Development and testing of a mobile application for identifying individuals at high risk for depression in the general population

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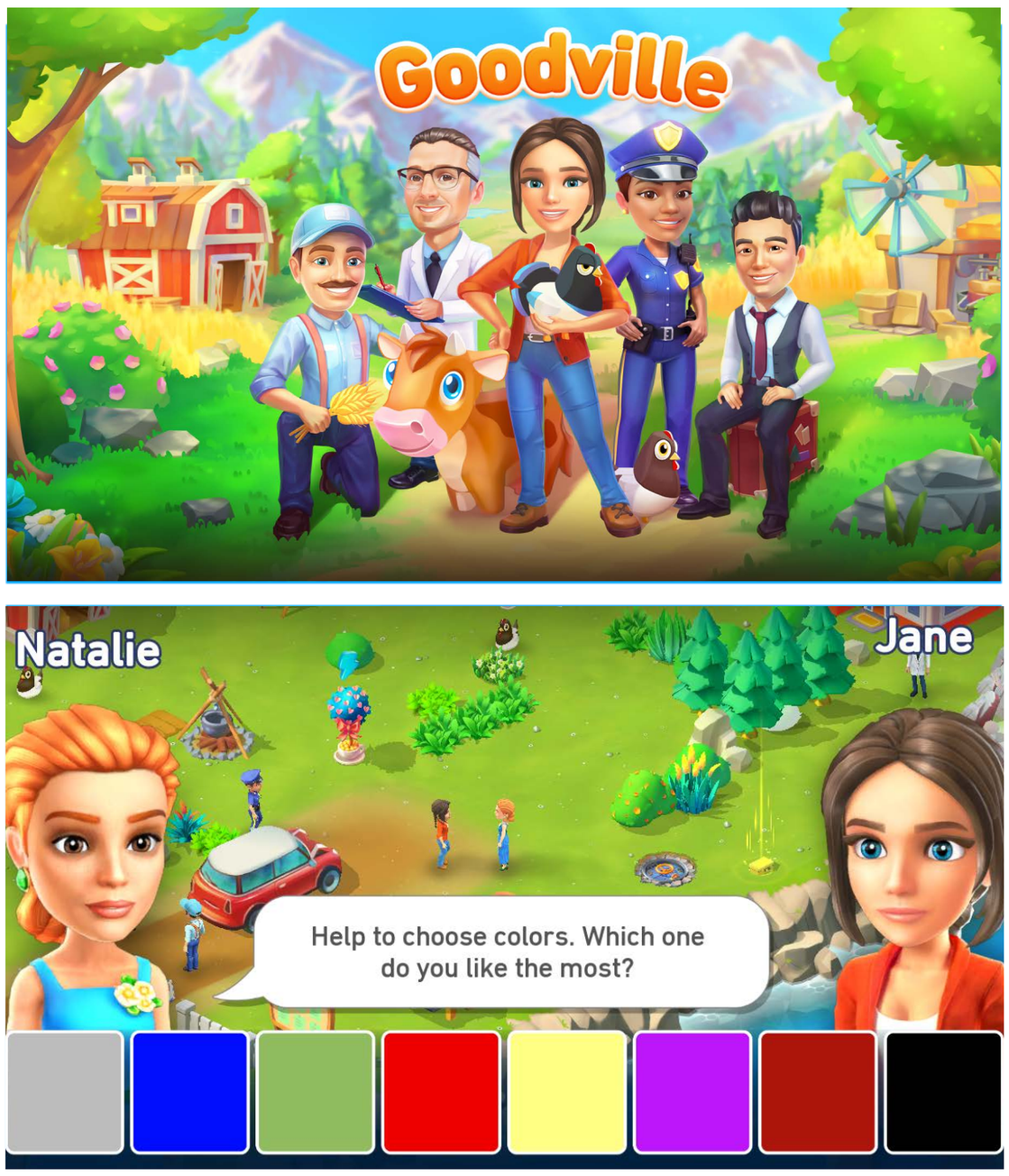
Introduction. Information Technology (IT) is a promising and quickly developing scientific and practical field. One of its traits is its ability to provide big numbers of people with everyday access to information and tools.

Our goal was to develop a mobile tool that can help measure the level of psychiatric symptoms in any given person and, without making any clinical diagnoses, offer that person information about probable conditions they might have and help they can get. In order for such an application to be available to the majority of smartphone users, we decided to incorporate into it the less-formal tools for measuring psychiatric symptoms.

The first test we included was the Lusher test as it is a rather well-investigated in relation to mood disorders tool that can be used as a screening method. The first dimension of psychiatric conditions we examined was affective disorders since they are common and in many cases their severity does not prevent people from using applications such as ours.

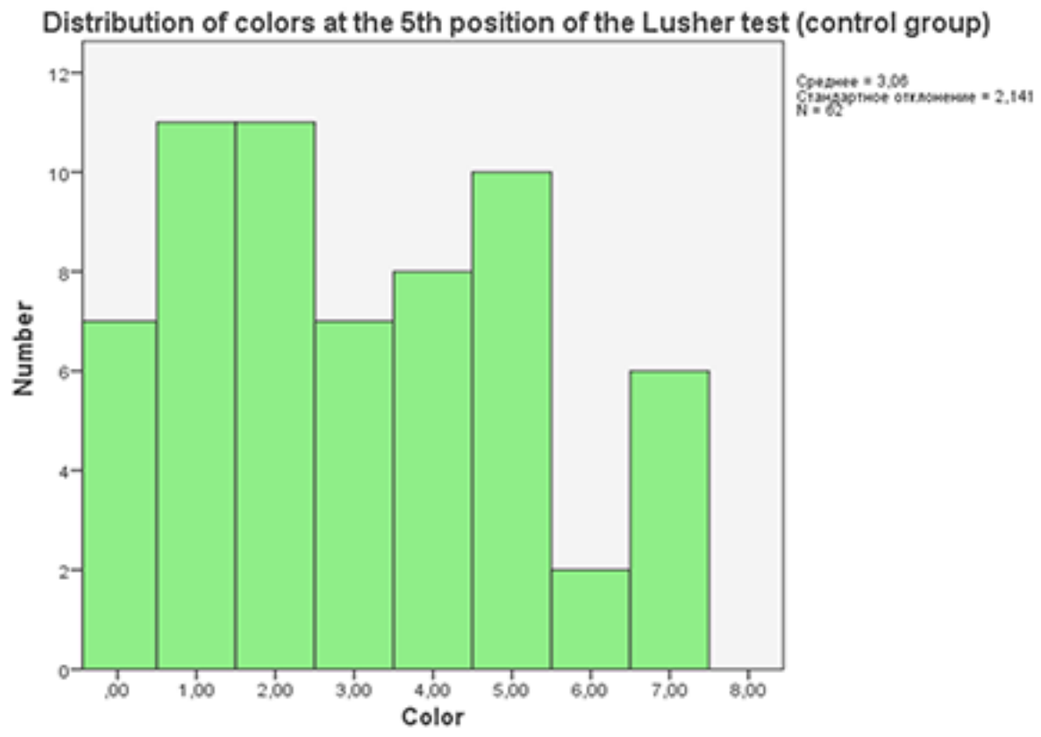


Pic.1 - Screenshots of a "Goodville" mobile application

Objectives. Our aim was to check the ability of the short (8-color) version of the Lusher test, introduced in a mobile gaming application, to differentiate patients with affective disorders from healthy individuals and to assess the severity of accompanying symptoms.

Methods. The respondents were 62 healthy individuals and 17 in-patients with a diagnosis of an affective disorder (F32) undergoing treatment. For assessing the severity of depression we used the QIDS-SR16 inventory which has high sensitivity at the lowest grades of depressive symptoms. The application we developed as a part of Totalgames company Goodville project was on its face a "farm" gaming application in which user is asked to plant trees and vegetables, gather the foods and communicate with 2 characters. The test we incorporated into it was the short (8-color) version of the Lusher test, which includes questions about a color that is most or least preferred at the moment and choice of that color from 8 specific ones. Then, the application arranged the numbers, associated with colors (0-7: 0 - gray, 1 - dark-blue, 2 - blue-green, 3 - red-yellow, 4 - yellow-red, 5 - purple, 6 - brown, 7 - black) into an order of preference from most liked at the moment to least liked. We used SPSS for statistical analysis.

Results. QIDS-SR16 scores differed significantly between patients and controls (Mann-Whitney U, $p<0,05$). It turned out that grey color appeared more frequently at the 5th position (from "most liked" to "less liked" at the moment in the Lusher test) in patients than in controls (χ-square, $p<0,05$). People from depression group chose it as a significantly more preferable compared to healthy controls. The proportion of black color in the 6th position significantly differed between patients who were at the lowest and 2nd-lowest symptom severity measured by QIDS-SR16 (χ-square, $p<0,05$).



Pic. 2 - Distribution of colors at the 5th position of the Lusher test in the control group (upper) and in patients (lower)

Conclusions. Results let us propose that the short version of the Lusher test incorporated into a mobile gaming application is a possible instrument to distinguish people likely to suffer from depression in the general population