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## **Kinesthesia and Cultural Affordances: Learning Physical and General Kinetic Concepts in a Tertiary-Level Contemporary Dance Classroom**

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### **Abstract**

In this study, we frame learning in the tertiary-level contemporary dance class as a process of developing culturally situated shared patterns of skilled action and attention through dynamic engagement with kinetic experience. Extending existing scholarship on dance learning, we adopt the framework of cultural affordances to understand the developmental relationship between physical and general categories of attention during the learning process. Based on qualitative analysis of student and teacher interviews, we contend that the dance classes were laboratories in which

cross-domain mapping (physical and general) was leveraged to develop students' kinetic and attentional skills. Understood in this way, the physical concepts and the general concepts worked in a helical fashion, cycling through dynamic engagement with kinetic experience and the development of attentional awareness, not as pure repetition, but as a progression toward more complex, skilled, and nuanced ways of moving.

### Introduction

In this article, we frame learning in tertiary-level contemporary dance<sup>1</sup> classes as a process of developing culturally situated shared patterns of skilled action and attention through dynamic engagement with bodily movement or kinetic experience. As educators of contemporary dance in the tertiary setting, we facilitate students' dynamic engagement with kinetic experience by teaching choreographed movement sequences, called “phrases,” as well as providing prompts for improvisational exploration. We might, for instance, introduce a stepping pattern that includes two steps forward and one step back. In this simple example, the stepping pattern, or phrase, serves as an opportunity to engage in skilled action, but the action is also a vehicle through which a pattern of attention is experienced. There is a *what* alongside the *how*. Depending on the pedagogy, the phrase might be taught through repetition without verbal reference, making the focus of attention implicit, or it might be taught by explicitly naming and describing what the students should be attending to (e.g., “As you take these steps, I invite you to pay attention to what it feels like to advance and then retreat.”). In addition, even when there is a shared experience of the movement, there will always be individual variation in what the students are attending to, leading to a diverse collection of both shared and personal patterns of attention. An educational goal of learning dance in this setting is that, when the specific phrase is forgotten, the patterns of skilled action and attention will be enduring, transferable, and integrated into possibilities for future complex thought in action. In this study, we seek to make these often-implicit patterns of action and attention explicit, guided by two research questions: In a tertiary contemporary dance class, what are students paying attention to? And how do these patterns of attention emerge from learning and practicing movement?

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<sup>1</sup> Although these classes are categorized by the university as “modern dance,” they follow the aesthetics of Euro-American contemporary dance, a term broadly used to encompass a range of dance performance and practices that may include (but are not limited to): release technique, contact improvisation, and modern dance techniques, such as Horton or Cunningham. (See Kwan 2017 for a more complex understanding of the form and the challenge of defining it). To accurately reflect the assemblage of approaches in the classes of study, we refer to the dance classes/practices in this article as contemporary dance.

Recognizing that what we hope students learn is beyond the replication of steps, we integrate multiple modes of instruction including: demonstration-repetition, visual imagery, verbal explanation, tactile/hands-on cueing (with explicit student consent), etc. These teaching modalities include multi-sensory experiences through which students are introduced to, and subsequently engage with, the phrase. For instance, after the instructor teaches a phrase, the dancers are offered the opportunity to practice, recalling and rehearsing the instruction through multimodal (visual, aural, tactile, verbal) re-presentation (Henley, 2015; Bläsing, et al., 2018; Seago, 2020; Henley & Conrad, 2023).

As dancers can recall images, sounds, touch, and words, they can also engage with and recall kinetic experience through kinesthesia, or “the experience of self-movement” (Sheets-Johnstone, 2010, p. 173), to inform successful execution of the phrase. Ehrenberg (2015, 2021) refers to this as a “kinaesthetic mode of attention,” which she defines as an “intentionally-directed consciousness, while dancing, which includes a number of elements, such as listening to the body’s movements, problem solving with the body, a curiosity about bodily feelings, and various types of embodied translation processes” (2021, p. 110). She argues that, for contemporary dance, attending to kinesthesia is an important part of developing expertise and becoming enculturated to the professional community of practice. For Ehrenberg, the kinaesthetic mode of attention is one of Csordas’ (2002) somatic modes of attention, which are “culturally elaborated ways of attending to and with one’s body in surroundings that include the embodied presence of others” (p. 244). During class, as dancers are practicing and performing the stepping patterns described above, for instance, somatic modes of attention could include, kinesthesia, intersubjectivity (Conrad, 2019), rhythmic virtuosity (Banks, 2021), or other categories.

### ***Situated Moving and Attending***

Somatic modes of attention, introduced in an educational setting, are culturally constituted (Csordas, 2002), reflecting the context of the institution, the instructor, and the style of dance. For instance, the stepping pattern in the phrase described above could be found in both the social form of Argentine Tango and the concert form of ballet. A teacher of Argentine Tango might bring attention to coordinating with one’s partner, whereas a ballet teacher might bring attention to the development of a narrative. (The reverse could also be true.) How one moves and what one attends to while moving are predicated on the “patterns, purposes, and underlying principles” (Ehrenberg, 2021, p. 144) of the particular cultural practice. Calling on Bourdieu’s theory of *habitus*, Ehrenberg (2021) describes the kinesthetic mode of attention as a disposition or form of know-how that distinguishes contemporary dance as a style. Through the learning process, dancers take on this form of know-how in order to work in the field of contemporary dance. Contemporary dancers eventually incorporate the modes of attentional directedness as their own, thereby maintaining and reproducing a particular way of knowing.

Other researchers have also described dancers' attentional directedness. For Sheets-Johnstone (2011), the different modes of attending comprise a "kinetic-bodily logos," rooted in a "spatio-temporal-energetic semantics" (p. 442). In a study with expert contemporary dancers, Legrand and Ravn (2008) described how "they 'listen' to the 'kinesthetic logic' of the musculoskeletal dimension of the body" (p. 403). This logic is related to the flow of movement in relation to gravity, and the matching of internal proprioceptive awareness to external visual form (Legrand & Ravn 2008; Ravn 2010). Ravn (2017) further connected weight and flow to spatial attention as a dancer in her study described dancing as a process of "building channels" in and through space. Potter (2008) similarly described contemporary dancers attending to weightedness and clarified *flow* as attention to patterns of tension and release. Based on her personal experience and her interviews with expert contemporary dancers, Ehrenberg bolstered these findings on attention as connected to skilled dancers' understanding of the physical characteristics of gravity, space, and flow. Ehrenberg goes on to argue that, for the dancers in her study, participation in contemporary dance involved shared attention to more than just the physical sensations of kinesthesia. Participating in the culture of contemporary dance also involved the acquisition and reproduction of attentional practices related to more general<sup>2</sup> categories of freedom, versatility, and mutual feeling, which extend beyond physical sensation to reflect cultural values.

In our research, we adopt Ehrenberg's kinaesthetic mode of attention as part of the broader, somatic modes of attention that are part of the community of practice of contemporary dance. Ehrenberg's study relied on the accounts of expert contemporary dancers for whom these modes of attention are already developed. In our study, we turn our attention to students of contemporary dance and their descriptions of the process of acquiring these patterns of practice and attention. In line with this developmental approach, Seago (2020) describes undergraduates students' disorientation as she introduces activities in the contemporary dance class that focus on attentional practices. She proposes that shifting modes of attention can facilitate individual agency and decision making. Her research focuses, primarily, on the individual's process of attending, rather than how practices of shared attention develop cultural values. To make this connection, we turn to the work of Ramstead et al. (2016) who propose a framework for the study of the mechanisms that mediate the acquisition of cultural knowledge, values, and practices. According to these authors, cultural knowledge is acquired through "regimes of shared attention" The term, "regime," is not meant to indicate a "method or system of rule, governance, or control," (OED, n.d.) but rather, a routine pattern of action.

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<sup>2</sup> The term *general* was chosen in contrast to *abstract*, following Lave and Wenger's (1991) argument that abstraction implies decontextualization whereas generality implies transferability between situated circumstances.

In this sense, a regime of shared attention refers to the shared expectations that develop and are cultivated by specific ways of doing joint activities (Ramstead et al., 2016).

Participation in the cultural life of a community draws an agent's attention to opportunities for interaction, or affordances, leading to a field of relevant affordances (Ramstead et al., 2016, p. 3). The field of relevant affordances is comprised of salient features in a given context that an agent can dynamically engage with and adapt to. As agents are immersed in cultural practices during development, their response to culturally relevant affordances is directed, patterned, and repeated, becoming stable over time. For instance, applying Ehrenberg's findings to this framework, attention to kinesthesia is part of the patterned cultural practice and therefore a relevant affordance in contemporary dance. Through the kinesthetic mode of attention, weight, gravity, and flow become relevant phenomena with which the dancer can interact. As these shared patterns of acting and attending are replicated across the community, they become stable cultural affordances and comprise, in part, the regime of shared attention.

Vaughan et al. (2021) draw on the idea of cultural affordances to describe learning or skill development in football (i.e., soccer). They claim that skill development is reliant on the perception of shared affordances; skilled performance involves responsiveness to multiple affordances simultaneously. During practice, players' attention is directed to opportunities for action (affordances), and certain aspects of gameplay become "weighted," meaning they stand out as more relevant to the players. The authors argue that it is the role of coaches to shape a player's orientation toward the environmental properties of the game and the relevant affordances, in particular, the opportunity to play through, around, or over an oncoming defender to score a goal. Translating their claim to our context, the role of the dance teacher is similar to that of the coach; facilitating dancers' growth as skilled performers by weighting attention to different aspects of movement phrases so that students develop the regimes of shared attention that are part of the community of contemporary dance practice.

Taken together, the literature suggests that cultural values emerge from regimes of shared attention during skill development. This occurs as particular affordances or opportunities for action and attention are weighted during the learning process. Vaughan et al. (2021) described relevant affordances in football as the opportunity to play through, around, or over. Ehrenberg (2015, 2021) and others (Potter, 2008; Legrand & Ravn, 2008; Ravn, 2010; 2017) argue that the relevant affordances in contemporary dance, experienced through the kinesthetic mode of attention, are the opportunities to attend to gravity, space, flow, and other physical categories. Ehrenberg also argues that expert contemporary dancers attend to more general categories of

freedom, versatility, and mutual feeling. In this study, we adopt the framework of cultural affordances to understand the developmental relationship between the physical and general categories of attention during the learning process.

### **Methodology: Design**

This qualitative research utilizes an ethnographic methodology rooted in a phenomenological foundation, which prioritizes subjective accounts of the participants' lived experiences (Gallagher & Zahavi, 2012). The research relies on multiple methodologies (interviews, existing discourse, researcher expertise) to develop literature on the process through which dancers learn kinetic material (dance movement and concepts) in the tertiary studio setting.

### ***Positionality***

We both have backgrounds as professional dancers, dancemakers, and dance educators in higher education in the United States. We have both investigated aspects of sensemaking practices in dance classrooms. In ongoing research, we continue to explore novel ways for understanding the learning process in/through dance practices. Leading with an interest in fostering further knowledge about how thinking is embedded in movement practices, this research reflects our expertise from a scholarly as well as an embodied/experiential perspective.

### ***Setting and Participants***

The study was conducted in a dance department, situated in a mid-size public university in the American Midwest, where Henley was an Associate Professor. The university offers liberal arts based undergraduate (BA) and graduate (MA/MFA/PhD) degrees in Dance that aim to “prepare dancers for fulfilling careers as artists, scholars, and leaders in a variety of settings” (Texas Woman’s University, 2023). After receiving institutional approval for research with human subjects, participants were recruited from the contemporary dance classes, levels two through four of a four-level sequence, being taught by full-time faculty members. Contemporary dance classes were chosen because they are foregrounded in the department’s dance practices curriculum. Participants’ enrollment in levels 2-4 and not level 1, indicate that they were familiar with the content and approach to contemporary dance at the institution. Therefore, in the frame of this research the participants are deepening and adapting their knowledge.

Henley was teaching a contemporary dance class during the semester the research was conducted and his class was included in the recruitment. Students were informed that their participation in the research project had no bearing on the classes themselves. Eight students volunteered to participate in semi-structured interviews on the same day they had taken a

contemporary dance class. Two faculty members, who also taught classes in which the student participants were enrolled, were also interviewed. Teachers were included in the interview process because, according to Ramstead et al.'s (2016) framework, they are also participants in the production and reproduction of regimes of attention and therefore offered valuable perspectives. Further, the faculty interviews reflected what they prioritized in the classes and how it was approached. This provided a basis for understanding if the students were making correlations between the intended plan from the teachers' perspectives or were drawing on other personal or intersubjective experiences that directed their explorations and learning outcomes.

### ***Data Collection***

Volunteers participated in one interview that lasted roughly sixty minutes. The interviews followed a general pathway intended to develop a discussion about the learning process in the classroom. The questions emerged in a fluid conversational, semi-structured interview format (Rubin & Rubin, 2012, p. 31). The interviews, conducted by Henley, followed the two-tier approach set forth by Høffding and Martiny (2016). The intent was to gather first-hand experiential data about the participants' lived experience and then to analyze this data, considering how it "might be generalized to say something about experiential structures and hence subjectivity as such" (Høffding & Martiny 2016, p. 543). The interviews began by asking the interviewee to recount what they remembered from the class that day. If, for instance, the participant described something complex that she struggled with, she might be asked to elaborate on how she approached tackling the challenge. This was intended to allow the participants to think about and reflect on the process of learning by considering, for example, the different possibilities for how they were taking in and processing information—visual, auditory, kinetic, tactile. The interviewer closely listened and followed up with open-ended questions to draw upon ideas about what learning the specific movements invited; in other words, what the movement afforded.

In the interviews, Henley, as both known to the participants and part of their world, could position himself to share a conversational interchange, allowing "inroads into the common experiential ground" (Varela & Shear, 1999, p. 10). This allowed a "reciprocity that is much more constitutive of the knowledge generation process" (Høffding & Martiny, 2016, p. 542). Henley modified his questions according to his own knowledge of the interviewee and the process they described. In this way "both subjects contribute to the knowledge generation process through complex dynamics, which are driven by reciprocal interaction" (Høffding & Martiny, 2016, p. 542). As an instructor and colleague in the department, Henley had prior common experience with all the interviewees, thus he could create an interaction "steeped in the domain of experiences under examination" (Varela & Shear, 1999, p. 10), which we,

following Varela and Shear, consider an asset to a first-hand knowledge of how to engage with the participants about their experiential accounts.

### ***Data Analysis***

We coded the transcribed interviews separately, noting relevant themes and patterns. We then came together to compare our analyses. This process ensured inter-coder reliability as we sought consensus in the findings, by attending to “the nuances in meaning brought by multiple researchers” which adds richness to the analysis (Olson et al., 2016, p. 26). During this process, we discussed the broad content of each interview and then considered one another’s highlighted statements, themes, and analytic memos that seemed to effectively capture salient aspects of the participants’ descriptions of making sense of movement material. If Henley considered it relevant to understanding the transcript, he would recount physical responses of the participant. For example, in one instance he recalled a movement that a participant made with her hands as she was describing an experience. This added to a nuanced embodied understanding of the text as the nonverbal, movement communication provided a source of information to complement the verbal descriptions (Denham & Onwuegbuzie, 2013) as did our own prior experiences with similar movement material. The congruence of similar accounts, in conjunction with existing scholarship acted as a confirmation of “intersubjective corroboration” (Gallagher & Zahavi, 2008, pp. 29-31) and provided external consistency, as did our assessment of the interviews in total when revisiting the compelling characteristics of each individual transcript. After agreeing upon the most salient aspects, we developed categories and returned to the transcripts to recode the data. These categories form the basis of our results. As a relationship between physical and general categories began to emerge, Lakoff and Johnson’s theory of conflation was integrated into our explanation.

### **Results**

Building on Ehrenberg’s (2015, 2021) kinaesthetic mode of attention in contemporary dance, this study frames learning in dance as a practice in which participants develop shared patterns of skilled action and attention through dynamic engagement with kinetic experience. Emerging from the analysis were three physical categories of kinaesthetic attention: orienting the body in space, shifting one’s weight, and reorganizing muscular release and engagement. These findings replicate findings from other studies of contemporary dancers’ phenomenological experiences related to weight (Legrand & Ravn, 2009; Ravn, 2017), space (Ravn, 2010) and patterns of tension and release (Potter, 2008). The evidence also suggested that the categories extended beyond the physical to include general categories: risk, problem-solving, and collaboration. Though these are different from Ehrenberg’s description of freedom, versatility, and mutual feeling as values emerging from contemporary dance practice, the findings indicate that physical practice is related to a shared set of more general

categories or concepts. Interpreting these findings through the lens provided by Ramstead et al. (2016), we argue that, during class, these categories are weighted from amongst the broader landscape of affordances present in the classroom leading to a regime of shared attention. The categories are described below followed by a description of their relationship in the discussion.

### *Categories: Physical*

#### *Orienting the Body in Space*

The participants all had some experience and awareness of moving with designated spatial orientations (front/back, left/right, up/down) as well as basic body movements (hip flexion, spinal flexion, stepping, spinning, etc.). However, they noted that within their contemporary class, they were introduced to more complex awareness of and attention to space. For example, one student specified that she was exploring “three-dimensional access, three-dimensional space” and the ability to “transform vertical momentum into horizontal.” Further, interviewees spoke of more intricate awareness of and attention to bodily movement. One aspect of this was moving sequentially or specificity in initiation. For instance, one student described how she accessed increased mobilization in the spine by thinking anatomically of her “T4 [Thoracic 4] moving up and forward and spinous process back.” As these components of spatiality (directionality and initiation) were integrated, students described attending not just to what moved, but what moved where. One student described that this environmentally grounded spatio-somatic awareness and attention included, “not just where our bodies are in space but of where the other bodies and other things around us are.”

#### *Shifting One’s Weight*

Participants articulated how they contended with gravity. In much of Euro-American concert dance, gravity, even if not explicitly addressed, is inevitably contended with. Contemporary dancers attempt to jump higher, to balance longer, to “pull up” against the way gravity affects posture. In these classes, the students described grappling with gravity more explicitly. They learned, for example, what it means to be “off center,” or in an asymmetrical posture which results in diminished control of momentum. One student described an exercise which focused on “taking your weight off of your center and letting your weight and your momentum guide you through things and to not really think about the shapes you were making.” They also discussed the experiential task of releasing the weight of their bodies rather than lifting it and letting this guide their movement. One student explored this by “finding sensation in [her] body in constant shifts of weight...like rolling on my stomach or rolling to my back, or crawling, or pushing away.” Students also investigated sharing weight with a partner: sensing another person’s weight and their own in relation to a partner, managing momentum, finding a fulcrum, and learning how to support weight skeletally versus muscularly.

### *Reorganizing Muscular Release and Engagement*

Release/engage describes a multimodal approach to harnessing gravity to facilitate ease of movement through synchronous breathing/moving, anatomical awareness, and muscle relaxation. Reorganizing muscular release and engagement is related to weight but is more nuanced in that not all patterns that students are trying to change are in response to gravity. Releasing is not, according to one teacher, “letting everything go,” but recognizing students’ habitual patterns of engaging or not engaging muscles during particular movements and specifying optimal release/engagement. For instance, during a swing of the leg students might habitually engage or grip the gluteal muscles of the swinging leg, which inhibits motion in both directions. They must learn there is a finer resolution of when to engage and release, often in antagonistic patterns. There is a dynamism of oppositional forces. The gluteal muscles engage at particular moments of the swing but not the entire time. As one student described, it was also necessary to think about “that contrast of being loose on one side and being stable on the other.” There was an awareness of other body parts; during the swing the student might engage the muscles that stabilize the neck but those were completely unneeded and so could be released. This process of knowing what to engage and what to release allowed for “a lot more range of motion and a lot more freedom and space in your joints in your body.”

### *Categories: General*

#### *Risk*

Risk is, in part, a physical category. Students described the risk involved in allowing the center of gravity to move past the base of support, which led to falling. Risk was also a general category that, for the interviewees, referred to a tolerance for ambiguity or the ability to move beyond comfort or the familiar. One can be overwhelmed with somatic sensation and learn how to navigate that without inducing a stress response. As one teacher described, risk in class develops students’ ability to cope with physical disorientation. Participants spoke of non-judgment with risk and the intention to “willingly experience disorientation and delirium.”

#### *Problem Solving*

The students described one of the objectives of the class as grappling with the complex constructions articulated above. They understood this explicitly; one student affirmed, “every dance objective or dance class objective is this idea of problem solving.” Students approached this complexity in different ways: by slowing down the movement; by focusing attention; by integrating imagery or metaphor; by tactile cueing; and/or, through repetition. The teachers

and students alike discussed utilizing multiple modes for working through different tasks or problems that arose. This reflected the need for multimodal instruction mentioned earlier. Most students incorporated several approaches. For example, one student mentioned integrating metaphor, repetition, and tactile feedback. She also mentioned the use of sound effects for the movement, like a “swoosh.” These tools helped the dancers focus their attention on one aspect of the movement without having to, as another student stated, “switch my attention back and forth. I’m just doing the one thing and so I’m less overwhelmed and I feel more comfortable.” The strategies that the dancers developed were honed with practice as they “prioritized the things that [they] struggled with the most and put [their] efforts in there, because if you take enough of the big things down you only have small things from there.” The dancers recognized that often these tasks or problems were overwhelming—as discussed in the previous concept of risk—and it was their responsibility to navigate that complexity. It was not only the outcome that was important, but the development of the process of problem-solving, of learning to learn.

### *Collaboration*

Collaboration was introduced in some of the classes, specifically for exercises developed from contact improvisation. The experience of weight-sharing, mentioned as a physical concept above, became a focus of awareness for each dancer and a shared focus of awareness in their partnerships. There were both explicit and implicit lessons within the tasks that focused on collaboration. For instance, one student mentioned that as her partner was “pushing out to plank pose and my center was on her back, that sensation led me to then extend onto her back.” The somatic sensibility towards her partner informed her own movement. Further, she stated that it was valuable to “repeat it with multiple people because then you are used to all different types of weight or all different types of bodies” which helped the student “be very adaptable. I think it teaches adaptability.”

## **Discussion**

### ***Reciprocal Nature of Physical Concepts Supporting General Concepts***

It is unsurprising that courses in contemporary dance led to the development of attention and skills for navigating space, weight, and muscular release and engagement. These are concepts that have framed and defined modern, postmodern, and contemporary dance throughout its history. What we find compelling in the results is how the teachers and students describe the developmental relationship between these physical concepts and the more general concepts of risk, problem-solving, and collaboration.

In the context of these classes, the participants described a process in which the complexity of a spatially focused kinetic task required the development of intentional problem-solving

strategies that endured beyond the specific phrase to which they were applied. The problem-solving strategies were then applied to even more complex spatial tasks later in the course, which in turn required the development of more complex problem-solving strategies. For instance, the students reported that it was challenging to attend to and accomplish a two-dimensional spatial coordination task (e.g., moving the fourth thoracic vertebra up and back). They developed problem-solving strategies (e.g., repeating with attention, slowing the movement down) to accomplish the task only to, later in the course, be challenged with a three-dimensional spatial coordination task (e.g., spiraling). The base task of two-dimensional articulation, once integrated into the students' repertoire of movement possibilities, was then expanded upon through the three-dimensional challenge. Similar attentional strategies were leveraged to facilitate more complicated and nuanced patterns of action.

Similarly, the students were confronted with a physical task that used weight in unfamiliar ways and were asked to attend to and expand their tolerance for risk. An expanded tolerance for risk endures beyond the physical task and increases the range of possibilities for students to explore off-weight actions in other tasks, which in turn expand their tolerance for risk. As the students experienced the sensation of falling when their center of gravity was no longer above their base of support, they attended to and moderated their stress response and tolerance for disequilibrium. As that tolerance increased, the students were willing to explore taking their center of gravity further away from the base of support, to fall further. This, in turn, provoked a need to further moderate their tolerance for disequilibrium. Understood in this way, the physical concepts and the general concepts work in a helical fashion, cycling through dynamic engagement with kinetic experience and the development of attentional awareness, not as pure repetition, but as a progression toward more complex, skilled, and nuanced ways of moving. Through somatic modes of attention, the teachers leverage movement experience to guide and constrain students' attentional practices toward mastering the course material as well as general concepts or values that distinguish the department as a community of practice.

### ***Conflation of Physical and General***

Through practice and instruction, the students in this study sorted different actions into physical categories (e.g., spinal extension initiated by the whole spine vs. spinal extension initiated by the fourth thoracic vertebra; leg swing with gluteal muscles engaged vs. leg swing with gluteal muscles released). They also articulated general categories for grappling with complex kinetic experience (solve the problem by slowing the movement down vs. solve the problem by attending to one thing at a time). In the previous section we describe how these two broad categories, physical and general, support each other in a helical fashion during the learning process. This matching of sensorimotor experience with more general categories is an example of Johnson's (Lakoff & Johnson, 1999) theory of conflation. According to this theory, during development, sensory and kinetic experiences regularly occur in tandem with,

and are often undifferentiated from, subjective evaluations, leading the two domains to be conflated. For instance, while being held by a caretaker, an infant experiences both physical warmth, a sensory experience, and feels cared for, a subjective evaluation, leading to the conflation of warmth and care. According to our data, these dance classes were a laboratory in which cross-domain mapping (physical-general) was leveraged to develop students' kinetic and attentional skills. Feeling "off-center" was, for the participants, conflated with risk. The experience of the concept of risk was not restricted to the specific phrase in which it was experienced, it was generalized to other phrases in class. In this way, dance served as a technique or technology that leveraged kinetic experience and the mechanism of conflation, to develop culturally specific modes of action and attention. As experience in the physical domain was mapped to a more general domain, the dancers were able to engage in novel reasoning about general experience. As this process fed forward and novel thoughts from the general domain were mapped back onto physical experience, the dancers were able to engage in novel reasoning about physical experience and practice. This helical interaction is one explanation for the developmental relationship between physical and general categories of cultural affordance during the process of learning. It also serves as a mechanism to describe how the enduring and transferable content we seek as educators emerges from the engagement with kinetic experience.

### Conclusion

This study replicates existing scholarship on attentional practices in contemporary dance and extends them by framing learning in contemporary dance through the lens of cultural affordances. This lens indicates that learning in contemporary dance is a process in which participants develop shared patterns of skilled action and attention through dynamic engagement with kinetic experience. Over time, this process develops enduring regimes of shared attention unique to the classroom, teacher, institution, and/or culture. This approach offers new insight into both *how* students learn and *what* they learn. Notably, the participants described a developmental relationship between the physical concepts and general concepts introduced in the classes. The data indicate that the physical concepts and the general concepts inform each other in a helical fashion such that physical practice contributes to a general understanding of movement and learning which in turn impacts future action. As a mechanism for this process, we describe the helical interaction between physical and general concepts in relation to Lakoff and Johnson's theory of conflation to illustrate the transferable and adaptive nature of the "what" that is learned through the dance phrase. As dance teachers and practitioners, it was our interest to highlight these connections to disclose critical aspects of the complexity of dance learning and what it offers students. In a broader sense we see this research as situating dance as a technology for shaping culturally situated thinking and offering possibilities for how dance learning can shape conceptual understanding so that the lessons of kinetic experience might endure beyond the classroom setting.

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### **About the author**

Matthew Henley, PhD, MFA is Associate Professor of Dance Education and Affiliated Researcher in the Arnhold Institute for Dance Education Research, Policy & Leadership at Teachers College, Columbia University. Henley's research describes and measures the cognitive, social, and emotional practices associated with dance education. Henley's interests include enactive cognition in the arts, developmental and neuroscientific approaches to embodied knowing, research methods for pedagogy, and the pedagogy of research methods. Henley danced professionally in New York City with Sean Curran Company and Randy James Dance Works. Henley earned his doctorate in Educational Psychology: Learning Sciences from the University of Washington, and M.F.A. in Dance from the same institution. He is an Associate Editor of the Journal of Dance Education.

Robin Conrad is a Los Angeles-based dance scholar, teaching artist, and concert and commercial choreographer. Robin holds a PhD in Dance from Texas Woman's University (TWU) and an MFA in Dance from California Institute of the Arts (CalArts). In 2020, Robin completed a postdoctoral research fellowship in the Movement, Culture, and Society (MoCS) research unit at the University of Southern Denmark. Robin is currently a Visiting Assistant Professor at TWU. For eight years prior, Robin was an Associate Professor of Dance at Fullerton College. Robin's current research engages with interdisciplinary perspectives from dance, philosophy, cognitive science, and social psychology to understand what happens as we move together, embedded in and reflecting our cultural contexts, while shaping and being shaped by our environments.

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