




Skilled performance in Contact Improvisation: the importance of interkinaesthetic sense of agency

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Abstract

In exploring skilled performance in Contact Improvisation (CI), we utilize an enactive ethnographic methodology combined with an interdisciplinary approach to examine the question of how skill develops in CI. We suggest this involves the development of subtleties of awareness of intra- and interkinaesthetic attunement, and a capacity for interkinaesthetic negative capability—an embodied interpersonal ‘not knowing yet’—including an ease with being off balance and waiting for the next shift or movement to arise, literally a ‘playing with’ balance, falling, nearly falling, momentum and gravity. We draw on insights from an interdisciplinary approach, including from a developmental perspective concerning the experience of dyadic interpersonal embodied skill development in both infancy and CI. Building on Ravn and Høffding’s (2021) definition of expertise in improvisation as an “oscillatory process of assuming and relinquishing agency” we propose that a key aspect of expertise in CI involves oscillation between levels and processes of interkinaesthetic sense of agency. These interdisciplinary insights also elucidate limitations within current conceptualisations of sense of agency, including the relationship between sense of agency and sense of control.

Keywords Embodied cognition · Dance ethnography · Movement practice · Attunement · Sense of agency

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1 Introduction

Dance is a complex human activity that provides a rich, ecologically valid test case from which to understand the role of the body in cognition, and to investigate skilled performance and the development of expertise. In recent decades a growing number of researchers in phenomenology (Albright, 2011; Buttingsrud, 2021; Legrand & Ravn, 2009; Ravn, 2009, 2020; Sheets-Johnstone, 1966, 1981), cognitive science (Kimmel et al., 2018; Kronsted & Gallagher, 2021; Merritt, 2015; Mingon & Sutton, 2021; Pini, 2022; Pini & Deans, 2021; Pini & Sutton, 2021) and neuroscience (Bläsing et al., 2011, 2010) have focused their attention on the analysis of dance practices. The present study consists in an interdisciplinary enactive ethnography (Wacquant, 2015) that addresses questions of embodied cognition and skilled movement in a specific dance form: Contact Improvisation (CI). We argue that CI provides unique insight into dimensions of skilled performance that are less readily apparent in other disciplines, and that one such dimension includes interkinaesthetic sense of agency.

Accounts of sense of agency in dance commonly focus on the experience of a single performer dancing alone (Bresnahan, 2014; Ravn, 2020).¹ Instead, we focus on the accounts of several dancers of CI, a duet system-based practice aimed at fostering interkinaesthetic awareness and challenging habits of movement (Pini & Deans, 2021; Pini et al., 2016). Our aim is to shed light on the complex, dynamic, interpersonal nature of embodied cognition by addressing the experience of moving together *in contact* and providing a unique case study to explore the nature of skill development in CI. We also take an interdisciplinary approach and draw on insights from the developmental psychology literature to elucidate key aspects of the development of skill in this dance form. We conclude by suggesting that Ravn and Høffding's (2021) notion of improvisation as an "oscillatory process of assuming and relinquishing agency" can be broadened to incorporate the notion that it is the flexibility to engage in oscillation between levels and processes of the sense of agency that is crucial for expertise. The interpersonal dyadic embodied context in which skill emerges in both contexts serves as a rich test-case for exploring the development of expertise in CI.

2 Methodology

This paper is informed by a qualitative and enactive ethnographic approach (Wacquant, 2005, 2015). This approach focuses primarily on an engaged form of participant observation that social anthropologist Loïc Wacquant calls 'enactive ethnography' (2015). He has proposed a focus on "the primacy of embodied practical knowledge arising out of, and continuously enmeshed in, webs of action, upon which discursive mastery comes to be grafted" (Wacquant, 2015: p. 2). Wacquant argues that "enactive ethnography, the brand of immersive fieldwork based on 'performing the phenomenon,' is a fruitful path toward disclosing the cognitive, conative, and cathectic schemata (that

¹ Ravn's analysis of agency in improvisational dance (2020) builds on the phenomenological experience of solo improvisation by international dancer Kitt Johnson; while Bresnahan's account of improvisational artistry refers to a single dancer performing for an audience (Bresnahan, 2014).

is, habitus) that generate the practices and underlie the cosmos under investigation” (Wacquant, 2015: p. 2).

We engage in an analysis of interviews with expert and novice CI practitioners conducted by one of the authors Sarah Pini, a former professional dancer herself who trained in ballet and contemporary dance for over a decade and performed internationally. This work is based on direct participation of Pini in the training practices and dance sessions of independent groups of CI dancers during multi-site fieldwork conducted from 2014 to 2017. During this time, Pini joined CI classes, workshops and jam sessions in different locations: in Bologna, Ferrara and Arezzo, Italy, and in Sydney, Australia. In this context, Pini conducted, transcribed, and where necessary, translated interviews with different CI practitioners.

Through ‘observant’ participation and the analysis of first-person descriptions of CI dancers, this work explores the experience of participation in improvisational dance practices. The direct involvement of the researcher in the practice under investigation is a key methodological approach employed here in order to best address questions of skilled performance in an ecologically valid manner. Engaging with the habitual practices of the participants is an established research method for dance ethnographers.² The methodology utilised also includes a consideration of the cultural contexts in which the dance form is practiced, as well as the historical and aesthetic components that shape the practice of CI.

We also draw on an interdisciplinary approach. Specifically, we apply findings from developmental psychology and infant research, which we argue is a field well placed to provide insights into notions of interpersonal embodied skill development.

3 Contact Improvisation

CI was initiated in the 1970s in the United States by the American dancer and choreographer Steve Paxton along with other dance artists such as Nancy Stark Smith and many others, who began to develop this “evolving system of movement based on the communication between two moving bodies” (Koteen & Smith, 2008: p. xiv). CI has since gained worldwide recognition within both the independent scene of the performing arts and in more institutionalised and traditional dance settings such as dance academies and professional dance companies. CI utilises awareness of friction, momentum, gravity, and inertia to explore kinaesthetic relationships between and among dancers.

In CI there are no predetermined steps and *contacters* stress the importance of listening to oneself and to others throughout the improvisation. CI is a dance form that both requires and grants a level of freedom and responsibility, where people can join and leave the dance as they wish. *Contacters* can dance alone, in a duo, in a group, and they can change dance partners at any point in time. CI is an experimental dance form that allows the testing of physical limits and possibilities without the constraint

² For further elucidations on how integrating qualitative research and dancers’ experiences for theoretical analysis see also Ravn (2021).

of normative judgments. CI is also a practice that invites and trains the body to be present and available to accommodate sudden, spontaneous, and unexpected changes.

CI presents a unique context in which to examine the development of expertise in skilled performance. It is considered by some dance scholars to be a dance genre that is in many ways opposed to Western classical dance in both cultural and aesthetic implications. For example, in Western classical ballet the dominant sensory modality is typically thought to be vision—watching and being watched—in a manner that extends right down to the physical context in which training occurs (in a mirror adorned room). In contrast, CI is a dance training system based primarily on touch (Bull, 1997; Cohen, 2010; Novack, 1988, 1990), emphasising an inner focus and a kinaesthetic sense of attunement within and between dancers (Behnke, 2003; Houston, 2009; Pini & Deans, 2021; Turner, 2010). Performance scholar Robert Turner (2010) defined CI as an “experimental technique of awareness of the self in relation to others” (p. 134). He emphasised the position taken by CI originators, who wanted to distinguish their practice from that of more institutionalised Western forms of movement such as ballet, in which “the proper performance of a particular, choreographed, and controlled form of movement” is prioritised, and where “the sensation of movement was merely secondary” (Turner, 2010: p. 125). According to Paxton (2003), a key initiator of CI, action evolves from sensing movement and thus CI presents an interesting vantage point from which to explore less traditional aspects of skilled performance.

Sensing movement, as Paxton describes it, includes a focus on the interpersonal emergent nature of the dance. As phenomenologist Elizabeth Behnke (2003) points out: “in CI, no single ‘choreographer’ imposes the artistic form of a ‘work’ on the flow of movement; not only does the dance proceed in collaboration between and among participants, but the improvisational structure allows the emerging movement itself to guide the dancers” (p. 51). This perspective on CI was emphasised in Pini’s ethnographic work, in which the practice of CI was characterised by attention towards the relational aspects of movement as opposed to performative and aesthetic qualities of the dance (Pini, 2019; Pini et al., 2016).

Following one workshop, Pini reported that: CI classes usually start with a ‘meet-up’, in which the participants sit in circle and introduce themselves to the group. The training continues with a warm-up session, where the dancers, working in pairs, begin to explore moving together in proximity, exchanging, and feeling each other’s weight while maintaining a point of contact between their bodies. Focusing on the sensations that might arise from this specific kind of dancing in contact, CI dancers foster their ability to feel and respond to their dance partner’s movements as well as the movements of the broader group, sometimes scaffolded by the music, sometimes simply by tuning into the dynamic created by their dancing bodies.³

A similar reflection was shared by many CI dancers who, in discussion with Pini, emphasised that practising CI was about learning a certain quality of moving in contact, which they contrasted with learning how to reproduce a form. As one participant in Pini’s fieldwork reported: CI “can be approached by people who are not expert dancers

³ For further elucidations on the specificity of Contact Improvisation practice and training see the journal *Contact Quarterly*, a forum for discussion on improvisational dance. Since 1975 *Contact Quarterly* gathers and publishes writings and interviews with teachers and practitioners of Contact Improvisation and somatic movement practices. <https://contactquarterly.com>

but have developed a capacity for attentiveness and possess the ability to manage their own movements and the relationship of movement with the others” (DG, a CI novice with 6 months experience). He also reported that in CI:

...everything is based on the relationship, on the ability to take the weight, on the beauty of the encounter, on feeling the other and eventually also the music. It is a medium of non-verbal interpersonal communication but really deep. Lastly, it is a dance that is based on the internal feedback of the practitioners and what you can see from the exterior is not necessarily interesting - it is not built for an external gaze but only for the pleasure of the actors involved.

Skill in CI thus differs from skill in dance forms such as Western classical ballet. The focus on relational aspects of movement and tuning into one’s interiority, to dance in a way ‘not built for an external gaze’, is a context that we explore further below, with the aim of elucidating in greater detail elements of the development of skill in CI.

4 What constitutes skill in Contact Improvisation?

In examining the question of what skilled practice of CI involves, we draw attention to those aspects mentioned above that distinguish CI from other dance forms. Our aim is not an exhaustive analysis of all the elements of skill in CI. Instead, we hope to illuminate aspects that may be more often overlooked in other explorations of the nature of skilled performance.

4.1 Intra- and interkinaesthetic attunement

Expertise in CI requires nuanced attunement to interkinaesthetic interaction, a concept phenomenologist Elizabeth Behnke (2003) has used to describe the intercorporeal kinaesthetic experience at play within this dance form. According to Behnke, the main principle governing CI is the cultivation of a kinaesthetic awareness by means of a particular attention to the relation of gravity, weight, and momentum. CI is a practice of non-verbal interpersonal communication and exploration, a practice in which “*we meet the other at the interface that defines our boundaries*” (Behnke, 2003: p. 48, italics added). In this context, the surfaces of the bodies of the dancers “are used as communicators, not in terms of arousal, but for understanding where weight is being concentrated and where support needs to be given” (Houston, 2009: p. 105). Paxton described the phenomenon as follows:

...it is through touching that the information about each other’s movement is transmitted. They touch the floor, and there is emphasis on constant awareness of gravity. They touch themselves, internally, and a concentration is maintained upon the whole body. Balance is not defined by stretching along the centre columns of the body, as in traditional dancing, but by the body’s relationship to that part which is a useful fulcrum, since in this work a body may as often be

on head as feet and relative to the partner as often as to the floor (Paxton, 1975: p. 40).

An important aspect of the practice of CI is that, by promoting a refinement of internal awareness (self-attunement), the dancer develops a capacity for simultaneous focus on one's own embodied experience and on the "responsiveness to another" (Behnke, 2003: p. 41). CI fosters dancers' ability to *simultaneously feel and respond* to both the other dancers' movement as well as the movement of the self and the broader group by engaging with the dynamic created by the dancing bodies. For Behnke, the body in CI is "as much an interkinaesthetic body as an individual one" (Behnke, 2003: p. 42). Similarly, dance sociologist Helen Thomas emphasised the dual nature of attention required in CI where "the body is ideally the subject and the object of attention" (Thomas, 2003: p.109).

Fieldwork participant AR, a CI expert dancer and choreographer, provides an example of how attunement emerges through the practice of CI:

...you can simply scan your body for sensations, and try to hold onto your awareness. For example, it is like meditation [...] you have to keep on this because the moment you add one more [sensation] you tend to lose [awareness of] one of the [other] sensations, but if you actually practice going through them, so you are constantly recycling the point of reference you start becoming more and more engaged with the stimuli coming from outside and, you can practice improvisation exercises responding to stimulus from outside like reacting to noises. For example, by making a move for every noise you can perceive, you will end up doing a little dance that will have a movement for any sound I'm hearing, basically I'm just simply practicing a connection with the reality around me.

As AR describes it, CI training involves the development of flexibility in attuning to the 'reality around me', whilst also retaining awareness of one's internal world 'like meditation'. Training included strengthening the connection between internal awareness, external 'noises' that are perceived, and spontaneous responsiveness in the form of non-predefined movement in response to the noise. Such exercises contributed to the development, or refinement, of the capacity for somatic awareness, spontaneous emergent movement, and attunement in the dancers.

In contrast to skilled dancers, CI novices may lack flexible fluid traversing of intra- and interpersonal attunement. The 'lived-body' may be at times reduced to Körper—body-as-object—during moments in which the CI practitioner is no longer able to maintain fluid intra- and interkinaesthetic attunement, such as awkward self-consciousness or becoming overly other-attentive at the expense of internal awareness. Skilled practice of CI requires the capacity for fluid traversing of inter- and intrakinaesthetic attunement as the movement emerges between the dancers and the surrounding

ecology.⁴ Through a practice of fostering flexibility in somatic awareness and attunement, and by engaging in kinaesthetic exploration together, expertise in CI emerges as the ability to attune to the movement of self and others, and to generate embodied action in accordance with the emerging demands of the interaction. Fieldwork participant CM, an expert CI teacher and dancer, emphasised this aspect of expertise in CI:

There is this duality, the constant connecting to the self and there is also connecting to the outside... the more details I actually manage to include in my awareness, the more choices I can make and the more I'm aware of the choices I make, the more I can include, so there is this... it is like this active circle of everything that fits into each other...

As CM describes it, developing the capacity for subtleties of intra- and interkinaesthetic attunement increased her awareness of, and capacity to engage in, the choices available to her, which in turn increases her scope of awareness and her sense of inter- and intrakinaesthetic sense of agency.

To explain how this attunement operates in CI, CM compared her practice of CI with her previous experience with horse riding. She recalled how:

...my true beginning with CI was horse riding, because of the connection you need to create with the horse. The first time I actually had to engage with another being, someone that was breathing and had an intelligence on his own rather than just being an object, was when I was horse riding. They [horses] read how you feel and how you sense, and you sense, and you read them, and I knew that I was doing that, I don't know if you call it a skill or not, but it was with this interaction.

The increase in interkinaesthetic awareness that arises through the practice of CI has been addressed by Ramaswamy and Deslauriers (2014), who emphasise how the practice of CI is consonant with an enhancement of the subtleties of attunement. The authors state that: "since physical contact is the premise of the form, the act of contacting itself requires proper attunement with oneself (self- attunement) and one's dancing partner(s) (contact attunement). This, in turn, requires refining the awareness of one's body so that one becomes increasingly ready and skilful to tune into the other" (Ramaswamy & Deslauriers, 2014: p. 117–118).

The process of the development of capacity for intra- and interpersonal attunement has an interesting parallel in developmental psychology. During emotional development in infancy attunement includes the experience in which an interactive partner (a parent for example) may enhance the capacity for the younger interactive partner to access and identify (to become attuned to) their own internal states through the recognition of the internal state being reflected back to them by the parent (in their facial expression, tone of voice, gestures or other modalities) over a multitude of repetitions of interaction. Skill development in this context also occurs through the

⁴ Referring to Merleau-Ponty's *Phenomenology of Perception* (1962), Susanne Ravn underlines that "our perceptual fields open in and through our body as lived" (Ravn, 2020, p. 81). This demands an acknowledgement and attention to the different cultural, social, and situational aspects, practices, norms and constraints that shape our fields of action and perception.

interpersonal embodied interactions in which the younger partner develops a greater awareness of their own body and internal states through their affect *having an effect on the other*—having their own expression of feeling mirrored back in a marked manner, thereby increasing their capacity to know what it is they are feeling themselves.⁵

Skill development in CI, and emotional development through the process of attunement in parent-infant interactions, emphasises the co-created, interpersonal and emergent aspects of both skills. Just as developmental approaches emphasise the notion that emergent attuned interaction can expand the capacity of the dyad (and particularly the less experienced member of the dyad), so too can the practice of CI enhance the capacity for attunement and awareness. As fieldwork participant CM put it: “with CI, particularly in the beginning, it was very useful to have another body to connect with, it was easier for me to connect to someone else than connecting to myself, so the body of the other dancer was my way in”.

4.2 Kinaesthetic negative capability: openness to being off balance

Skill development in CI highlights the kinaesthetic aspects of the capacity to allow oneself to dwell in the uncertainty of being off balance, without anxiously reaching after a rigid sense of control or collapsing into formlessness. This capacity allows for the possibility of discovering that which arises in just this moment, between just these dancers, and the co-creation of an emergent momentum, emphasised by Behnke when she states that CI is about allowing the “emerging movement itself to guide the dancers” (2003, p. 51).

Crucial to this capacity is developing skill in being off balance, as CM emphasises:

Falling is the foundation of CI, because falling makes you deal with... you can deal with anything, if you know how to fall, if you know that you can trust your body, and know where it is in space, if you know that proprioception, the proprioception system is functioning and that you can be eyes closed, flying on someone’s body, someone that obviously you trust. You really need to trust the people you are working with, because you know, you can surrender [letting go], but then I know that falling is... it’s a skill that I have acquired and through that skill I can handle anything really.

This also finds corollaries in experiences of emotional development in infancy, in terms of two concepts: negative capability and ‘mismatch and repair’ (Tronick, 2007). Keats’ notion of “negative capability”—to be “capable of being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason” (Keats, as cited in Bion, 1970: p.125) has been used in developmental psychological approaches and we argue here that it can also be utilized in understanding skill in CI. Similarly, ‘mismatch and repair’, another concept drawn from parent-infant research, examines fluctuations in attunement and misattunement and refers to the capacity for things to go awry in an interaction (become misattuned) and then to get back on track. Interestingly, despite previous hypotheses to the contrary, it was found that infants

⁵ We note the congruence with the work of Thelen and Smith (1994) on nonlinear dynamic systems theory and approaches to walking in infants, and we are grateful to a reviewer for insightfully pointing this out.

who experienced attunement in the middle range, rather than either the more perfectly attuned dyads, or less surprisingly those dyads that were hypo-attuned, were more likely to be securely attached to their caregiver (where security is a specific marker of psychological, emotional and relational health) (Beebe & Steele, 2013; Beebe et al., 2010). One hypothesis is that mismatch and repair, required when there are fluctuations in attunement, increases resilience. Without the skill and trust that together they can bring things back on track, the dyad risk engaging in a hyper-attuned manner in which (at least one) partner anxiously attunes to the other but in such a way that it can impede self-attunement and the capacity for full awareness of feeling (Beebe & Steele, 2013; Beebe et al., 2010; Fonagy et al., 2002).

The capacity to allow oneself to be in an open state of physical disorientation, coupled with trust and skill in the capacity of one's own instincts (for example: to fall skilfully if the balance point shifts irrevocably) was also discussed by other CI practitioners (Albright, 2013). Several participants in Pini's fieldwork stated that CI could guide them in the exploration of their 'instinctual' or 'innate' ability to interact through movement with other *contacters* and the surrounding environment, rather than more 'top-down' approaches to movement, such as that involved in skill development in classical ballet in which attaining a specific externally referenced visual form is prioritised and sought after. As Ramaswamy and Deslauriers (2014) put it: "CI trains the person to pay attention to the finest kinaesthetic and proprioceptive sensations. [...] CI attunes the dancers to be present to the open field of potentiality of movement in space" (Ramaswamy & Deslauriers, 2014: pp. 117–118). The capacity to be in uncertainty allows for perceptual possibilities that might arise at the intersection of two dancing bodies in the act of collaboratively redefining their relationship with gravity. CM similarly emphasised how the dance changes with each unique individual with whom you dance, as each person brings a specific quality, and it is the two qualities meeting each other, in just this moment and place, that leads to the emergence of the dance. She stressed how:

The physical connection is a component of these compositional states, or improvisational states, which is a state of presence, and being open to what is available, whatever that is, and to be open to embrace it, and transform it, so there is this dual relationship between you and what's there, so *you get affected but you can also affect*.

This last phrase, "you get affected but you can also affect" highlights the iterative nature of intra- and interkinaesthetic attunement. It is also an example of contingent responsiveness, a crucial aspect of the development of a sense of agency (elaborated below). Deans has argued elsewhere (Deans et al., 2015) that an important aspect of the development of a sense of agency in infancy is the experience of contingent responsiveness in parent-infant interactions where an infant has the experience: 'I cause things to happen in her, therefore I begin to feel that I am, and I also begin to feel that she is' (Alvarez & Furiuele, 1997). We suggest that interpersonal embodied contingent interaction is a key aspect of the development of a sense of agency in infancy and it is also key to skill development in CI. We examine this in greater detail below.

4.3 Interkinaesthetic sense of agency

What is sense of agency? Haggard (2017) states that ‘the core of sense of agency... is the association between a voluntary action and an outcome’ (p. 198). For example, when a dancer kicks her leg into the air, she experiences a sense of agency for that movement. Her (presumably) voluntary action results in a contingent outcome (the leg makes a pleasing arc). However, if she were to attempt to kick and no movement resulted, or her kick was the result of a reflex movement after a tap to her patella, she would not experience a sense of agency (Haggard, 2017; but see Christensen & Grünbaum, 2018; Grünbaum, 2015; Grünbaum & Christensen, 2018). In a reflex movement a pre-reflective sense of ownership over the movement is retained (she retains an awareness that it is her leg that is moving), but there is no accompanying experience of having generated the movement (Gallagher, 2012). Arguably at least three components make up the sense of agency—voluntary generation of the movement, a contingent relationship between the action and intended outcome, and the capacity to recognise action-outcome contingencies and to attribute them to oneself as opposed to other agents or to events in the surrounding environment (Deans, 2019; Gallagher, 2012; Haggard, 2017). In the section that follows, we explore the nature of skill development in CI. We suggest that the development of interkinaesthetic sense of agency is an important aspect of expertise in CI. We utilize areas of overlap between the development of sense of agency in infancy with that of the development of interkinaesthetic sense of agency in CI to engage in a novel analysis of skill development in CI.

We note that whilst there is important work on collective intentionality and the notion that “agency not only comes in individual, but also in collective forms” (Salice et al., 2019: p. 197), the focus of this section is limited to the interpersonal development of skill and sense of agency within individual CI practitioners (even as they dance with each other). We acknowledge that a natural extension of the current work could involve a deeper consideration of experiences of “we agency” (Pacherie, 2014) and collective intentionality (Martens, 2020). We also note that there is a vast literature examining sense of agency from a neurological perspective. Whilst this research may be brought to bear on aspects of our argument in the future, this paper is situated firmly in a qualitative and ethnographic research context, as such applications of neurological research are outside the scope of this piece.

Drawing on developmental psychological approaches, Deans et al., (2015) have highlighted the importance of attunement for the development of a sense of agency in infancy, and the continued experience of a sense of agency as an adult. Developmental research suggests that the emergent sense of agency is dependent on the contingent responsiveness of the other interactive partner, through which the infant begins to recognise their own feelings arising within while simultaneously having their affective experience have an effect on the other. Experiences of attunement and contingent responsiveness are not limited to infancy, as we have seen above in participants accounts of CI. Such experiences are an ongoing aspect of adult interpersonal embodied interaction, rendering sense of agency irrevocably interpersonally situated and emergent. In CI, this is apparent in the ongoing iterative interchange of momentum

and weight shifting engaged in by the dancers—affecting and being affected by—each other.

Sense of agency is often defined in relation to control. For example, Haggard and Chambon (2012) describe sense of agency as the experience of ‘controlling one’s own actions, and, through them, events in the outside world’ (p. R390). The relationship between sense of agency and sense of control is interesting when considered in the context of CI. Whilst, as Thomas (2003) notes, classical Western ballet is often taken to invoke “the pursuit of the mastery of the body over nature” and hence high levels of sense of control (p. 109); in contrast, CI instead “invites the performer to let go” (p. 110), allowing for an exploration of the possibilities of movement liberated from both technique and codified steps. This contrast of ‘letting go’ with ‘mastery over’ is particularly relevant in the context of exploring the nature of expertise and skilled performance.

To unpack this further, we will consider two participants accounts. Consider first CM’s description:

...if you are doing something aerial—you have this internal awareness, but you can switch to the external through your gaze, so you have more presence within the environment around you, and when I was switching from one to the other, I had no idea of where I was in the space. In the beginning it was like ‘wow’, I thought I was here then I realized I’m not where I thought I was, and it was a bit scary, and then I thought ‘oh my god this is so amazing’. Sometimes you find yourself with a hand on the floor and you go ‘how did I get there?’, then you realise that you got there because your body knew, your body always knows, even when you are not oriented. Having this conscious disorientation was really fascinating, it was like rediscovering going back to a [embodied] childhood memory like when your father throws you up in the air, and you go ‘oh, I’m flying now’ and this is exciting, for me there was a moment of fear but more like surprise because I wasn’t expecting it.

Similarly, another CI practitioner, TG recalled an experience that he defined as finding the ‘magical moments’:

Sometimes a dance is magical when you are both immersed in the same plot, without having said it, without ‘calling it’, when you feel that the same music is playing, so the rhythm, the breath is truly synchronized, when no one is really ‘leading’ and no one is ‘reacting’, but when there are pauses, there is no anxiety or pressure to do things, sometimes maybe even when you are dancing with someone you do not know, who at first you do not feel familiar with, and you want to try a bit of everything because you are in a hurry to find a point of contact, a common language, and there, the magic dance is when the common language is found, and when you do not have the feeling like “What do I do now? Where am I going now?” Then within the magic dance there are the magical moments, those in which I completely lose track of what I am doing and when I arrive somewhere without knowing how I got there.

These two accounts highlight the complexity of experiences in CI that do not fit neatly into approaches to sense of agency that equate it with sense of control.

For example, the description by CM of finding herself “with a hand on the floor and you go ‘how did I get there?’, then you realise that you got there because your body knew, your body always knows, even when you are not oriented” suggests an experience of disorientation at one level but not complete absence of awareness. Similarly, for TG ‘magical moments’ were experienced at times when he would “completely lose track of what I am doing and when I arrive somewhere without knowing how I got there”. These accounts could be interpreted in multiple ways, and we acknowledge caution is required in drawing firm conclusions. However, the sense in these accounts is not of formless chaotic movement but instead, despite disorientation and in CM’s case ‘surprise’, an arrival and a bodily knowing that accompanies even experiences of disorientation that are ‘a bit scary’.

Ravn (2020) has argued that “partly ‘losing’ a sense of being intentionally in control of actions performed does not entail a loss of agency nor of one’s sense of agency” (p. 81). Similarly, McIlwain (2014) emphasised the adaptive capacity of relinquishing the need for a sense of control, which may allow for greater flexibility of responding in some situations, particularly those in which no sense of control is possible. She suggested this may occur in some self-states in which one lets go of control and yet retains a sense of awareness and the possibility for action. The latter is consistent with CM’s account, described earlier, in which her expertise resulted in greater subtlety of attunement, which in turn allowed her a greater sense of choice.

Ravn and Høffding (2021) suggest a further refinement—that a key aspect of expertise in artistic improvisation involves mastery of the capacity to engage in an “oscillatory process of assuming and relinquishing agency”. Building on this account, we ask—what are the possible candidates for what oscillations in the sense of agency might entail? For example, would it include oscillations between a sense of agency and lack thereof? Ravn and Høffding (2021) suggest that it may consist in suspension of control “insofar as ‘thinking in movement’ is exemplified in artistic improvisation, we suggest that such ‘thinking’ rather than solely concerning a bodily driven spontaneity, has to do with mastering the suspension of control—that is, with an oscillation of agency” (p. 2). If oscillations of sense of agency are not oscillations between dichotomous states, what other candidates are possible? Oscillations, we would like to suggest, could be understood in a number of ways, for example—between levels of awareness (e.g. pre-reflective, reflective), or types of processes (e.g. motor processes, higher order conceptual processes) and between concordance and discordance of levels and processes. Similarly, Gallagher (2013) has emphasised that sense of agency is best conceptualised as a matter of degree, rather than as a dichotomous variable.

As Deans (2019) has argued elsewhere, sense of agency is a broad concept, and the recent proliferation in research has seen the concept extended to a wide array of disorders and situations. This broad scope requires attention to the factors which vary across applications of this concept. Deans (2019), building on the work of Gallagher (2012, 2013) and Pacherie (2008), has suggested these include: processes (which range from low-level motor processes to higher order conceptual processes) levels of awareness (ranging from pre-reflective to reflective), unit of analysis (for example, the momentary act of a dancer’s movement, in contrast to the performance of an entire piece; see Gallagher, 2012), and timing (prospective, retrospective, long-term, or current/situated; see Gallagher, 2012, 2013; and Pacherie, 2008).

We suggest that in CI, somewhat paradoxically, maintaining a sense of agency requires the capacity for flexible transitions between levels and processes of sense of agency, as well as between concordance and discordance among those levels and processes. We would like to suggest that the insight expounded by Ravn and Høffding (2021) regarding the notion that expertise in improvisation involves an “oscillatory process of assuming and relinquishing agency” can be expanded to incorporate the notion that it is the flexibility to engage in oscillation between levels and processes of sense of agency that is required for expertise of this nature. In CM’s account of disorientation above, within her experience of “I’m not where I thought I was” she nonetheless retains a sense that “your body always knows”—a pre-reflective sense of agency for motor skill in conjunction with a higher order conceptual awareness of this embodied knowing. We argue that the cultivation of flexibility in navigating transitions between levels and processes of sense of agency is a crucial aspect of expertise. Subtlety in both intra- and interkinaesthetic attunement (recall CM’s linking this to her experience of expansion in movement choice), and the capacity for negative capability (of being in uncertainty), both contribute to this capacity and to the development of expertise of each CI practitioner.

5 Conclusion

By exploring experiences of sense of agency that relate to the individual in interaction with others, dance and performance practices offer unique perspectives that can complement other critical approaches (Merritt, 2015; Pini, 2022; Pini & Deans, 2021; Ravn & Høffding, 2021). As Bläsing and colleagues (2011) suggest “dance has not only the potential to provide insights into cognitive, emotional, and aesthetic function and behaviour, but also it has the potential to impact contemporary scientific approaches” (p. 306). CI provides a rich opportunity to reconsider our relationship to spatial perception and other sensory modalities through improvisation and moving in contact with others. This paper combined a qualitative research and enactive ethnographic methodology with an interdisciplinary approach to examine skilled practice in CI. Expanding on Ravn and Høffding’s (2021) account, we argued that a form of expertise highlighted by this dance form involves an increased capacity for flexibility in navigating oscillations in levels and processes of interkinaesthetic sense of agency. Our account thus allows for a more fine-grained understanding of expertise as it operates in CI. This may also extend to practices beyond CI, such as sporting or performance contexts which, whilst they might look quite different, nonetheless involve spontaneous responsive movement in uncertain interactive contexts. Does expertise in these disciplines include flexibility in traversing levels and processes of interkinaesthetic sense of agency? To be sure it will likely differ in levels of degree depending on the nature of the discipline, however exploring the way in which this form of expertise applies in other movement practices or sports, even those as distinct from CI as ice hockey or rugby would, we believe, be an interesting future endeavour.

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Author contributions CD and SP are both first authors. Both authors contributed equally to the writing of the manuscript. Theoretical analysis was performed by CD and SP. Ethnographic data collection was performed by SP. The first draft of the manuscript was written by both authors in collaboration. All authors read and approved the final manuscript.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Data availability This study received approval by Macquarie University ethics committee for research involving humans and informed consent for all participants involved has been obtained.

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