Attentional Focus in Classical Ballet
A Survey of Professional Dancers

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Abstract
Focus of attention and its effects on skilled motor performance has become an important line of research in the motor learning domain. Numerous studies have demonstrated that an external focus of attention (i.e., on the movement effect) enhances motor performance and learning relative to an internal focus (i.e., on body movements). Thus, small differences in the wording of instructions or feedback given by teachers can have a significant impact on the effectiveness and efficiency of motor skill performance. In this paper, we review some of the attentional focus studies that are relevant to ballet performance. In addition, we report the findings of a survey among professional ballet dancers (N = 53) that we conducted to determine their typical attentional focus while performing certain movements. The results showed that the majority adopted internal foci, or combinations of internal and external foci, most of the time. This suggests that there is room for improvement for performance and teaching. We provide examples of how external foci can be promoted in ballet practice.

Classical ballet dancers perform some of the most complex combinations of motor skills, often under conditions of pressure. An important question for dancers and those who instruct them, therefore, is how performance can be optimized, and how high performance levels can be maintained under pressure (e.g., in front of critics, audience, when fatigued, injured, or simply maturing). More specifically, how can the effectiveness of instructions or feedback be enhanced? How should ballet teachers direct the dancers’ attention? What should dancers concentrate on when practicing or performing to support the sustainability of the technique? Motor learning research has given clear answers to these questions. Over the past two decades, numerous studies have shown that a performer’s focus of attention has a significant impact on the quality of movement; an external focus of attention on the intended movement effect or outcome has consistently been found to result in superior performance relative to an internal focus on body movements. Given the importance of these findings for a performing art, such as ballet, where a concentration on body movements is arguably common, the purpose of the present paper is threefold: First, we review experimental findings related to the effects of different attentional foci on motor performance and learning that are particularly relevant to ballet (e.g., balance, jumping). Second, we report the results of a survey we conducted among current or former professional dancers with the goal of determining their typical attentional focus while performing certain routines. Third, we provide some practical suggestions for dancers and practitioners in terms of how they might direct attention externally to enhance ballet performance.

Experimental studies examining the influence of the performer’s attentional focus on motor performance or learning have used a wide variety of motor tasks, including various sport skills. These studies have shown that, when performers direct attention to the intended effect of their movements on, for example, an implement (e.g., golf club, bean bag, piano hammers), the ground, the water, or a ball trajectory (a so-called external focus of attention) rather than to their body movements themselves (internal focus), performance is more effective and efficient. The benefits of an external focus for performance and learning are independent of the type of motor skill, skill level, age, or (dis)ability.

In several studies, participants were asked to perform tasks requiring balance and jumping, which are obviously key components of ballet technique. For instance, in some balance-related studies participants were asked to try to stand as still as
possible on an unstable surface, such as a balance platform, an inflated rubber disk, or a solid surface. Depending on the task, researchers measured average deviations of the platform from the horizontal or the amount of postural sway as a function of the instructed focus of attention. Consistently, when participants were asked to concentrate on keeping the platform or disk still (external focus), their stability was significantly enhanced relative to a concentration on keeping their feet still (internal focus). Thus, a small difference in the attentional focus, or in the wording of instructions, had a significant influence on balance performance. It should be pointed out that participants’ vision in those studies was controlled by asking them to look straight ahead; thus, the only difference between conditions or groups was in the attentional focus or concentration.

Motion analyses have revealed that when performers adopt an external focus, they tend to utilize to a greater extent automatic (i.e., unconscious, fast, reflexive) processes, as evidenced by high frequency, low amplitude movement adjustments, that result in enhanced motor performance (e.g., balance). In contrast, with an internal focus on their own movements, performers tend to constrain their motor system by using conscious control processes that are relatively slow and interfere with automatic control mechanisms. Consequently, performance is less than optimal. The greater automaticity resulting from an external focus is also reflected in reduced attentional demands. That is, when performers adopt an external relative to an internal focus, they show better performance on secondary (e.g., cognitive) tasks that are performed simultaneously with the motor task.

By directing attention to the task goal and away from body movements, an external focus reduces a focus on the self. A focus on the self has frequently been shown to impair motor performance. Further, access to the self seems to be associated with the default mode of brain activation, and task-related activation requires switching away from the self network. An external focus on the intended movement outcome prevents self-activation and thus optimizes movement coordination. The effect is seen at both the inter- and intra-muscular level. The result is seen in greater movement efficiency, including reduced muscular activity, heart rate, oxygen consumption, greater maximum force production, etc. Studies have shown that participants jump higher or farther with an external focus, and that they do so with less muscular effort. This is due to a more efficient recruitment of motor units and reduced co-contractions of agonists and antagonists. In some studies in which participants performed a standing long jump, they jumped farther when they were asked to concentrate on jumping as far as possible past the start line or on a cone that was placed at a 3 m distance from the start line, compared to focusing on the extension of their knees. In other studies, participants performed maximum vertical jumps. When instructed to concentrate on the horizontal rungs of a measurement device that they attempted to displace, they jumped higher than when they were asked to concentrate on their fingers, with which they were about to displace the rungs, or were not given instructions (control condition). It has been shown that performers produce greater forces when they focus on the intended outcome of their jump. It is also interesting to note that an external focus is typically more effective when it is more distal, that is, farther away from the body than a proximal focus close to the body, such as the intended trajectory of a golf ball versus the motion of the golf club or markers on a balance board that are farther away from the feet relative to markers close to the feet.

While the findings are clear, one might wonder what a ballet dancer should focus on in the absence of implements, unstable surfaces, or measurement devices. Instead, images, analogies, or metaphors might be used to induce an external distal focus. Trying to produce a certain image directs attention away from body movements and on to the intended effect or outcome of the action. Another possibility is to actually attach stickers or markers to the performer, which can serve as external proximal attentional cues. In one recent study, skilled 12-year-old gymnasts performed a vertical maximum jump with a 180° turn while airborne, with the hands crossing in front of the chest during the turn. The skill required not only maximum force production but also high precision (e.g., alignment, feet positioning, landing), as any imperfection resulted in a deduction. When participants were asked to concentrate on the direction in which a tape marker on their chest was pointing after the turn, both jump height and movement quality were significantly enhanced, compared with instructions to focus on the direction in which their hands (in front of their chest) were pointing, or a control condition. It is noteworthy that practice devices, such as markers (on clothing), do not need to be present later, for example, during performance on stage. Rather, practice with external cues has been shown to have relatively permanent, positive effects in the long-term, even when they are absent.

Interestingly, in the vast majority of studies that included control conditions or groups, without specific focus instructions, performances under internal focus and control conditions did not differ from each other while an external focus enhanced performance or learning. It appears that performers spontaneously tend to focus on their own movements when they are not instructed otherwise. Only in very few cases—that involving elite performers—did the external focus instructions not result in more effective performance than control conditions in which performers used their “normal” focus of attention. In one of those studies, world-class balance acrobats (Cirque du Soleil) performed a relatively simple balance task (i.e., standing on an inflated disk). In this case, balance was controlled more automatically in the control condition than with external (“keep disk still”)
or internal focus (“keep feet still”) instructions. It is probable that the highly trained performers adopted their habitually used and more effective (external) focus than the one provided. Another study with expert performers demonstrated, though, that not all experts adopt an optimal focus. Interviews with expert swimmers, who had many years of competitive experience, indicated that their “normal” focus (i.e., in a control condition) differed among participants. While some swimmers reported having more of an internal focus (e.g., hip rotation, spinning arms, high elbows), others focused more externally on the overall outcome (e.g., speed, tempo, going fast, swimming hard). Interestingly, those with an internal focus swam significantly more slowly in the control condition than those who adopted an external focus. These findings are consistent with the notion that an internal focus interferes with automaticity and efficiency and results in poorer performance. They also suggest that some experts apparently had already discovered the value of an external focus and adopted one habitually, whereas others had not.

In summary, there is overwhelming evidence showing that focusing on body movement is detrimental to motor performance as well as the learning of new skills. In contrast, focusing on the intended movement effect (external focus) enhances automaticity, movement effectiveness, and efficiency. Given that many practitioners, such as coaches or physical therapists, often provide their clients with instructions that promote an internal focus, and that most performers, either spontaneously or as a result of those instructions, typically focus on body movements, we deemed it important to find out what ballet dancers focus their attention on. Therefore, we conducted a survey with current or former professional ballet dancers to determine what they typically focus on when performing certain traditional movements. We hypothesized that although many of them would report internal foci, some may have realized intuitively the effectiveness of focusing externally.

Method

Participants

Participants were 53 international professional ballet dancers from Australia, Canada, Finland, France, Ireland, Monaco, Sweden, Switzerland, the United Kingdom, and the United States, who were actively dancing or used to dance in a professional company. Of those who indicated their present status, 11 stated that they were current dancers, and 19 said they were former dancers.

Procedure

Key professionals were contacted via e-mail and social media and invited to fill out an online survey (via SurveyMonkey®) and also asked to share the survey with colleagues from within their professional network. The survey, which was approved by the university’s institutional review board, consisted of four questions: “What do you focus on/imagine/think when preparing/executing… a balance in fifth demi-pointe or pointe?”; “…a balance in arabesque demi-pointe or pointe?”; “…a pirouette en dehors?”; “…a grand jeté en avant?” The questions were chosen for their increasing motor complexity (two-foot sustained balance, one-foot sustained balance, one-foot dynamic balance plus more complex rotation, and explosive long-jump). It was assumed that all professional ballet dancers would understand the motor actions implicit in these movements, so that the survey would reflect “like for like,” and given the universality of the technique, they would to a great extent be preparing and executing the same technical movements. Both investigators classified the responses that were received (53 for fifth position, 50 for arabesque, 45 for pirouette, and 47 for grand jeté) by consensus, using three categories: internal focus, external focus, and combination (of internal and external foci). If clear reference was made to body movements (e.g., “Pulling up the body and pushing off leg for thrust…plié accentuated as the ignition,” “Relaxing. Pushing the knee around and turning with the back”), the response was classified as an internal focus. We categorized as external focus responses that did not include body-related words but rather referred to the intended movement outcome, often in the form of an image (e.g., “Reacting to the floor in a crossed chain sensation, imagining the least resistance,” “Pushing a balloon under water in the plié, the balloon continually rising in the balance,” “Push and fly”). Finally, a number of responses included both references to body movements and images, and those were categorized as combination (e.g., “Lift, lightness, fly, stretching legs and feet,” “Lengthening diagonals in upper body and quick push off,” “Pulling up the body and pushing into the floor at the same time”). As different numbers of responses were given for each question, we calculated the percentage of responses in each category. These are presented in the results section.

Results

Representative responses in each category (internal focus, combination, and external focus) for each of the four movements are provided in Table 1. The relative frequency (in percent) of each type of response can be seen in Figure 1. Overall, internal focus (36.1%) and combination (36.1%) responses accounted for the majority of replies, whereas an external focus (27.7%) was reported less frequently. However, different types of focus appeared to be more prevalent for different skills. While for the fifth position no particular focus category was prevalent, an internal focus was predominant for the arabesque (50%). Most combination responses were seen for the pirouette (51.1%), and an external focus was most often reported for the grand jeté. Possible reasons for this pattern of results are discussed in the next section.

Discussion

Professional ballet dancers showed a high degree of creativity and diversity
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<th>Table 1</th>
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### Balance in Fifth Position

**Internal Focus**
- Two legs equally balanced through the feet, growing through, back muscle are well engaged, relaxed and well supported spine through the head.
- Balancing bones and wrapping muscles.
- Core engagement and engagement of muscles of pelvic floor, oppositional forces through the spine, strong fifth position at top of legs.

**Combination**
- The pressure of the legs into one another as if they were one/glued and spiraling in opposition.
- Ideally a spiral upwards instead of a static, frozen position, with the two legs spiraling outwards from each other.
- Pulling up without tucking, arms in front of shoulder, chin lifted...thinking of floating rather than pushing down into the floor.

**External Focus**
- A sense of energy in two directions—down in to the floor and internally lifting up in an opposing direction.
- Reacting to the floor in a crossed chain sensation imagining the least resistance.
- I imagine elevating myself like a balloon.

### Balance in Arabesque

**Internal Focus**
- I imagine the two arms elongated, the malleolus points to the ceiling, the arabesque leg moves away from the body.
- Foot muscles and straight leg.
- Divide the body in two halves (spine in the middle and both sides) to be able to get a correct alignment of the arabesque. Supporting leg is growing through and also into the floor (like in Yoga). Working leg is lengthened away from the hip joint. Arms and neck are relaxed and placed.

**Combination**
- A lengthened curve—the upper body traveling forward through space while the gesture leg curves away from the center.
- I imagine dancing on a big stage and dancing with a lovely partner or doing the balance on the top of the Tour Eiffel, focus on stretching my knees, proper placement, soft arms...I usually hope for a great balance.
- Feeling my center controlled over my supporting leg. The big toe of my arabesque floating away and up. Both pushing into and lifting out of the floor as the movement expands.

**External Focus**
- Energy expanding out in all directions.
- Going forward, feeling like a swan.
- I imagine stretching like a star in all directions.

### Pirouette en dehors

**Internal Focus**
- Relaxing. Pushing the knee around and turning with the back.
- Putting more weight into the supporting leg in plié prep, keeping width through shoulders, using forward arm first in take off, then feeling the opposite side of back in conjunction with passé knee and supporting glute.
- Rotation from hip socket, squared off hips, coordination of head, back and arms in takeoff, use of the floor and appropriate amount of torque.

**Combination**
- High on the standing leg/fast to the position.
- Just going...too much thinking doesn't help, keep the body square.
- Complete eye focus...pin point spot on floor...carriage of arms...the end of the turn.

**External Focus**
- On a whirligig.
- Climbing up a corkscrew.
- Spiral

### Grand Jeté

**Internal Focus**
- Focus is on short foot and gluteal engagement of the push off leg for thrust...plié accentuated as the ignition.
- Knees in correct alignment when landing.
- Releasing the air from my lungs to prevent the shoulders from going up; turning the head to the public.

**Combination**
- In preparation going down into the floor for push into the air, imagining staying in the air for two counts while pushing legs up higher.
- Keeping heel down on plié, allowing the music to help find the pause in the air.
- Jump over a puddle—suspension—soar and glide with pelvic initiation at top of jump.

**External Focus**
- On jumping above the lake.
- I imagine jumping over something.
- Travelling...achieving air time in the jeté...gliding through air.
in their attentional foci. Over many years or even decades of their active careers, they presumably developed certain preferred foci based on what seemed to “work” for them or on instructions they received from their teachers. Given the nature of ballet and its emphasis on the movement form, it is not surprising that many dancers reported concentrating on the coordination of their movements. Almost three quarters (72%) of the responses referred to body movements to at least some degree (internal focus and combination). Interestingly, though, about 28% percent of the reported foci consisted mostly of images, with no mention being made of body movements (e.g., “feeling like a swan,” “energy expanding out in all directions,” “spiral”), thus representing external foci. As shown in a study with highly skilled Cirque de Soleil performers,37 this may result from the fact that some dancers through their training and practice intuitively discover the benefits of thinking of metaphors rather than focusing on their body movements.

It is also interesting that the predominance of a certain type of focus appeared to be a function of the type of skill. For instance, a complex static balance over a relatively long duration, as seen in the arabesque, might promote an internal focus and entice performers to consciously try to maintain their balance and alignment by focusing on legs, arms, shoulders, etc. In contrast, a pirouette, where balance demands are combined and coordinated with dynamic rotation, appears to lend itself to combinations of internal and external foci, such as “lengthening diagonals in upper body,” “spiral and opening/closing the arms,” or “push off the floor and use your whole body to turn.” Finally, the dynamic and ballistic motion of the grand jeté, which leaves little time for conscious control, likely explains the predominance of external images such as “gliding through air,” “imagine jumping over something,” or “reach for the sky.” Nevertheless, even for the grand jeté, more than half of the respondents (57%) indicated that they partially adopted internal foci (internal focus or combination).

Thus, the results of our survey suggest that, while some professional dancers seem to take advantage of the “power” of an external focus by using metaphors, analogies, or other images, not all dancers seem to have an optimal focus of attention at all times. Indeed, more often than not they tend to concentrate on their body movements, which, as reviewed in the Introduction, has consistently been shown to result in less-than-optimal performance.1,2 While it may seem daunting to give up conscious control attempts or even think of alternative appropriate external focus cues for certain skills, we are confident that both dancers and teachers will immediately see the benefits and will use their creativity to generate appropriate foci or instructions.

Finally, it should also be pointed out that benefits of an external compared to an internal focus have been shown for a variety of skills, ranging from pressing piano keys or h amplified.
ners 5 to driving golf balls, 40 although the advantages of an external focus are especially pronounced when the skill is difficult or complex 3,14 and advantages of an external focus have been demonstrated in situations that involved pressure, including audience presence. 3,41 Furthermore, instructions promoting an external focus have been found to enhance not only the performance of experienced athletes but also of beginners, 3,8 people of age groups ranging from children 42 to older adults, 43 healthy people and those with injuries, 10,44 motor impairments caused by stroke 45 or Parkinson’s disease, 13 or intellectual disabilities. 4

If dancers’ focus and ballet teachers’ instructions are similar (internal versus external ratio) to those used by athletes, sport coaches 38 and physiotherapists, 39 then there remains ample bandwidth for adjustments to be implemented in ballet practice, including the developing fields of dance practice for older adults and dance for people with Parkinson’s disease. Research findings suggest that simple modifications to the wording of instructions can lead to immediate enhancement of performance and have a long-term impact on the sustainability of the technique. In dance, there are several potential external foci to which attention could be directed, such as the relation to the floor, a dance partner, the music, the sound of a movement, the surrounding air, or the movement of a prop. Thus, a shift to an external focus could be as simple as a return to a focus on the musicality of the movement or the relationship and communication with another performer.

Yet, external foci employed in a ballet context can also be imaginary. Imagining the effect of one’s movement on the air or the universal energy field or imaginary surrounding water would constitute an external focus. Also, when imagining a continuation of the limbs and their movements and shapes out in space, like a laser light extending out through the limbs and crown to facilitate lengthening and extension in adage, the whole movement effect is traced multi-directionally in space in the imagination of the dancer. Figure 2 shows a ballet exercise designed to promote an external focus to encourage the simultaneous extension of the five lines of the arabesque out into space. The dancer’s proprioceptive sense of the external proximal touch of her peers provides both an immediate effective external cue and a lasting recall cue for the dancer. Anecdotal evidence also suggests that a more distal external image, such as “reach down into the rock and up to the rain,” rather than, “press the floor away and reach for the ceiling” (external proximal image), can promote additional vertical stability to facilitate the one-foot dynamic balance and coordinated rotation of a pirouette en dehors, for example. These benefits experienced in practice are commensurate with the findings of the extensive research literature on attentional focus and motor skill learning of the last two decades 1 and with the key role an external focus of attention has in a new theory of motor learning. 46

References

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