Differences between People Who Think About and Attempt Suicide

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Machine learning has found that simple risk and protective factor models are limited in their ability to distinguish between those who think about suicide and those who attempt suicide. Instead, differences between the two groups may best be explained by a large set of factors in many possible combinations.

Researchers tested three models that might explain differences between those who think about suicide and those who attempt it: (1) A simple model where a single or small set of combined factors is both necessary and sufficient to accurately distinguish between the two groups; (2) a complicated model, where a large combination of factors is both necessary and sufficient to accurately distinguish between the two groups; and (3) an indeterminate model, where an indeterminate number of factors and factor combinations can accurately distinguish between the two groups. Using five participant groups, each with over 35 variables reflecting known risk or protective factors for suicide, researchers analyzed which model provided the best fit for the data.

They found the best fitting models randomly generated combinations of factors. In these models, many algorithms provided sufficient fit for accurately distinguishing between the two groups, and no single factor or combination of factors was necessary.

These results suggest there may be an indeterminate number of ways to differentiate those who think about suicide from those who attempt it. Approaches that rely on specific prediction models may be limited.

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