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Author: Prof.Dr. Michel Nicolas
France

Dr. Guillaume Martinent
France
Prof. Peter Suedfeld
Canada
Dr. Marvin Gaudino
France
Mr. Lou Perrot
France

THE ICE-Q: A TOOL FOR THE ASSESSMENT OF PSYCHOLOGICAL ADAPTATION PROCESSES (PAP) IN ISOLATED AND CONFINED EXTREME (ICE) ENVIRONMENTS

Abstract

Life in Isolated and Confined Extreme (ICE) environments poses important challenges and constraints and therefore to human adaptation and more particularly to the processes of psychological adaptation (PAP). Contemporary models view psychological adaptation as a dynamic process of constant adjustment to the environment, encompassing changes in physical, social and psychological demands and constraints (Cramer, 2000; Lazarus, 1991; Nicolas et al., 2017). The literature lacks valid and reliable measures of the psychological processes engaged in adaptation to the ICE environment (Sandal, Leon, Palinkas, 2006). Monitoring can provide early warning of mission- and health-endangering psychological disturbances. This communication describes the development of a psychometrically sound instrument to evaluate individual and social adaptation in ICE environments. It is intended for use in spaceflight and other extreme situations (e.g., polar stations, offshore platforms, deep diving, deep-sea sailing, submarines or military missions). During four years, participants (n=140) spending one year in several sub-Antarctic and Antarctic stations completed a questionnaire. This study addresses all three stages of construct validation: the substantive, structural, and external stages (Messick, 1995). Factor analyses provided strong evidence for the construct validity of the ICE-Q. The most salient factors were (a) social (e.g., relationships, social support), (b) emotional (e.g., emotional changes, boredom) (c) occupational (e.g., level of investment in work and leisure activities), and (d) physical (e.g., fatigue, well-being). These big four dimensions are consistent with the main dimensions of human adaptation mentioned in the ICE research literature (Cazes et al., 1989; Gunderson, 1974; Kanas Manzey, 2004; Leon et al., 2011; Palinkas Suedfeld, 2008; Zimmer et al., 2013). Given the several sources of adversity associated with ICE environments, adaptation represents a central construct for mission success and also for health and well-being of participants. In line with the theoretical frameworks and previous empirical studies in similar situations, these findings have identified the four key domains (social, emotional, occupational, and physical) of the state of adaptation to the challenges generated in ICE environments. Complementing other methods, this short, quick, cost-effective and non-invasive measure could serve to (1) monitor psychological adaptation within the big four dimensions, and (2) assess methods used to facilitate adaptation to extreme situations and enhance the health and well-being of participants before, during and after missions.