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The cognitive antecedents and motivational consequences of the feeling of being in the zone

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ABSTRACT

The feeling of being in the zone (related to "flow") is marked by an elevated yet effortless sense of concentration. Prior research suggests that feelings of being in the zone are strongest when the demand posed by a task matches one's level of ability (i.e., the balance hypothesis). In the present article, we tested this hypothesis using a novel experimental paradigm. By collecting numerous zone judgments for each participant, we were able to examine intra-individual sources of variance that explain why people often feel more or less in-the-zone on the same task from one moment to the next. The results of two experiments provide support for what we have termed the balance-plus hypothesis, which posits that zone experiences are strongest (Experiments 1–2) and have the greatest motivational force (Experiment 2) when the balance between task demand and ability is accompanied by positive assessments of one's own performance.

1. Introduction

The feeling of being 'in-the-zone' is experienced across a broad range of cultures and activities (Jackson, 2000; Massimini & Carli, 1988; Moneta, 2004). It is evident not only when a jazz musician improvises a solo or a basketball player takes a jump shot, but also when a person plays a computer game. Qualitative research has established that feeling in the zone is marked by a heightened level of absorption and concentration that feels productive yet effortless (Csikszentmihalyi, 2000; Moneta & Csikszentmihalyi, 1996). Although this feeling has been identified as a phenomenologically unique psychological state in domains as disparate as sports (Cooper, 1998; Garfield & Bennett, 1984; Loehr, 1986; Ravizza, 2007), art (Csikszentmihalyi, 2000; Dewey, 1934) and human–computer interaction (Konradt, Filip, & Hoffmann, 2003; Novak, Hoffman, & Duhachek, 2003), it has only been investigated experimentally by several research groups in a small number of published studies (Engeser & Rheinberg, 2008; Keller & Bless, 2008; Keller, Bless, Blomann, & Kleinböhl, 2011; Keller & Blomann, 2008; Mannell & Bradley, 1986; Rheinberg & Vollmeyer, 2003; Schiefele & Raabe, 2011; Schiefele & Roussakis, 2006; Ulrich, Keller, Hoenig, Waller, & Grön, 2014). The present experiments attempt to address this gap in the literature by exploring the cognitive antecedents and motivational consequences of the feeling of being in the zone.

The feeling of being in the zone is similar to being in a state of flow, which has been described as an enjoyable feeling of deep absorption in a task (Csikszentmihalyi, 2000). Flow is thought to occur during the performance of activities that involve high levels of risk and expertise, such as artistic performances, surgery, or rock climbing (Csikszentmihalyi, 2000) though it

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may also occur during more mundane activities. It involves completely focused motivation and single-minded immersion sometimes to the point that the person may ignore needs for sleep and food. Thus, the term flow (and certain mystical experiences that are associated with it such as self-transcendence) is often associated with intense and even mystical feelings, and, by some views, may be open only to people of certain personality types (though see Engeser, 2012, and especially, Engeser & Schiepe-Tiske, 2012; Keller & Landhauber, 2012). We view flow as being on a continuum with the feeling of being in the zone – the feeling state that we investigate in the present experiments. In the review of the literature that follows, we use the term "feeling in the zone" to refer to both types of experiences.

1.1. The balance hypothesis

Keller and Bless (2008) conducted an exhaustive literature search and found that only two experimental studies of feeling in the zone had been published up to that point (Mannell & Bradley, 1986; Rheinberg & Vollmeyer, 2003; see also Moller, Meier, & Wall, 2010). The first of these studies (Mannell & Bradley, 1986) established that people were more likely to feel in the zone when they were given clear rather than ambiguous instructions about how to complete an experimental task. The second study (Rheinberg & Vollmeyer, 2003), which is more directly relevant to the present research, tested a theory from the non-experimental literature known as the *balance hypothesis*. The balance hypothesis stipulates that zone states arise when the perceived level of demand posed by a task matches a person's perceived ability or skills for completing the task (Csikszentmihalyi, 2000). That is, zone states are believed to arise only when perceived task demands do not exceed perceived ability (i.e., when the task does not seem too difficult) and when perceived ability does not exceed perceived demands (i.e., when the task does not seem too easy). The balance hypothesis is particularly interesting from a learning perspective because of its alignment with region of proximal learning (RPL) theory, which states that learning is optimized when the materials or task requirements are neither too easy nor too difficult for the particular learner (Kornell & Metcalfe, 2006; Metcalfe, 2002, 2009, 2011; Metcalfe & Kornell, 2003, 2005). The idea that there is a sweet spot for learning that is just slightly beyond what the learner has already mastered is also consistent with the theoretical views of Piaget (1952), Berlyne (1966) and Atkinson (1972). It is therefore not surprising that a number of researchers have looked at the implications of feeling in the zone for intrinsic motivation and learning (e.g., Chan & Ahern, 1999; Keller et al., 2011; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003).

Rheinberg and Vollmeyer (2003) tested the balance hypothesis by having participants play a computer game that varied in its level of difficulty across trials. Their assumption was that each participant's ability would remain constant throughout the experiment, but that perceived challenge would vary in accordance with the difficulty level of each trial, that is, as a function of the task demands. Because they presumably designed the game so that the average participant's ability would significantly exceed the lowest difficulty level but be far surpassed by the highest difficulty level, they hypothesized that participants would experience an optimal degree of task demands and relatively high levels of zone when playing the game at medium levels of difficulty. The results of their study confirmed this hypothesis. Keller and Bless (2008) conducted a similar test of the balance hypothesis by creating three conditions of the game *Tetris*, each of which reflected a different relationship between perceived ability and task demands. In the boredom and overload conditions, objects fell either at a very slow or very fast rate that was held constant throughout the trial. In contrast, the speed of the game in the adaptive condition was automatically adjusted by the computer in order to maintain a fixed level of performance and an optimal level of task demand. More specifically, if a participant in the adaptive condition successfully completed five or more lines of the game within a particular time frame, the speed was automatically increased by one interval. But, if the player completed only three lines or less lines in the same time frame, the speed was decreased by one interval. Consistent with the balance hypothesis, the results of the study showed that participants' zone judgments were highest when the demands of the task had been matched to their ability (i.e., in the adaptive condition).

1.2. Balance-plus

Though the balance hypothesis has received some empirical support, it is limited in terms of the specificity of its predictions. First, although the notion of a balance between task demands and ability is attractive, this notion really only specifies the conditions that are likely to produce "optimal experiences" or feelings of zone. It cannot be used to precisely describe the degree of balance or optimality experienced by an individual at a particular point in time. Later in the paper we examine several performance variables that could potentially serve as a direct measure of optimality, including hit rate, false alarm rate, *d'*, and the absolute amount of reward (i.e., successes minus failures during a fixed amount of time allotted to the task).

Another limitation of the balance hypothesis is that it is unable to explain why the zone experiences of an individual vary between trials even though the demands of the task and the individual's ability level remain constant. For instance, although most professional basketball players exhibit a consistent level of ability over the course of a season and although their level of competition remains relatively stable, they often report feeling more or less in the zone from one game to the next. Research by Gilovich, Vallone, and Tversky (1985) on the hot hand phenomenon suggests that this variability in players' zone experiences may be due to the manner in which they interpret random fluctuations in their performance. That is, when players make a substantially higher percentage of baskets during a game than their season average would seem to predict (or make what incorrectly seems to be an improbable string of consecutive baskets; Gilovich et al., 1985), they often report