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EMOTIONAL AND COGNITIVE ADAPTATION DURING 520 DAYS OF ISOLATION: RESULTS FROM THE LODGEAD MARS500 STUDY

Abstract

The LODGEAD study aims at identifying the relationship between physical (e.g., confinement) and social-psychological (e.g. loneliness) stress factors and executive functions. Data from the Mars105 (Van Baarsen et al., 2009) and the Mars520 (Van Baarsen, 2011) studies were collected through (validated)psychological questionnaires, cognitive tasks. We hypothesised that during the mission:

1. loneliness will increase, particularly at the end,
2. the negative relationships between loneliness and social support will become more pronounced,
3. control processes will be negatively affected, resulting in reduced efficiency.

Results from the data collected during the Mars105 and the first seven months of the Mars520 studies supported the hypotheses. Overall, feelings of loneliness increased over time, particularly shortly after confinement. The average scores that were measured just before and directly following the confinement showed an increased pattern for all the loneliness items, though relevant individual differences were observed. Also, over time, the relationship between (lower) perceived support from colleagues and (higher) loneliness became more pronounced; however, in the long run the negative association was restricted to 3 loneliness items. Regarding the executive functions, in both the studies a noteworthy pattern was found in that they reduced their efficacy, as shown by the backward inhibition decreasing and the switch cost increasing along with the isolation period. Under stress conditions, the inhibitory component of the executive functions became less efficient, thus the representations of all the tasks at hand remained active and interfered one with each other. With regard to the relationships between loneliness and executive functions, the results indicated that before the isolation, loneliness does not seem to affect the executive functions by itself, but that the isolation condition produces a rather general distress that affects the feeling of loneliness and the ability to cope with multiple tasks. These results might suggest that countermeasures preventing feelings of loneliness to increase during isolation can also have a positive impact on the executive functions.

Our results give a first information on the effects of extended isolation on social-psychological (loneliness, professional support) and cognitive adaptation processes, and on the relation between them. The

results must be interpreted with care, as they are based on a small number of participants. Moreover, the results have to be confirmed for long term isolation effects. Therefore, in the present study, data collected during 520 days of isolation will be analysed and discussed according to the hypotheses mentioned above.