

Introduction

Technology is becoming more prevalent in schools

- Technology is progressively being integrated into education and psychological services.
- SMART Boards, a brand of interactive whiteboards, allow users to view, drag, and rearrange content displayed on the board. The aim is to make learning more interactive and collaborative, and they are being increasingly used in educational settings (Giles & Shaw, 2011).

Anxiety is a significant issue for school-aged children

- Young people experience anxiety disorders more than any other mental health problem (Merikangas, Nakamura, & Kessler, 2009).

Cognitive behavior therapy (CBT) for anxious youth

- CBT has been identified as an effective evidence-based treatment for anxiety among youth including randomized controlled trials (RCTs) of CBT which have demonstrated that the approach is effective (Seligman & Ollendick, 2011).

The present study

- However, the cross-section between technology and CBT for anxious youth is a relatively unexplored area of research.
- Although technology-based anxiety treatments exist, such as Smartphone-enhanced Child Anxiety Treatment (SmartCAT) and Camp Cope-A-Lot (CCAL), SMART Board-based socio-emotional curriculums designed to be implemented in school settings are not as common.
- Our study explores the impact of a technology- and CBT-based intervention on elevated maladaptive cognitions and behaviors in anxious youth.
- "On Second Thought: From Iffy to Witty Thoughts" (OST) is a socio-emotional program designed for youth which is based on cognitive-behavioral principles (Busto & Busto, 2014).
 - OST is designed to help children understand the cognitive triad in a scaffolded, child-friendly format.
 - Concepts are delivered via SMART technology through 19 interactive activities featuring words and animated cartoons.
 - All activities are delivered in-person by a facilitator; prior cognitive-behavioral therapy (CBT) knowledge is not necessary.

Method

Inclusion and Exclusion Criteria

- Inclusion Criteria: At least one elevated subscale on the MASC-2 Self Report (SR) or Parent Report (PR)
- Exclusion Criteria: Currently receiving psychological services, including psychiatric medication or psychotherapy

Assessment Instruments

- Multidimensional Anxiety Scale for Children, Second Edition (MASC 2)
- The Behavior Assessment System for Children, Third Edition (BASC-3)
- Children's Automatic Thoughts Scale (CATS)
- Child and Adolescent Scale of Irrationality, Third Edition (CASI-3)

Hypotheses

We hypothesized that children who participated in the OST intervention would demonstrate significant reliable change index (RCI) reductions in:

- Anxious symptoms (MASC 2 SR and PR total and subscale scores)
- Overall behavioral and emotional problems (BASC-3 SR and PR composite scores)
- Negative self-statements (CATS total score)
- Endorsement of irrational statements (CASI-3 total score)

Procedures

- The OST program was delivered once weekly for 8 weeks at St. John's University by two doctoral students, under the supervision of the principal investigator, a licensed psychologist.
- 19 activities, based largely on the theoretical work of Aaron T. Beck, Albert Ellis, and David Burns, were divided into two parts:
 - Part one focuses on thought, feeling, and behavior identification followed by the concept that every thought has a sequence (thought, feeling, behavior) with a situation preceding and a consequence following the sequence.
 - Part two highlights unhelpful and helpful thoughts and offers children the opportunity to recognize the value of replacing a maladaptive ("iffy") thought with an adaptive ("witty") one.
 - Each activity takes between 20 to 45 minutes to complete and contains psychoeducational information about a concept followed by examples to practice.
- Undergraduate volunteers monitored treatment integrity to ensure that the facilitators took attendance, read prompts, distributed handouts, and corrected incorrect responses. The number of slides administered was also recorded.

Results

Participant Scores

	Participant 1			Participant 2			Participant 3			Participant 4			Participant 5		
	Pre	Post	Follow-Up	Pre	Post	Follow-Up	Pre	Post	Follow-Up	Pre	Post	Follow-Up	Pre	Post	Follow-Up
MASC SR *	69	—	64	64	65	—	77	53	60	75	68	67	66	63	64
MASC PR Total	NC	—	77	73	—	—	89	60	79	81	76	60	77	53	52
BASC SR School Problems	63	71	80	72	—	—	NC	NC	NC	NC	NC	NC	NC	NC	NC
BASC SR Internalizing Problems	NC	NC	78	71	—	—	NC	NC	NC	NC	NC	NC	68	53	56
BASC SR Emotional Symptoms Index	60	56	76	73	—	—	NC	NC	NC	NC	NC	NC	73	54	59
BASC SR Personal Adjustment	36	44	24	31	—	—	NC	NC	NC	51	36	40	NC	NC	NC
BASC PR Externalizing Problems	69	—	71	56	—	—	NC	NC	NC	NC	NC	NC	NC	NC	NC
BASC PR Internalizing Problems	NC	—	89	74	—	—	62	54	54	66	62	60	NC	NC	NC
BASC PR Behavioral Symptoms Index	68	—	83	71	—	—	60	53	56	73	66	60	NC	NC	NC
BASC PR Adaptive Skills	42	—	39	41	—	—	39	40	39	NC	NC	NC	38	52	47
CASI Total	3.382	3.044	3.328	3.29	—	—	2.488	2.554	2.462	NC	NC	NC	NC	NC	NC
CATS Total	37	28	107	97	—	—	17	12	12	NC	NC	NC	102	70	74

* MASC SR Total score is provided for all students except for Participant 3, for whom the inclusion criteria was one elevated subscale (Separation Anxiety/Phobias).
Note: "NC" indicates non-clinical values. "—" indicates that data is not available because measures were not returned.

Reliable Change Index (RCI)

	Calculated with RCI (Pre to Post)												
	MASC SR	MASC PR	BASC SR					BASC PR				CASI	CATS
	*	Total	School Problems	Internalizing Problems	Emotional Symptoms Index	Personal Adjustment	Externalizing Problems	Internalizing Problems	Behavioral Symptoms Index	Adaptive Skills	Total	Total	
Participant 1	—	—	-1.71	NC	0.94	-1.63	—	—	—	—	1.66	0.86	
Participant 2	0	0.85	1.46	1.14	0.5	-1.03	4.01	3.54	3	-0.5	0.15	0.71	
Participant 3	3.79	6.18	NC	NC	NC	NC	NC	1.89	1.75	-0.25	-0.27	0.36	
Participant 4	1.11	1.07	NC	NC	NC	2.21	NC	0.94	1.75	NC	NC	NC	
Participant 5	0.47	5.12	NC	2.43	3.17	NC	NC	NC	NC	-3.5	NC	2.28	

	Calculated with RCI (Pre to Follow-up)												
	MASC SR	MASC PR	BASC SR					BASC PR				CASI	CATS
	*	Total	School Problems	Internalizing Problems	Emotional Symptoms Index	Personal Adjustment	Externalizing Problems	Internalizing Problems	Behavioral Symptoms Index	Adaptive Skills	Total	Total	
Participant 2	-0.16	—	—	—	—	—	—	—	—	—	—	—	
Participant 3	2.69	2.13	NC	NC	NC	NC	NC	1.89	1	0	0.105	0.36	
Participant 4	1.26	4.48	NC	NC	NC	1.62	NC	1.41	3.25	NC	NC	NC	
Participant 5	0.32	5.33	NC	1.95	2.33	NC	NC	NC	NC	-2.25	NC	1.99	

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	Clients who Achieved Reliable Change in Outcome Measures			
	Pre to Post		Pre to Follow-Up	
	# of participants who demonstrated RCI	% of participants who demonstrated Significant RCIs	# of participants who demonstrated RCI	% of participants who demonstrated Significant RCIs
MASC				
MASC SR *	1 of 4	25%	1 of 5	20%
MASC PR Total	2 of 4	50%	3 of 3	100%
BASC SR				
BASC SR School Problems	0 of 5	0%	0 of 3	0%
BASC SR Internalizing Problems	1 of 5	20%	0 of 3	0%
BASC SR Emotional Symptoms Index	1 of 5	20%	1 of 3	33.33%
BASC SR Personal Adjustment	1 of 5	20%	0 of 3	0%
BASC PR				
BASC PR Externalizing Problems	1 of 4	25%	0 of 3	0%
BASC PR Internalizing Problems	1 of 4	25%	0 of 3	0%
BASC PR Behavioral Symptoms Index	1 of 4	25%	1 of 3	33.33%
BASC PR Adaptive Skills	1 of 4	25%	1 of 3	33.33%
CASI				
Total	0 of 5	0%	0 of 3	0%
CATS				
Total	1 of 5	20%	1 of 3	33.33%

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Results & Discussion

Results

- Each group began with three participants (resulting in a total of six initial participants). A total of four participants returned all post and follow-up forms. One participant and their family did not complete or return any post or follow up data and was not included in the provided tables. Refer to Table 1 for additional information on scores collected.
- Of the participants who provided data, significant RCIs were found for four participants at post-test and three participants at follow-up. Refer to Tables 2 and 3 for further information.

Discussion

- The OST program provides an innovative way of teaching CBT socio-emotional concepts to youth in a child-friendly way through its use of interactive and engaging activities. The OST program has already been implemented in select school settings, and could be implemented as part of a psychoeducational curriculum in a broader range of schools.
- During program sessions, participants demonstrated different rates of concept acquisition. It might be helpful to consider how concrete and abstract thoughts play a role in the acquisition of the concepts.
 - For example, the Witty Thought "Cut Someone Some Slack" proved more challenging for some of the participants to grasp because they did not realize that "someone" could apply to oneself as well.
- A benefit of the OST program is that it contains many slides per activity to allow for additional practice, as well as assessment of the different rates of acquisition per student.
 - For this reason, more than eight sessions may be necessary for future groups to allow for more flexibility in the amount of time that can be devoted to each activity or lesson.
- Since the OST program is skill-focused, a competency check or quiz administered at the end of each session may be beneficial to assessing the specific acquisition of the socio-emotional constructs for each student.
- Parental reinforcement of concepts may also prove to be important to the generalization and maintenance of the skills learned. Providing parents with resources for reinforcing concepts was also discussed as a potentially beneficial addition.
- Since the conclusion of these study groups, additional program elements have been developed. The OST program now includes an introduction for parents and caregivers, homework assignments, and a card game to accompany the SMART Board program. To encourage further generalization and reinforcement at home, the program developers also encourage parent involvement during completion of homework assignments and playing the card games.

References

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