Special Topic:
Identifying effective learning environments
– Part I

Guest Editorial

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Researchers and laypeople alike continue to argue over the relative importance of genes versus environment in explaining superior accomplishments in art, science, sport and education. Although this debate shows no signs of abatement, many researchers in the fields of giftedness and expertise have focused on how the environment influences the attainment of achievement. Obviously, environmental influences can be wide-ranging; studies in this area vary from understanding differences between systems of development (e.g., between nations) and global policies regarding instruction to the manipulation of specific variables in training/practice environments to determine their effectiveness to maximize learning effects.

Leading models of expertise development and giftedness (e.g., Ericsson, Nandagopal, & Roring, 2009; Gagne, 2004) have placed environmental factors as fundamentally important for understanding attainment. For instance, Ziegler's (2005) Actiotope Model of Giftedness is based on the notion that excellence is best understood as a consequence of an enormous number of successful adaptations to different environments experienced throughout the development process. In Ziegler's view, access to important developmental resources (i.e., different forms of 'capital') is critical for positive adaptation and continued development. Educational Capital, for example, refers to exogenous resources that are regulated through a system (and its subsystems) and include factors that can be mobilized or utilized for the improvement of education and learning (e.g., wealth, cultural belief, social support, etc.). In comparison, Learning Capital refers to endogenous resources that are regulated by the individual and include things like an individual's physiological and psychological predispositions, their capabilities for action and attention, among other factors (for a more detailed description of educational and learning capital see Ziegler & Baker, 2013).

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This first part of the special issue highlights the diversity of approaches used by researchers who have examined optimal environments for learning and achievement and the various influences of different forms of educational and learning capital. In the first paper Anamaria Vladut, Wilma Vialle, and Albert Ziegler establish an empirical link between actiotope variables and learning resources. Their results show that the Questionnaire of Educational and Learning Capital (QELC) has satisfactory psychometric qualities as well as acceptable factorial and concurrent validity.

The next paper is entitled "Virtual realities as optimal learning environments in sport – A transfer study of virtual and real dart throwing" and was contributed by Judith Tirp, Christina Steingröver, Nick Wattie, Joseph Baker, and Jörg Schorer. The researchers address an interesting question that will become more relevant in the future, as virtual realities become more common. In their article they show that transfer of specific skills can be found between virtual and real perceptual-motor behavior, and that small changes in the virtual environment can be used to optimize the learning experience.

Sustained motivation over a prolonged period is undoubtedly important for achievement. In the third paper of this special issue, "What influences motivation in Physical Education? - A multilevel approach for identifying climate determinants of achievement motivation", Benjamin Niederkofler, Christian Herrmann, Sara Seiler, and Erin Gerlach consider a very unique learning environment in school in the special field of physical education. In a longitudinal design they test the influence of students' individual and aggregated climate perceptions on the development of motivation with a multilevel regression approach. They show how a supportive classroom climate can facilitate the development of achievement motivation in physical education.

The fourth paper, entitled "Why chess players do what they do: Effects of exogenous resources on the Domain Impact Level on Activities (DILA)" by Tobias Debatin, Manuel Hopp, Wilma Vialle, and Albert Ziegler, builds on the idea that the acquisition of expertise is very time consuming (cf. Ericsson et al., 2009). This prolonged engagement seems only possible if chess-related activities can be integrated in the person's life. The authors show for the domain of chess that the availability of educational capital in an actiotope enables a better integration of the required training.

The fifth paper entitled "Age Differences in the Actiotope Model of Giftedness in a Turkish Sample" by Marilena Z. Leana-Taşcılar (2015) aims to investigate differences between youth age groups and sexes in educational and learning capitals. In the first phase, the Turkish translation of the Questionnaire of Educational and Learning Capital was translated and tested for reliability. In the second, the author showed that younger pupils were more dependent on capital for their achievement.

The final paper in this first section of the special issue, by Jörg Schorer and his colleagues examines "Developmental Contexts, Depth of Competition and Relative Age Effects in Sport: A Database Analysis and a Quasi-Experiment" and looks at how a simple policy like using a cut-off date to group children of varying ages affects the probability of achieving excellence. In their first study they look at relative age effects across 49 European countries in elite male football. In the second study they examine how

reducing the number of available spots for talent selections affects relative age influences in handball.

We are indebted to Klaus Kubinger, the Editor-in-chief of this journal for providing us with the opportunity and space to present such a topic in this journal from an international and interdisciplinary background. In the next issue of this journal, the remaining four papers that constitute this special focus on identification of effective learning environments will be published.

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