measures in dance, despite significant interest in the use of such measures in other creative domains (e.g., Fink & Woschnjak, 2011). Here we outline some of the challenges clouding the use of these measures in dance.

In dance, there is no tangible product as a result of the creative process; dance performance is ephemeral; always in flux, polysemic, and non-linguistic, and is therefore difficult to capture or measure (Batson & Wilson, 2014; Weber, 2016). In dance choreography, though products are created in the form of dance pieces, in creative practice the process is emphasized. Following the postmodern era in dance, there is a heightened emphasis on process over product and newer forms of dance blur the boundaries between process and product, and, much of what is designated “creative” in contemporary dance forms is exploratory and process-based. Further still, the boundaries are often blurred, with dance “often presenting process-as-product, in which the multimodal meaning-making processes for dancers in both ‘stages’ entwine as one-and-the-same” (Weber, 2016, p. 108). Therefore, we argue the need to develop dance specific measures of the creative process, and to find valid means of assessing this creativity.

Studies of the process are concerned with how an individual is creative over time, resulting in a creative product. Process-based approaches have been discussed for many decades; one early conceptualization of creativity was “the defeat of habit by originality” (Koestler, 1964, p. 96). Subsequently, a common theme is that for the term creative to be attributed, an individual must generate novel ideas *and* evaluate them to choose those of value. Finke (1996) argues that creative processes in the arts are a combination of both structured thinking and free processing, with creativity occurring in moments of imaginative exploration. Likewise, Stevens et al. (2001) make a case for creativity in dance choreography as resting as much in the connection of parts of

a dance as in the original movement generation for those sections, further pointing to the importance of the evaluative and processual nature of creativity in dance over the result. Meanwhile, both qualitative research fields and higher education mission statements emphasize the relevance of process in pedagogical approaches in dance (Watson, Nordin-Bates & Chappell, 2012). Considering this emphasis on process in dance choreography and creativity research, we argue that future dance science research would be wise to develop means of assessing the creative process in dance, drawing on methodologies such as experience sampling and think aloud approaches.

Like the challenges of defining creativity, a lack of consensual definition of choreography may have impeded previous research into creativity in dance choreography. Creativity is crucial to the development of choreographic and Lavender (2009) argues that much ‘set’ choreography stems from creative improvisation. Though other research on creativity in dance has examined the improvisational generation for tasking-directed choreography (see: May et al., 2011), we reject the historically ‘accepted dichotomy between improvisation and choreography’ as a binary (Kraut, 2010, p. 39). Many definitions highlight a creative process which often develops through the generation of movement to create phrases that are crafted together into a finished work (Smith-Autard, 2002); whereas choreography in improvisational, experimental, or newer forms, as noted above, blends the concept of process and product into one. Thus, the emphasis in creativity definitions and testing of the product may not fairly or reliably assess creativity in all forms of choreography, neither will the sole focus on improvisation. We argue the need for longitudinal mapping of creative processes, and for means of researching this series of events.

Issues of Complexity

Finally, the complexity of dance and the lack of suitably complex creativity theories has been another barrier to research. Dance scholar Brooks (2014) argues that the reality of the creative process in dance is complicated, while psychologists Basadur, Runco and Vega (2000) highlight that the creative process models described by Campbell (1960) and Wallas (1926) are overly simplistic in their linear nature. Basadur et al. (2000) emphasize that creativity should be recognized as a continuous, changing, self-repeating process; the creative process is made of repetitive steps between generation and selection of ideas. Thus, one strategy for understanding creative processes in dance might be to use longitudinal tracking over time, allowing the mapping of processes to understand the iterations over time.

This complexity reflects a further complication to the development of the area, namely that dance is a gestalt—a meaningful whole made up of many parts and many perspectives which exceeds the mere sum of those parts (Batson & Wilson, 2014; Stevens et al., 2001). Fraleigh (1987) illustrates that the dancer is both many selves and more-than-self, and the body is inseparable from the dance. Dance exists beyond the individual experience, inhabiting places within and between a variety of perspectives, at the convergence of choreographer, dancer as choreographer’s object/instrument and dancer as subject/experiencer, and audience. Even if one is to take the

perspective solely from the experience of a dancer, dance is a complex whole made of many parts, situated in a rich context: “from the phenomenological perspective, the dancing body is not a material thing separate from dance, but a holistic gestalt manifesting as dance. The body-in-dance is a process of being in the world” (Batson & Wilson, 2014, p. 58).

Many researchers argue that creative processes in dance are embodied, achieved through physical exploration (Grove, Stevens & McKechnie, 2005; Kirsh, 2011; Lucznik, 2015; Stevens et al., 2001; Stevens 2005b). Imagination in dance is often used intentionally, as a trigger for creativity. The choreographic material may begin with a vague idea, and is often shaped by external influences such as music, poetry, or art—indeed, the source material for dance is often multimodal (Stevens et al., 2001; Weber, 2016). These processes occur in a way that uses space, time, motion, and physical expression, with less emphasis on the verbal and greater focus on nonverbal communication (Batson & Wilson, 2014). This way of thinking uses both declarative, or verbal, and procedural nonverbal processes (Weber, 2016).

Verbal Vs. Nonverbal

As such, Stevens et al. (2001) critique the implication in most creativity and cognition research that mental processes rely on language and visual representation, because dance ideas are shared ‘in both words and movement’ (p. 55) and choreographic cognition is ‘hidden, rapid, multimodal, and non-verbal’ (Stevens, 2005a, p. 155). This understanding of movement as a creative and cognitive process in its own right (separate from language) is supported by not only these critiques, but also across dance research literature (see: Batson & Wilson, 2014; delaHunta & Barnard, 2005). Current creativity testing exists primarily in pencil-and-paper form relying on verbal processes, or, sometimes ‘fixed’ visual imagery, neither of which reflect the embodied meaning-making or polysemic, multimodal nature of creativity in dance, and future dance-domain specific research would be wise to address this gap.

Social Elements of Dance Creation

The multiple methods of creating dance, in particular, the frequency of shared creation in choreography mentioned previously further complicate the non-linearity and complexities of the creative process in dance (Brooks, 2014; Lucznik, 2015). Commonly referred to as collaboration throughout contemporary dance education (Butterworth, 2004) the popularity of shared creation in dance making and movement is reflected in a research shift towards understanding the socio-cultural nature of creativity (Snowber, 2012). This is one area in which models from other arts may already be beginning to be illustrated in current research on dance creativity. For example, Sawyer (1999), in examining creativity in the improvisational theatre context, claims creativity lies in emergent phenomena which arise from the collective activity of social groups. He goes on to argue that emergent processes, which he believes are not product-producing, are more a ‘series of steps,’ pointing to the processual nature of creativity in performing arts (p. 466).

Sawyer's (2014) proposal that creativity may be social has parallels in other theories of social creativity (e.g., Amabile, 1996; Csikszentmihalyi, 1999). Some research in dance has already investigated the idea of distributed cognition in creativity--or the sense that the social nature of creation impacts creative output. In this, researchers point to not only the individual contributions to a creative product but also the context inherent in dance creation. As Stevens et al. (2001, p. 2) state, research on creativity in choreography must "address the complexity of dynamics and interactions among dancers and choreographer in this community of creative minds." Their dynamical system, composed of the choreographer, performer, and observer each as actors, highlights the social nature of the creative choreographic process. Likewise, Lucznik (2015) claims dance improvisation is a co-agentive process which is distributed across group interactions. Another study on distributed creativity in dance, examined improvisational tasking either alone, with a familiar partner, or in an unfamiliar pairing, and showed qualitative differences in movement generation in social creation (Stevens & Leach, 2015). Furthermore, a study on the creative process in dance rehearsals claimed that creative choices in movement production and choreographic instructions are both social phenomena (Muntanyola Saura, 2011). Moreover, Kirsh (2011), reported that the choreographic generation was affected by a distributed system, namely that social interaction encouraged alterations in imagery underpinning choreography and greater variance in generated movement ideas. These ideas are contrary to the traditional notion of the creative individual as a lone genius (Barron, 1988). Of interest in the collaborative dance making process is the recent finding that some dancers still attribute the choreographer as the sole creative individual, appearing to overlook personal contributions (Farrer, 2014). It is of future importance to observe the input of each dancer and assess their perception of their participation when considering choreographic creativity.

Barriers: In Sum

This article has discussed several themes arising from a review of existing literature on creativity and dance and has identified several barriers to extensive research on choreographic creativity. Namely, the complexity of the form, conflicting values in scientific research and artistic practice, a perceived lack of consensual definitions, dance's lack of tangible products to measure, the tension between verbal research methods and a mostly non-verbal art form, and the social nature of many choreographic practices. Because of this extreme complexity, much of the current dance scholarship spans knowledge bases situated in a multiplicity of academic disciplines. Unlike some other art forms, dance encompasses many aspects both internal (i.e., kinaesthesia, affect, somatic experience, etc.) and external (i.e., rhythm, percussion, visual aesthetics, temporality, spatial dynamics, vocalization and the spoken word, and more). Multi-sensory, multimodal exploration is how meaning is created and new movement generated in choreography (deLahunta, Barnard & McGregor, 2009). Dance is a dynamic and complex system, and research in the area contains many complex tangible and non-tangible phenomena (Stevens, Malloch & McKechnie, 2001). It is

a continually shifting movement fabric in which many elements intrinsic to dancer and context converge to become the dance' (Batson & Wilson, 2014, p. 57). Thus, product-based approaches from cognitive psychology which emphasize verbal or visual creativity may not wholly recognize the multimodality of dance creativity. We move next to some potential approaches from the literature.

Future Potentials

Models from Other Artistic Disciplines

Although there are many proposed models of the creative process within psychology, as well as recent attempts to describe the creative process of choreography, few efforts have been made to combine the two fields of research, and it seems that dance scholars have largely not considered work by psychologists. There is little research that provides a clear understanding of creative processes which lead to a product deemed to be creative or highly desirable, rather than a creative process leading to a product that is considered to be non-creative or routine (Howard, Culley & Dekonick, 2008). In our work, we are focused on dance, and an in-depth analysis of other performing arts are beyond the scope of our article. However, we argue there are parallels between artistic modalities and dance worth exploring.

Despite the lack of dance-focused study, some existing research has supported the mapping of artistic creativity to proposed psychological theories of creativity. For example, Botella et al. (2013) interviewed professional visual artists and included questions which required the artist to reflect upon the creative process and articulate their approach to creating. Using discursive analyses, the researchers found that the artists reported their work to align with traditionally cited creative processes. The artistic process was found to be cyclical and iterative, resulting in the artistic product. It is worth questioning whether similar processes are operating across disciplines, and occurring similarly in dance. Such methods could be used in conjunction with quantitative measures to observe the choreographic process over time to address the current gap in creativity research on dance.

Within the (non-dance) artistic literature, two main approaches have been used to study the stages of the art-making process (Locher, 2010). The first of these involves direct observations of artists at work. The benefits of this are abundant in allowing the researcher to obtain clarity and detail surrounding the chosen methods and materials and to see the development and realization of ideas and concepts in real time. Research has also tended to use qualitative interviews to explore processes, for example in how artists produce works for upcoming exhibitions (Mace & Ward, 2002). These approaches have been conventional in dance literature; however, they are purely artistic, and few researchers have attempted to understand the relationship between the creative process and product within a psychology of creativity framework, instead aiming to create their own models (as in Brooks, 2014). Although this model comes from data collected from a collaborative process, it offers potential methods to develop the understanding of the process and product/performance relationship within psychological creativity frameworks. However, this qualitative approach may

also have limitations in the applicability to dance science, where quantitative research with large sample sizes allows for generalization.

Development of Dance Specific Measures

There are “different cognitive constructs tapped by [different] measures of ‘creativity’ across studies” (Abraham et al. 2012a, as cited in Jung et al. 2013, p.8), implying the need for domain-specific measurements. Echoing this domain-specificity, Stevens and McKechnie (2005, p. 245) claim, ‘creativity in contemporary dance is movement based, and material evolves from experimentation and exploration in the medium itself’—so a truly accurate measurement ought to test creativity in the domain—i.e., in the medium of movement. But such a measurement has yet to be developed—as mentioned previously, verbal and static tests are at odds with the nonverbal, dynamic nature of dance. So, how do researchers measure divergent thinking when meaning exists on an implicational level? Are there ways of tapping into nonverbal and abstract modes, like movement, to measure divergent thinking? Perhaps these could be modeled on the non-verbal figurative drawings in tests like the gold-standard Torrance tests but modified to include the range of aspects covered by the complementary verbal listings. Perhaps new motion-capture technologies may offer a way of recording novelty in movement, rather than through verbal or figural reporting. Perhaps these could be combined with phenomenological methods addressing creativity experts’ often implicit theories of creativity to ascertain how experts within a domain identify novelty or usefulness in dance. Exploring this proposal through analyzing multimodal datasets (written, spoken, observed visually and kinesthetically) through the lens of interdisciplinary theories could offer a more holistic perspective on the many meaning-types; propositional and implicational, in dance making. It is a challenge that must be addressed creatively, with developments that make use of the strengths of mixed methodologies and consider the full gamut of the multimodal experience that is dance choreography by researchers in the future (Weber, 2016).

As Batson and Wilson claim, “dancemaking requires unique cognitive processes that demand deeper description and analysis [...] research in cognition and dancemaking remains isolated and in need of greater global visibility and cohesion” (Batson & Wilson, 2014, pp. 22-23). They call for researchers who have dual competency in psychology and dance to build a body of research which preserves the integrity of each field’s ideology, methodology, and language. This will build non-dualistic dialogues, and understandings between the scientific and artistic/embodied while still “preserving [dance’s] unique integrity as a non-reductionist reality of the unity of body, brain, and thinking” (Sheets-Johnstone, 2009 as cited in Batson & Wilson, 2014, p.23). Thus, the authors recommend the development of interdisciplinary research teams which facilitate a multifaceted approach to creativity research in dance science.

CONCLUSION

Research into dance creativity calls for a multimodal, interdisciplinary, mixed methodology because of its multifaceted nature. Dance features dynamical complexity; it is not merely one thing, it is not easily measurable, and thus it resists reductionist analyses (Batson & Wilson, 2014). We have discussed the difficulties in defining creativity, issues around the multimodal and social nature of choreographic practice, questions of implicit value in dance science approaches, as well as the range of what constitutes choreography, a query which itself illustrates the range of valuation of process and/or product as primary in both dance and psychological discourses. We have discussed limitations of current creativity theories and testing models, with an eye to how future dance creativity research might improve some of these issues. Such an approach, with a consideration of all of the complexities and complications, is the appropriate way to approach an understanding of creativity within the domain of dance. Despite such barriers, we recognize the many strengths of capturing dancers' creativity within the scientific framework; methods ought to go beyond phenomenology and consider more empirical cognitive psychological methods.

Addressing the embodied perspective is required if dance science is aligned with dance's prioritization of embodied knowledge, reflected in the field's recent formulations such as "choreographic thinking," "thinking with the body" currently permeating dance studies (see, for example, deLahunta et al., 2009; Kirsh, 2010). Though previous research has attempted to investigate the intersection of dance science/psychology and embodied or experiential knowledge, such an approach is not without its dilemmas: as Batson, Quin & Wilson claim, "Despite successful attempts at convergence between dance science and somatics, problems remain in integrating the pragmatic field of somatics with the theoretical paradigms of dance science. For example, somatic experiences are not often explicitly grounded in scientific constructs, and dance science experiments often exclude somatic principles and experiences" (2012, p.185). It is essential, then, to mitigate these concerns through a purposefully integrated research methodology, led by researchers with dual competencies.

In sum, while we have offered some options and possibilities for the development of the area, we firmly believe that to develop meaningfully, researchers in the field should approach studying creativity in dance *creatively*. There is not one way forward, but many, requiring not only divergent thinking but divergent approaches to understand the complexity of creativity in dance.

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