

CAN ARTIFICIAL INTELLIGENCE SUPPORT CREATIVE PROBLEM-SOLVING?

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Abstract

The process of creative problem-solving and stimulating innovation in organizations is long, costly, and high-risked. While risk is by definition included in the creative process, ideation can cut down time and costs of fostering innovative solutions. Inventive systems such as TRIZ (*Теория решения изобретательских задач*), CPS (Creative Problem-Solving) or DT (Design Thinking), have paved the way in supporting creators, designers, inventors and scientists in innovative solutions seeking. However, only a few of these systems are scientifically proven to be effective. It seems that CPS, initiated by Osborn, is the best evidence-based inventive system, as well as it is still developed both in empirical research, and in real-life practice (Buijs, Smulders & van der Meer, 2009; Isaksen & Treffinger, 2004; Puccio, Murdock & Mance, 2005). The main assumption of CPS is that creating innovative ideas is a phase process, i.e. following a certain universal pattern. Baer and Kaufman (2005) argue that CPS involves various skills, especially domain-specific creativity (i.e. related to expert knowledge), which is embedded in general abilities such as intelligence and motivation. However, the use of CPS requires high-class experts who are not only specialists in a specific field but also trained in creative problem-solving. Regardless of the costs, it is a bottleneck for the application of such inventive techniques on a larger scale. Therefore, new approaches in development of AI-powered creative tools to assist creators and designers seem to be emerging. One of them is @CREATE – an expert inventive system based on CPS and supported by artificial intelligence. The idea of @CREATE will be presented by the authors.

Keywords: *Creativity, creative problem solving, innovations, artificial intelligence.*

ADOLESCENTS' SENSE OF BELONGING AT SCHOOL: THE ROLE OF EMPATHY AND INDIVIDUAL CHARACTERISTICS

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Abstract

There are many benefits of a high sense of school belonging (i.e., lower psychological distress), yet a lot of students do not feel like they belong to their schools. Many researchers have therefore tried to increase the sense of belonging in adolescents via different interventions. One of the recent review articles (Allen et al., 2021) discovered that successful interventions targeted students' strengths and promoted positive interactions. One way these strengths and positive interactions could be targeted is to build empathy capacities. Although personal characteristics have been widely recognized as predictors of school belonging (i.e., age, gender, academic achievement, etc.) this does not seem to be the case for empathy. Only a few studies explored empathy components when addressing school belonging (i.e., Batanova & Loukas, 2014) and none, to our knowledge, have looked into empathy as a possible mediator of the relationship between personal characteristics and school belonging. The present study investigated the relationship between personal characteristics and the sense of belonging at school while investigating the mediating role of empathy on the relationship. A randomized sample of 1990 students from Slovenia ($M = 15.35$ years, $SD = 1.23$; 58.3% female) was used in a structural equation modelling to determine the relationships between the individual characteristics (gender, age, grades) and the Sense of belonging at school (OECD, 2018), while looking into the mediating role of both empathy components, namely, Empathic concern and Perspective taking (IRI; Davis, 1980). Results showed that all personal characteristics (gender, age, grades) are positively connected to both empathy components. Also, both empathy components (Perspective taking, Empathic concern) have a positive connection with the Sense of belonging at school. Furthermore, grades have a direct positive and gender a direct negative connection with the Sense of belonging at school. Lastly, both empathy components mediate all the indirect paths from the personal characteristics to the Sense of belonging at school, thus providing 6 positive indirect paths in-between. The model provides an insight into the important role that empathy has when