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WORD FREQUENCY AND SENTENCE BASED CONTENT ANALYSES OF DIARIES OF
ANTARCTIC WINTEROVERERS

Abstract

Space psychologists agree that the results of space analog studies, including anecdotal reports, may help hypothesize and investigate psychological processes in staffed space missions. We applied two content analysis approaches for the same textual corpus, compared the results, and drew important conclusions.

Venues and data collection. In ESA cooperation, we collected video diaries from two Antarctic winterovering crews. Sample 1 was the French-Italian Concordia Station (isolation period: 264 days, 10 males, 4 females; mean total sentence count per participant: 1276). Sample 2 was the British Halley VI Station (isolation period: 234 days, 7 males, 1 female; mean total sentence count per participant: 947). Ten-minute-long video diaries collected every week were transcribed verbatim; the French and Italian diaries were translated into English.

Study 1. We performed word frequency-based content analysis by the LIWC software (Pennebaker, et al., 2015) for exploring and comparing the effect of time on patterns of emotionality, and the presence of third-quarter emotional dysphoria. We found the third quarter phenomenon in Concordia, but not in Halley.

Study 2. The aim of Study 2 was to clarify the underlying reasons for different emotional patterns of Concordia and Halley crewmembers. We performed sentence-based quantitative manual coding. Three coders identified three clusters of sentences: the first cluster captured self-related statements, the second one collected statements about other ingroup members, while the third cluster was formed by sentences lacking self or ingroup related topics. Taking the valence of the statements into account, sub-clusters were merged into five codes: Self OK, Self Not OK, Ingroup OK, Ingroup Not OK, and Non-Relevant references. In sum, the two samples did not differ as to the total rates of Self or Ingroup References; Self and Ingroup foci did not change with advancing time during winterovering either within or between the two groups. No changes were seen in the Self OK References in any of these aspects. However, the Ingroup OK and Ingroup Not OK References showed significant differences between the two crews. The British winteroverers spoke more benevolently about their crewmates: they expressed more OK and less Not OK statements in their diaries during the mission.

Conclusions. Considering the controversial results concerning the third quarter phenomenon, we suggest that a more refined approach should be applied to the study of emotional processes of heterogeneous crews, taking different national, organizational, and professional cultures and gender into consideration.