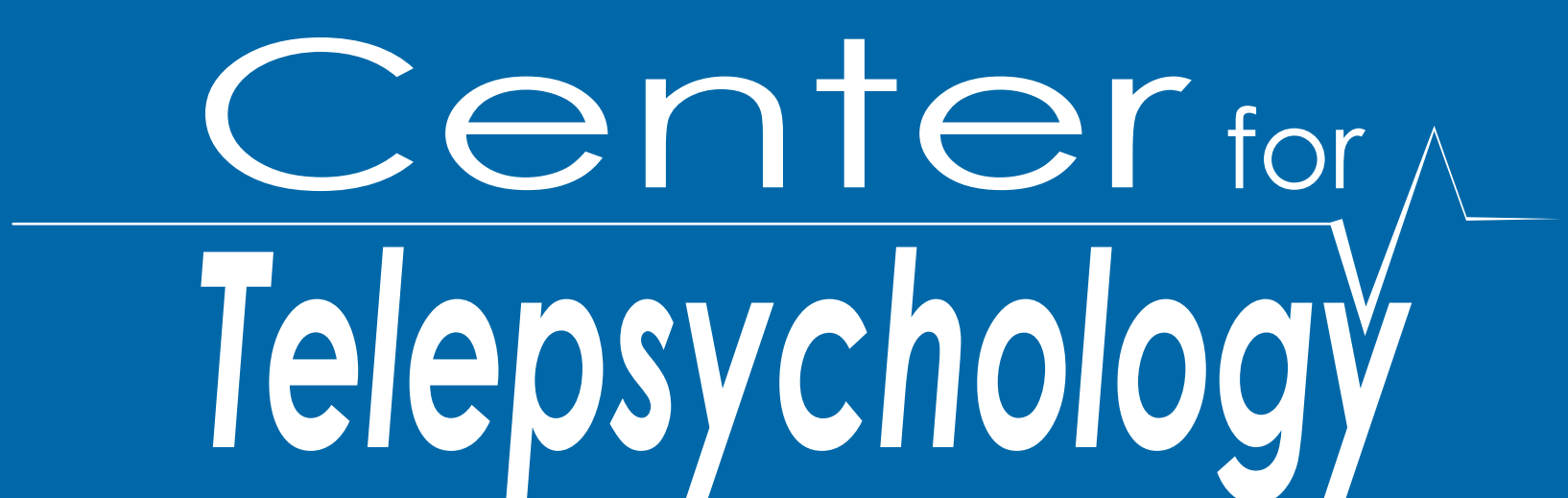


Computerized Screening of Comorbidity in Adolescents with Substance or Psychiatric Disorders



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Introduction

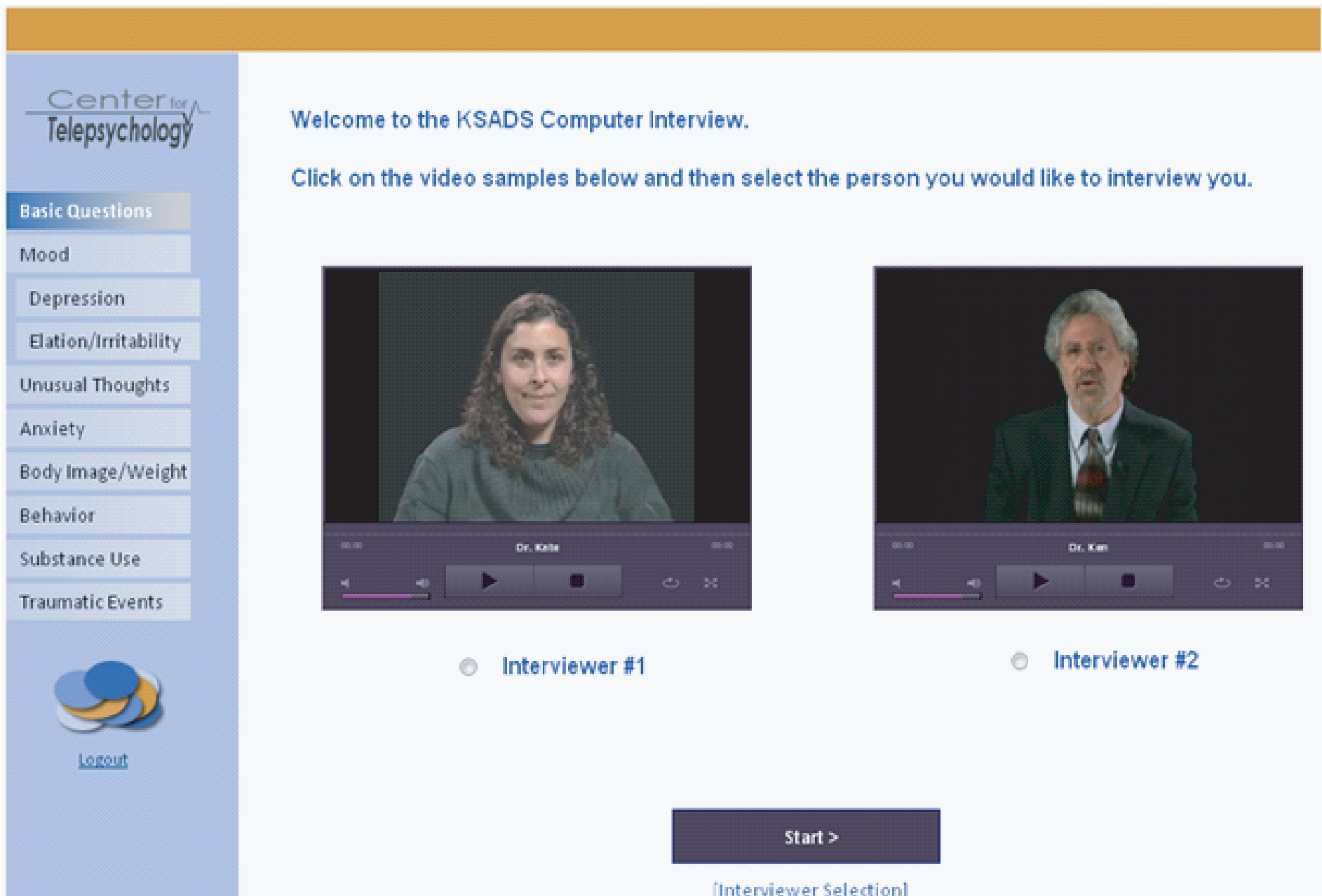
Psychiatric comorbidity is a major concern in adolescents with substance use or psychiatric disorders as it worsens treatment outcomes for both disorders. While effective treatments exist, failure to identify the comorbidity impacts successful treatment of both disorders. Reasons for undetection include lack of expertise in diagnostic interviews; limited time and expense; and underreporting due to stigma. To overcome these problems, we developed a computerized screener to identify comorbid substance or psychiatric disorders in adolescents in treatment for either disorder (NIMH# RMH094092). The tool (based on the K-SADS) also contains embedded severity scales to enable quantification of severity in addition to diagnosis.

Methods

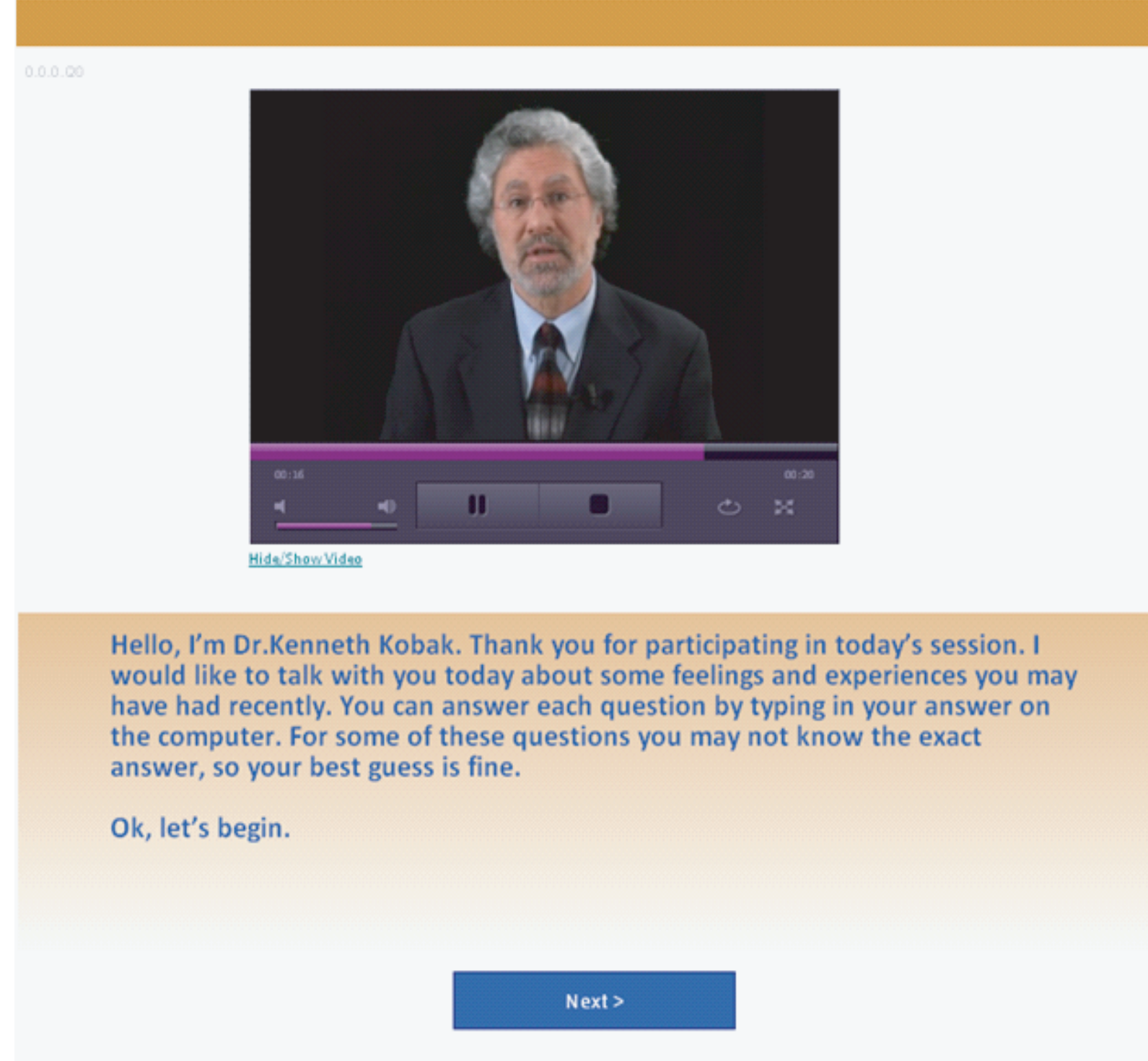
- 50 adolescents, aged 13-18 (Mean=16.4), and their parents
- Computerized KSADS and the clinician-administered K-SADS (criterion measure) administered in a counter-balanced order.
- Questions were asked by a video of either a male or female clinician (which the teen chose).
- Questions designed to emulate a skilled clinician
- After completing both the computer and clinician-administered K- SADS, subjects completed a user satisfaction questionnaire to gauge their experiences taking the interviews.
- Reports generated included a) diagnoses present, b) specific symptoms endorsed to attain the diagnoses, and c) total scores on embedded symptom rating scales, and d) clinical interpretation of scores on embedded rating scales.

System Design

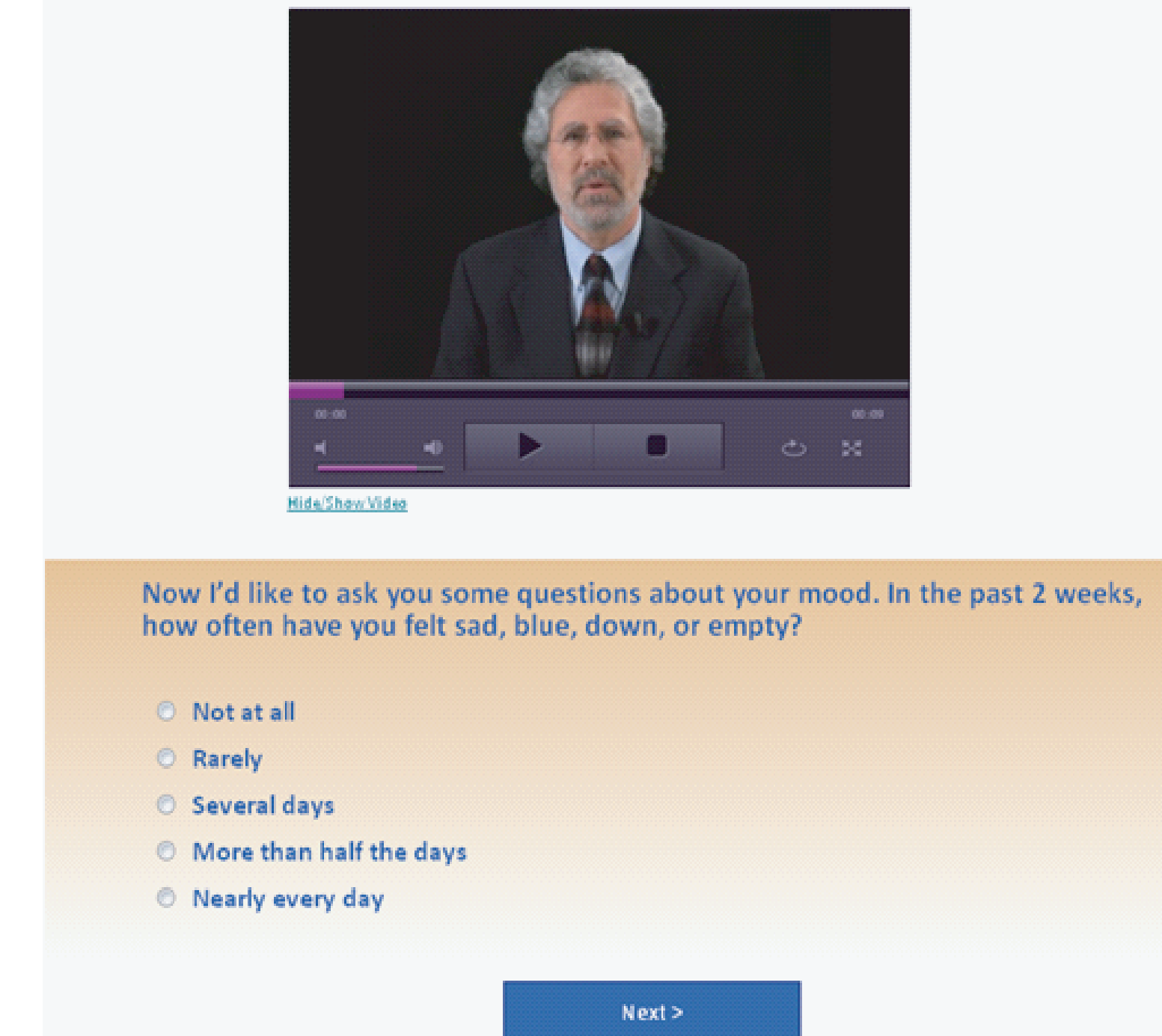
1. Pick Interviewer



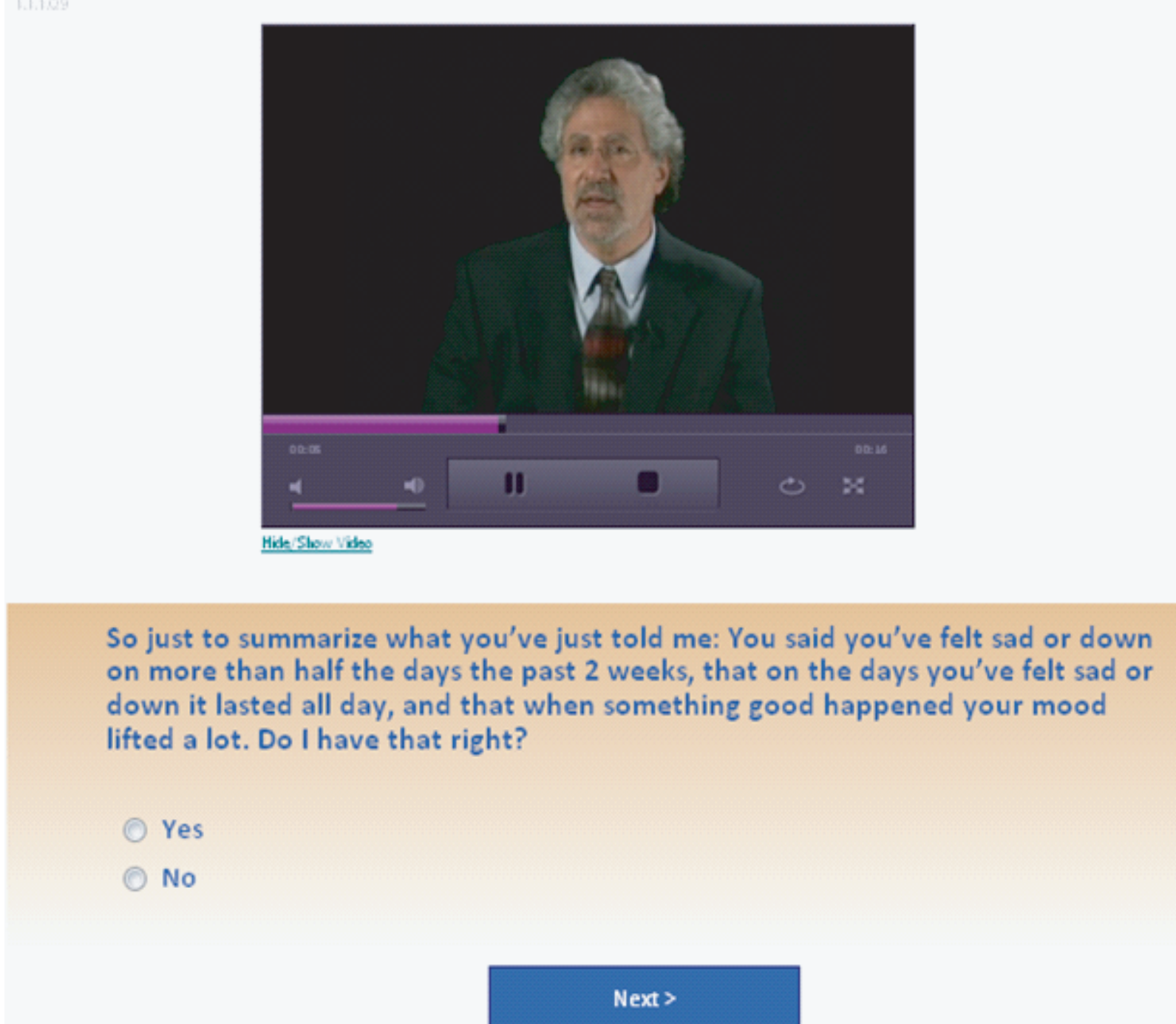
2. Intro



3. First Question



4. Example of Feedback



Results

Usability

- The mean score on the System Usability Scale was 80.4 for teens and 82.8 for parents (corresponding to a score of between good and excellent).
- 75% scored above 71 (cut off for good).
- The mean global rating of user friendliness was 5.7 for both teens and parents (5 = good; 6 = excellent).
- 80% of teens said they would be willing to take a computer interview again;
- 43% of teens preferred the computer, 28.5% the clinician and 28.5% had no preference.

Equivalence

	Sensitivity	Specificity	Kappa	\bar{S}^2	P for \bar{S}^2
Any Anxiety	63% (5/8)	93% (40/43)	.55	15.7	.001
Any Behavior	100% (7/7)	91% 40/44)	.73	29.5	.001
Any ADHD	53% (8/15)	86% (31/36)	.41	8.6	.003
Any Eating	100% (1/1)	100% (50/50)	1.0	51.0	.000
Any Bipolar	43% (3/7)	89% (39/44)	.30	4.5	.033
Any Psychosis	76% (3/6)	94% (44/47)	.56	16.7	.000
Any Substance	100% (20/20)	94% (29/31)	.92	43.4	.000

Mean System Usability Scale Scores

Adjective	SUS Cutoff Score	Mean Teen SUS Score	Mean Parent SUS Score
Worst Imaginable	12.5		
Awful	20.3		
Poor	35.7		
OK	50.9		
Good	71.4		
Excellent	85.5	80.4	82.8
Best Imaginable	90.0		

Clinician Report
Select User ID: [User012] [Refresh]
Interview Date: April 2, 2012
Date of Birth: December 28, 1995
Lives With: Mom and Dad
Age: 18
User Type: Teen
Interviewer Preference: Female
Current Diagnosis
Group: Mood Disorders
Diagnosis
Major Depressive Disorder, Single Episode, Moderate 296.22
Symptoms
• Persistent Depressed Mood
• Loss of Interest & Pleasure
• Fatigue
• Feelings of Worthlessness
• Hypersomnia
Symptom Severity Scales
Hamilton Depression Rating Scale (HAM-D): 13 (Mild)
Montgomery Asberg Depression Scale (MADRS): 22 (Moderate)
Quick Inventory Depressive Symptomatology (QUIDS): 13 (Moderate)
PHQ-9: 11 (Moderate)
Group: Anxiety Disorders
Diagnosis
Generalized Anxiety Disorder 300.02
Symptoms
• Persistent Excessive Worry or Anxiety
• Difficulty Controlling Worry
• Worry or Anxiety Cause the Following Symptoms
• Restlessness or feeling keyed up or on edge
• Difficulty concentrating or mind going blank
• Irritability
• Not confined to features of another Axis I disorder
• Causes Clinically Significant Distress or Impairment
Symptom Severity Scales
GAD-7 Scale: 13 (Moderate)
Symptoms Without Diagnosis
Group: Eating Disorders
Symptoms
• Recurrent inappropriate compensatory behavior (laxatives)
• Self-evaluation unduly influenced by body weight and shape

Which method of being interviewed do you prefer?

	Computer	Clinician	No Preference
TEEN	43%	28.5%	28.5%
PARENT	24%	46%	30%

SYSTEM USABILITY SCALE

- I would take a computer interview designed like this again.
- The features of the computer interview were too complex.
- I thought the computer interview was easy to use.
- I would need help from someone to know how to use this computer interview.
- The parts of this computer interview fit together well.
- The parts of the computer interview were too different from each other.
- Most people would learn to use this computer interview very fast.
- I found the features of this computer interview very hard to use.
- I felt I knew how to use the computer interview.
- I needed to learn a lot of things before I could use this computer interview.

KSADS COMPUTER SATISFACTION QUESTIONNAIRE RESULTS: ADOLESCENTS

Question	Response Categories				
	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Some-what Agree	Strongly Agree
1. I was comfortable answering questions on the computer.	1 (2%)	6 (11.8%)	5 (9.8%)	10 (19.6%)	29 (56.9%)
2. The questions were clearly stated and understandable	1 (2%)	4 (7.8%)	6 (11.8%)	15 (29.4%)	25 (49%)
3. The computer did a good job asking me about feelings	2 (3.9%)	7 (13.7%)	7 (13.7%)	9 (17.6%)	26 (51%)
4. I felt less embarrassed answering these questions on the computer than I would have with a clinician	8 (15.7%)	11 (21.6%)	9 (17.6%)	7 (13.7%)	16 (31.4%)
5. I found the computer interview to be a helpful process to go through	2 (3.9%)	8 (15.7%)	11 (21.6%)	8 (15.7%)	22 (43.1%)
6. I liked being able to chose my interviewer	1 (12.0%)	2 (3.9%)	21 (41.2%)	7 (13.7%)	20 (39.2%)
7. I liked when the computer read back to me what I had previously said and asked if it was correct.	1 (2.0%)	6 (11.8%)	15 (29.4%)	7 (13.7%)	22 (43.1%)
8. I liked having a video of the doctor asking me questions in addition to having the questions written on the screen	2 (3.9%)	6 (11.8%)	16 (31.4%)	8 (15.7%)	19 (37.3%)
9. Were there any technical problems during the interview?	Yes = 9 (17.6%)			No = 42 (82.4%)	
10. Would you be willing to be interviewed again by computer?	Yes = 41 (80.4%)			No = 10 (19.6%)	
11. Which method of being interviewed do you prefer for these types of questions?	Computer = 21 (41.2%)				
	Clinician = 14 (27.5%)				
	No Preference = 16 (31.3%)				
12. How would you describe your overall experience taking the computer interview	Very Positive = 19 (37.3 %)				
	Somewhat Positive = 14 (27.4%)				
	Neutral = 13 (25.5%)				
	Negative = 4 (7.8%)				
	Very Negative = 1 (2.0%)				

Overall Rating: User -friendliness of the tutorial:

Worst Imaginable	Awful	Poor	OK	Good	Excellent	Best Imaginable	Mean (SD) Rating
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
0	0	0	11 (22%)	9 (18%)	18 (35%)	13 (26%)	5.65 (1.09)

Conclusions

The computerized diagnostic interview was well accepted by teens and had psychometric properties similar to those found in the literature for clinician interviews. A larger validation study with higher base rates is planned for phase II.

Acknowledgements

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