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Working memory capacity predicts individual differences in social-distancing compliance during the COVID-19 pandemic in the United States



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Significance

Before vaccination and other intervention measures become available, successful containment of an unknown infectious disease critically relies on people's voluntary compliance with the recommended social-distancing guidelines. This involves a decision process of prioritizing the merits of social distancing over its costs, which may depend on one's ability to compare multiple pieces of potentially conflicting information regarding social distancing in working memory. Our data support this hypothesis, highlighting the critical role of one's working memory capacity in social-distancing compliance during the early stage of the coronavirus disease 2019 pandemic. This observation reveals a core cognitive limitation in one's response to a public health crisis and suggests a possible cognitive venue for the development of strategies to mitigate this challenge.

Abstract

Noncompliance with social distancing during the early stage of the coronavirus disease 2019 (COVID-19) pandemic poses a great challenge to the public health system. These noncompliance behaviors partly reflect people's concerns for the inherent costs of social distancing while discounting its public health benefits. We propose that this oversight may be associated with the limitation in one's mental capacity to simultaneously retain multiple pieces of information in working memory (WM) for rational decision making that leads to social-distancing compliance. We tested this hypothesis in 850 United States residents during the first 2 wk following the presidential declaration of national emergency because of the COVID-19 pandemic. We

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found that participants' social-distancing compliance at this initial stage could be predicted by individual differences in WM capacity, partly due to increased awareness of benefits over costs of social distancing among higher WM capacity individuals. Critically, the unique contribution of WM capacity to the individual differences in social-distancing compliance could not be explained by other psychological and socioeconomic factors (e.g., moods, personality, education, and income levels). Furthermore, the critical role of WM capacity in social-distancing compliance can be generalized to the compliance with another set of rules for social interactions, namely the fairness norm, in Western cultures. Collectively, our data reveal contributions of a core cognitive process underlying social-distancing compliance during the early stage of the COVID-19 pandemic, highlighting a potential cognitive venue for developing strategies to mitigate a public health crisis.

working memory social distancing social norm individual differences COVID-19

Footnotes

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Author contributions: W.X. and W.Z. designed research; W.X. and S.C. performed research; W.X. contributed new reagents/analytic tools; W.X. analyzed data; and W.X. and W.Z. wrote the paper.

The authors declare no competing interest.

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Data deposition: Nonidentifiable data from all 1,159 participants and associated analytical scripts/files are available in the Open Science Framework data repository at <https://osf.io/uhns4/>.

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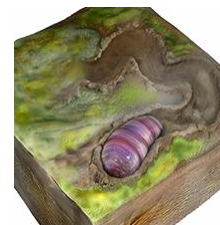
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