Using Affect Response to Dangerous Stimuli to Classify Suicide Risk

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ABSTRACT
Suicide is a leading cause of death world-wide. Despite decades of research utilizing self-report questionnaires and clinician interviews, accuracy in predicting short-term suicide attempts is severely limited [1]. The Interpersonal Theory of Suicide (IPTS, [2]) proposes a two-stage model of suicidal behavior in which the first stage involves generating motivation: “wish to die”. Stage-two has been conceptualized as “capability” to inflict self-harm and is assumed to be influenced by fearlessness of injury/death. We are developing an affect-response protocol to measure individual differences in capability. We hypothesize that individuals with high capability will demonstrate measurable differences in affect when exposed to high-risk self-harm stimuli.

Author Keywords
Suicide; Facial Coding; Affective Computing.

ACM Classification Keywords

INTRODUCTION
While there are numerous well-known, sensitive risk factors for life-time suicide (e.g. sex, history of depression, substance abuse, and psychiatric hospitalization), these traditional factors have low specificity for short-term (~6 month) suicide attempt [1]. The lack of specificity of traditional risk factors is likely related to their distal relationship to the very specific behavior of self-harm. Recent work utilizing the implicit association test has demonstrated that behavioral (cognitive information processing) measures can yield significant improvements in predicting suicide attempts [3, 4] Our group has completed a pilot test of a novel eye-tracking paradigm aimed at capturing attention bias for suicide related stimuli and are in the process of enhancing that procedure.

Our next goal is to evaluate a behavioral (affect) measure of capability for self-harm. We will model capability as a latent construct indicated by abnormal affective response to visual stimuli associated with self-injurious behavior. Specifically, we will expose research participants to video vignettes depicting a series of scenes intended to induce: 1) calm, 2) general distress, 3) joy, 4) self-harm related distress, 5) social attachment, 6) neutral affect. We will measure affect response using automated facial action coding, electrodermal activity, and heart rate variability. These signals will be recorded in a synchronized fashion during stimulus video playback. The video playback will be randomized. We will explore the relationship between our affective measures and self-reported capability directly as well testing for potential interactions with social attachment.

CONCLUSION
We seek to evaluate a bio-behavioral measure of capability to engage in suicidal self-injurious behavior in accordance with the IPTS. This work could directly lead to a significant advance in short term suicide risk assessment feasible for use in clinical practice, particularly inpatient psychiatric decision making. The work may potential contribute to an automated method of assessing suicide risk.

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REFERENCES