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Anxiety in Children: Intervention Strategies

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This evidence project, submitted by

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has been approved and accepted
in partial fulfillment of the requirements for the degree of
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Key words:____Anxiety___,____Children____,____Interventions____

Abstract

Three occupational therapy graduate students at the University of Puget Sound partnered with a practicing pediatric occupational therapist to investigate effective interventions for anxiety in children in the literature. A Critically-Appraised-Topic (CAT) was performed on the research question: Which interventions geared towards school-aged children between 5 and 18 with anxiety and related disorders are effective in reducing symptoms and increasing participation in school and meaningful occupations as compared to no intervention?

Cognitive Behavioral Therapy (CBT) was found to have the strongest research base and the strongest positive outcomes. Gains were maintained following CBT even 10-26 weeks post-treatment. Other promising interventions with positive outcomes included social skills training, yoga, deep pressure, and play-based and occupation-based groups, although much more research is needed in these areas.

Decision support tools were created by the graduate students to aid the partnering clinician and her clinic translate knowledge from the research into practice. The students created tables listing interventions and assessments for anxiety in children found in the literature, and listed additional details such as cost, time to administer, and targeted diagnoses and ages to help the clinicians decide which interventions and outcome measures from the research to incorporate into practice.

The clinicians ultimately decided to purchase several books, such as the social stories program "Dominique's Handy Tricks", to use in treatment of anxiety of children at their clinic. Clinicians reported the knowledge translation tools strengthened their evidence-based practice by allowing them to easily choose interventions and tools that had positive outcomes in the literature and that best fit the clinic's needs.

Executive Summary

Three graduate students in the Master of Science in Occupational Therapy Program at the University of Puget Sound collaborated with a practicing pediatric occupational therapist at the Center

for Therapeutic Intervention (CTI), located in Gig Harbor, Washington to investigate current literature on best interventions for anxiety in children and youth. Thus, the following clinical question was raised: Which interventions geared towards school-aged children between 5 and 18 with anxiety and related disorders are effective in reducing symptoms and increasing participation in school and meaningful occupations as compared to no intervention?

Following the Critically-Appraised-Topic (CAT) by the graduate students, the main findings were:

Cognitive Behavioral Therapy (CBT) had the strongest research base and strongest outcomes following intervention for anxiety symptoms; treatment gains were also found to be maintained 10-26 weeks post-treatment, with some small effect in relapse in symptoms. Adding relaxation or adjusting timing of exposure of CBT was not found to affect intervention efficacy.

Social skills programs were also found to have beneficial outcomes in the reduction in anxiety symptoms. Programs such as The PEERS program, interventions combining CBT and social skills training, and participation in summer camps with typical peers significantly decreased anxiety symptoms, social avoidance behaviors, and improved overall social functioning in many children with Autism Spectrum Disorder (ASD) and other anxiety disorders. Additionally, in one study, higher friendship quality predicted absence of anxiety symptoms.

Other emerging treatments, such as music therapy and yoga, were found to have promising outcomes in anxiety symptom reduction. Temple Grandin's Hug Machine, which provided deep pressure to children with ASD, was effective in reducing anxiety and tension levels. Occupation-based groups, child-centered play therapy, and education of emotions related to anxiety within the context of every-day activities, such as ADLs, were also found to be successful in decreasing anxiety levels. However, much more research is needed in these areas.

Recommendations from the CAT can be incorporated immediately through the use of CBT referrals or administration of CBT-based treatment programs for children with anxiety. Practitioners

can also incorporate occupation-based and child-centered play interventions, which may improve functional performance and participation. Finally, social skills and the ability to build high quality friendships effectively supplement anxiety intervention. However, due to limitations in the occupational therapy literature for these interventions, we recommend therapists to monitor client performance on pertinent outcome measures before, during, and after the intervention as well as in follow-up assessments in order to substantiate the applicability of their findings to their practice setting, and contribute information to the literature to benefit other professionals in utilizing current evidence-based practice.

Knowledge translation consisted of completing an intervention decision support tool and an outcome measures table where the requested information on each intervention or outcome measure that were of the clinician's interest were extracted from the critical appraisal of the topic and any additional research done for items not covered in the literature review. To measure the quality and effectiveness of the knowledge translation tools on enacting change, the clinician was asked to complete a survey assessing the effectiveness of knowledge translation tools. Upon receipt of the survey, the collaborating clinicians rated the usefulness of the tools in their practice. On the administered survey, the staff at CTI rated the tools as 10/10 for being concise and readable, easy to understand, useful in highlighting the most salient points of interventions and outcomes, and a good fit with CTI's priorities and culture. CTI reports that they are highly likely to implement change in their therapy process with the use of the administered tools. The staff also provided further examples of the criteria included in their decision-making process for deciding outcome measures and assessments. This included medical insurance coverage, recommendations from colleagues and peers in the field, estimated ongoing cost of materials, and the ease of scoring of materials. These suggestions are recommended to include in further updates of these knowledge translation tools.

ANXIETY IN CHILDREN: INTERVENTION STRATEGIES

Focused Question:

Which interventions geared towards children between 5 and 18 with anxiety and related disorders are effective in reducing symptoms and increasing participation in school and meaningful occupations as compared to no intervention?

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Date Review Completed:

11/17/2015

Clinical Scenario:

A pediatric occupational therapist currently uses stress management education for treating anxiety symptoms co-occurring with the disorders or difficulties addressed in occupational therapy (such as Autism Spectrum Disorder, or ASD, and developmental delay) commonly seen in her pediatric clients. She is interested in learning about current evidence-based interventions and their efficacy in reducing anxiety symptoms in children and youth to better treat and serve the clients at the Center for Therapeutic Intervention (CTI). Therapists strive to reduce anxiety symptoms in order to increase the child's participation in school and meaningful occupations. The CAT would provide information on the types of anxiety interventions and their corresponding efficacies in the literature of occupational therapy and other related disciplines that could be applied to the CTI clinical setting, enabling the therapist to better serve the needs of her clients while also providing the opportunity for the therapist to use more scientific reasoning in the intervention selection process.

Review Process
Procedures for the selection and appraisal of articles
Inclusion Criteria:

Specific pediatric population age 5-18, pertinent comorbid disorders commonly seen in occupational therapy (e.g. ASD, Attention-Deficit Hyperactive Disorder (ADHD)), pertinent behavioral outcomes seen in occupational therapy (e.g. attention, impulsivity, hyperactivity, learning, engagement, memory), presence of anxiety symptoms or anxiety disorder diagnosis including PTSD, OCD, social anxiety, generalized anxiety disorder, panic disorder), treatment or intervention

Exclusion Criteria:

Adult population >18 years of age, pharmaceutical as the sole intervention, non-peer reviewed article, study protocols without any information on treatment results, articles where results are not pertinent or applicable to occupational therapy as defined by the Occupational Therapy Practice Framework

Search Strategy

Categories	Key Search Terms
Patient/Client Population	Child*, children, pediatric, ped*, youth, school-aged children
Intervention (Evaluation)	Intervention, treatment, therapy, prevention, relaxation, sens*, calming
Comparison	N/A (no intervention/control/treatment as usual)
Outcomes	Anxiety, anx*, generalized anxiety disorder, OCD, phobia, PTSD, social phobia, social anxiety, panic disorder

Databases and Sites Searched
PubMed Central
PsychInfo
CINAHL
Google Scholar
Collins Memorial Library
American Journal of Occupational Therapy
British Journal of Occupational Therapy
Canadian Journal of Occupational Therapy
ProQuest Education Journals
ERIC (Education Research Information Center)

Search study and selection criteria

Databases (listed above) were searched from their inception until November 2015 using the following key words:

Anxiety *or* anx* *or* generalized anxiety disorder *or* anxiety disorder, *or* OCD or phobia *or* PTSD *or* social phobia *or* social anxiety *or* panic disorder
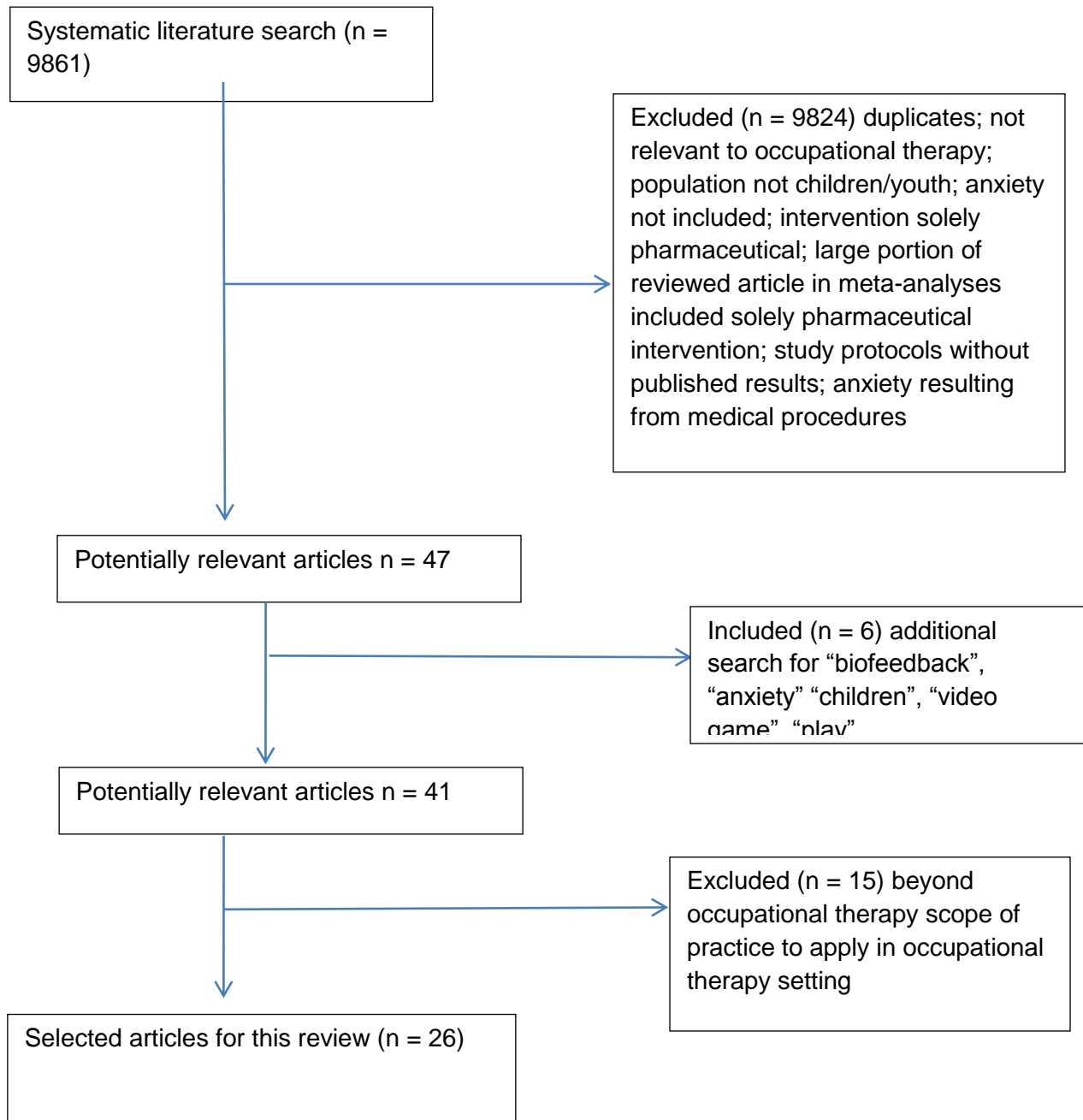
And

Child* *or* children *or* pediatric or ped* *or* youth *or* school-aged children

And

Intervention *or* treatment *or* therapy *or* prevention *or* relaxation *or* calming *or* biofeedback

Search results

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┌─────────────────────────────────┐
│ Systematic literature search (n = │
│ 9861)                             │
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                │          ┌─────────────────────────────────┐
                │          │ Excluded (n = 9824) duplicates; not │
                │          │ relevant to occupational therapy;   │
                │          │ population not children/youth; anxiety │
                │          │ not included; intervention solely   │
                │─────────►│ pharmaceutical; large portion of    │
                │          │ reviewed article in meta-analyses   │
                │          │ included solely pharmaceutical      │
                │          │ intervention; study protocols without │
                │          │ published results; anxiety resulting │
                │          │ from medical procedures             │
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│ Potentially relevant articles n = 47 │
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                │          ┌─────────────────────────────────┐
                │          │ Included (n = 6) additional      │
                │─────────►│ search for "biofeedback",        │
                │          │ "anxiety" "children", "video     │
                │          │ game", "play"                    │
                ▼          └─────────────────────────────────┘
┌─────────────────────────────────┐
│ Potentially relevant articles n = 41 │
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                │          ┌─────────────────────────────────┐
                │          │ Excluded (n = 15) beyond         │
                │─────────►│ occupational therapy scope of    │
                │          │ practice to apply in occupational │
                │          │ therapy setting                  │
                ▼          └─────────────────────────────────┘
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│ Selected articles for this review (n = 26) │
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Results of Search

Summary of Study Designs of Articles Selected for the CAT Table

Pyramid Side	Study Design/Methodology of Selected Articles	Number of Articles Selected
Experimental	**4** Meta-Analyses of Experimental Trials **12** Individual Blinded Randomized Controlled Trials **2** Controlled Clinical Trials 0 Single Subject Studies	18
Outcome	0 Meta-Analyses of Related Outcome Studies 0 Individual Quasi-Experimental Studies **3** Case-Control Studies **3** One Group Pre-Post Studies	6
Qualitative	0 Meta-Syntheses of Related Qualitative Studies 0 Small Group Qualitative Studies 0 Brief vs prolonged engagement with participants 0 Triangulation of data (multiple sources) 0 Interpretation (peer & member-checking) 0 A posteriori (exploratory) vs a priori (confirmatory) interpretive scheme 0 Qualitative Study on a Single Person	0
Descriptive	0 Systematic Reviews of Related Descriptive Studies **2** Association, Correlational Studies 0 Multiple Case Studies (Series), Normative Studies 0 Individual Case Studies	2
Comments:		*TOTAL* *26*

Meta-Analyses/Meta-Syntheses/Systematic Review **Evidence**

Author, Year	Study Objectives	Study Design/ Level of Evidence	Papers Included, Inclusion, Exclusion Criteria	Interventions & Outcome Measures	Summary of Results	Study Limitations
E 1 Data						
Ale, McCarthy, Rothschild, & Whiteside (2015)	To compare effectiveness of CBT treatment components for childhood anxiety disorders (CAD) and OCD	Meta-Analysis AOTA L I Pyramid E1	35 RCTs -IC: participants have elevated anxiety symptoms, RCT, participants <19 yrs. old, treatment designed to reduce anxiety, outcome data provided -EC-other disorders, incomplete data, unique delivery methods	95 total experimental conditions, 44 CBT, 25 waitlist, 11 placebo -Comparison of interventions that included exposure, relaxation, and cognitive strategies -Outcomes-Symptom reduction as calculated by effect sizes	- No ES difference for CBT interventions that included relaxation than those that did not (0.91 vs. 0.94, p = 0.88) -No ES difference in presence of exposure based therapy (1.00 vs. 0.99, p = 0.73) -For exposure based intervention, no significant relationship between ES and number of sessions, length of sessions, hours of treatment, and proportion of sessions with exposure (all p > 0.3 -CBT interventions significantly higher ES than waitlist or placebo interventions for CAD (all p < 0.05)	-Differences between separation anxiety, social phobia, and GAD not delineated. -Effect sizes could have been a result of time passage rather than the interventions -How to include exposure based therapy with cognitive strategies not defined
Kreslins, Robertson, & Melville, 2015	To systematically evaluate the evidence for the use of psychosocial interventions to manage anxiety in children and adolescents with ASD	Meta-analysis, AOTA L I Pyramid E1	-10 RCTs total N = 470, 393 male, 72 female, 5 not reported aged 7-17 -Databases: Web of Science, PsychINFO, Embase, Medline, Cochrane Database of Systematic Reviews -Search criteria: ASD, auti*, child*, anxi*, psychotherapy*, cognitive behavi*therap* -Inclusion: journals in English year 2000-2013, RCT, age 0-18 yrs. with primary dx of ASD and clinically significant anxiety sx, at least 1 outcome measure a standardized continuous measure of anxiety	-Interventions: CBT -Outcomes: frequently used anxiety scales rated by clinicians, parents, and/or children (self-reported) and were mentioned on two recent rigorous reviews on high validity: e.g. -Anxiety Disorders Interview Schedule Child/Parent version, Pediatric Anxiety Rating Scale -Integrating analysis approach: statistical analyses for standardized mean difference for estimate of tx effect, subgroup analysis to compare individual and group delivery of tx	Clinician-reported outcome measures - psychosocial interventions superior to waitlist/treatment-as-usual (SMD d=1.05, p< 0.05, large effect), parent-reported d=0.48, p<0.05 moderate effect size favoring psychosocial tx; individual tx more effective than group tx for clinician-reported outcome measures (d= 1.70 , p<0.05, large effect for individual tx vs d= 0.47 p<0.05 moderate effect for group tx); parent-reported d=0.81 p<0.05 mod effect individual tx vs failure to reach significance in group tx -positive carry-over effect for some months -degree of tx effect differs among individuals recommendations: -use fewer self-reported efficacy measures; less reliable and valid due to lack of cognitive abilities, self-awareness	-study only considered methodological weaknesses in assessing risk of bias which leaves out other forms that may affect validity of outcomes (e.g. observation bias, placebo effect, environmental factors, family factors) -lack of blinding in all studies resulted in high risk performance bias that reduces reliability of results -no intervention protocols available in any of the studies -small number of included studies limits generalizability -participants in the studies were self-selected and may be drawn from unusually motivated population -impossible to compare and deduce specific therapeutic factors affecting treatment outcomes due to heterogeneity in methodology among studies
Neil & Christensen (2009)	To evaluate effectiveness of school based prevention and early intervention programs for anxiety	Meta-Analysis AOTA L I Pyramid E1	-27 papers reviewed between 1987-2008 from 3 databases Search words-school, child, anxious, and related terms. -Inclusion criteria: age of child 5-19, intervention to reduce or prevent anxiety, school-based, RCT, peer reviewed.	-Interventions: 78% Cognitive Behavioral Therapy (CBT) -Implemented by: mental health professionals (45%), and teachers (24%), -Outcomes measured by anxiety symptom measurement scales (RCMAS, ASTAI, SCAS) -Effect size calculated with Cohen's d and Phi.	-Prevention interventions for anxiety significantly reduced symptoms in most studies. -Type of therapy, program leader, or type of control group did not affect efficacy, which has implications for multi-context, multidisciplinary interventions	-small number of trials in some studies made it difficult to compare efficacy -limited follow up measurements -trial quality, program interest and fidelity, and relevant content may have weakened findings

| Weaver & Darragh, 2015 | To systematically evaluate the effectiveness of yoga interventions, as defined by controlled breathing, postures, and meditation, in reducing anxiety among children and youths | Systematic review AOTA L I Pyramid E1, O1, D1 | 6 RCTs, 2 non-randomized pre-post control group studies, 7 uncontrolled pre-post group studies, 1 case study

Inclusion criteria (1) Peer-reviewed studies published in English (2) Use of yoga or mind-body interventions that included physical postures, controlled breathing, and meditation (3) Participants were youths ages 3-18 (4) Inclusion of an anxiety outcome | Yoga intervention as defined by controlled breathing, postures, and meditation; common programs included Yoga-Ed and Viniyoga

Outcome measures measured anxiety; common measures included BASC-2, STAI, STAI-C | Research is mixed; yoga may be effective in reducing anxiety and anxiety-related symptoms in children and adolescents; more significant decreases were seen in yoga programs provided at higher frequency and tailored to meet the specific needs of a target population | Small body of evidence (only 16 articles); some studies did not find any decrease in anxiety symptoms following intervention; 1 study found that standard care also resulted in decrease in anxiety with no difference between groups; no studies examined yoga's impact on occupational participation and performance |

Quantitative Evidence

Author, Year	Study Objectives	Study Design	Participants:	Interventions & Outcome Measures	Summary of Results	Study Limitations
				E 2 Data		
Bouchard, Gervais, Gagnier, & Loranger, 2013	Evaluate effectiveness of a book-supported primary prevention program for anxiety disorders in children aged 9-12 years	RCT AOTA L I Pyramid E2	N = 46 children, aged 9-12 Exclusion: global score of >75 on Child Behavior Checklist, >60 on Screen for Child Anxiety Related Emotional Disorders	IV: Dominique's Handy Tricks Prevention Program consisting of a series of fictional stories simulating life situations, workbook guides children to understand how characters in stories cope with anxiety, 75 min workshop of story reading, reviewing of skills learned in previous workshops, group activities and discussions, 1x/week/10 wks Control group: wait list group receiving same tx after IV group Outcome measures: Coping Scale for Children and Youth, Childhood Anxiety Sensitivity Index, Multidimensional Anxiety Scale for Children	-statistically significant improvement in coping skills, anxiety sensitivity, and anxiety symptom subscales on CSCY, CASI, MASC (p < 0.025) with medium to large effect sizes pre and post tx -post-tx gains maintained at 9 month follow up	-lack of criterion for diagnosis of anxiety disorder limits generalizability to children with mild anxiety symptoms who may not have a formal diagnosis -Wait list control group received tx before end of tx for IV group which may impact validity of results -difficult to assess compliance on homework activities in tx protocol -ideal level of parental involvement and role in program and its impact on efficacy is unknown
Edelson, Edelson, Kerr, Grandin, 1999	Evaluate efficacy of deep pressure to reduce arousal and anxiety in children with ASD	AOTA L I Pyramid E2	N=12 children with ASD, randomly assigned to control or experimental, 4-13 yrs. old, 9 male, 3 female	20 min. sessions, 2/week, 6 weeks, experimental group self-administered lateral deep pressure through Grandin's Hug Machine, control group sat in Hug Machine with mechanism to administer pressure disabled Outcome measures: Galvanic skin response (arousal), Conners Parent Rating Scale (anxiety)	Experimental group scored significantly lower (p<.01) on Tension, Restless/Hyperactivity, but not Anxiety scale (p<.10) on Conners Parent Rating Scale No significant GSR differences post-intervention for experimental group, but experimental group exhibited increased variability in GSR readings, explained by researchers as possible variable response to deep pressure	-small sample size -ASD population may not be generalizable to other anxiety disorders -experimental group's variable response to deep pressure indicate practitioners should proceed with caution; deep pressure may be beneficial to some children but may increase arousal in other children

Goldbeck, Ellerkamp, (2009)	Compare the effectiveness of Multimodal Music Therapy (MMT) to a control group of treatment as usual (TAU) in children with anxiety disorder to decrease diagnostic status of anxiety, and increase dimensional outcome variables	RCT AOTA L I Pyramid E2	-N = 36 -Children aged 8-12 -IC: primary dx of an anxiety disorder (GAD, separation anxiety disorder, social phobia, specific phobia), IQ >80 -EC: children with a change in psychotropic medication during the trial	I=Multimodal Music Therapy, 3 sessions of individual music therapy for 60 min, and 9 sessions of group music therapy for 100 min each. Included cognitive-behavioral interventions O= presence of an anxiety disorder after treatment and after 4 month follow up. -Symptoms, quality of life, functioning and well-being, as measured in different questionnaires and assessments	Remission of anxiety disorder observed in 67% of MMT group, and 33% in TAU group (p = .046) Remission rates remained stable after 4 months. Quality of life measures improved significantly for both groups, but no significant effects found between groups	-While all of the children receiving MMT attended all sessions, attrition rate was higher for TAU group. -Diagnoses were not equally divided among groups, despite randomization. -Both groups had high attrition rates at the 4 month follow-up -Researchers did not separate possible effects of different aspects of the multimodal intervention
Hudson, Rapee, Deveney, Schniering, Lyneham, & Bovopoulos (2008)	Compare effectiveness of the Cool Kids cognitive behavioral treatment (CBT) package to an active control (group support and attention, GSA)	RCT AOTA LI Pyramid E2	-N = 112 -74 boys -Children aged 7-16 -Principal anxiety disorder by DSM-IV -Exclusion criteria: mental retardation, psychoses, concurrent psychological treatment	IV = 2 hr./ weekly/ 10x -CBT group used Cool Kids manual-based program -GSA group removed CBT components O = remission or reduction in severity of principal and all anxiety diagnoses (by CSR), reduction in mother and child reported anxiety (SCAS scale, SDQ scale)	-CBT significantly more efficacious compared to GSA in reducing diagnosis and reported anxiety (p's < .05). No significant differences in reported emotional problems -Children free of principal anxiety diagnosis significantly more in CBT subjects at 3 month follow-up (p < .05)	-specific treatment components that are efficacious not defined -CBT treatment designed in collaboration with family, control not -Control not child centered -children in CBT group had greater severity before treatment
Masia-Warner, Klein, Dent et al, 2004	Examine the efficacy of school-based intervention for social anxiety disorder in adolescents aged 13-17	RCT AOTA L I Pyramid E2	N = 35 adolescents mean age 14.8 diagnosed with social phobia or social/generalized anxiety disorder with main concerns on performance and public speaking situations	IV: Skills for social and academic success school-based intervention (SASS) sessions 40 min 1x/wk/12 weeks + 2 15-min meetings + 2 group booster sessions + 2 90 min weekend social events led by trained clinical psychologist and peer assistants in social events providing real-world opportunities for social skills generalization Control group: wait list group receiving same IV tx 3 months later Outcome measures: Anxiety Disorders Interview Schedule, Liebowitz Social Anxiety Scale for Children and Adolescents, Social Phobic Disorders Severity and Change Form, Children's Global Assessment Scale, Social Phobia and Anxiety Inventory for Adolescents	-statistically significantly lower ADIS in IV group (F (1, 33) = 50.6, p < 0.0001); decrease in severity of anxiety symptoms on SPDSCF (F (1, 33) = 34.9, p < 0.0001); decrease in social avoidance, performance anxiety, and total anxiety subscales on LSAS (p <0.05); improvement in overall functioning on CGAS for IV group, p < 0.0001 -significantly greater reduction in social anxiety for IV in new peers/situations on SAS, p < 0.05 -overall results suggest the IV group maintained clinical gains 9 months post-tx -67% of IV group compared to 6% of control group no longer met diagnostic criteria for social phobia post-tx	-majority of sample were Caucasian females limiting generalizability of study -improvements on certain subscales of outcome measures did not generalize to improvements in broader contexts (e.g., decrease in social anxiety in new situations did not generalize to decreased general social anxiety that is more often encountered in everyday life) -Intervention protocol occurs during class time and may disrupt school schedule; protocol needs revision for optimal effects on decreasing anxiety and maintaining academic performance -no comparison group for carry over effect -unclear whether efficacy of tx was related to increased attention on adolesecents or to protocol

McConachie, McLaughlin, Grahame et al, 2014	Investigate acceptability and outcomes of adapted group therapy for anxiety in children with ASD aged 9-13	RCT AOTA L I Pyramid E2	N = 32 children with ASD, met criteria for at least one anxiety disorder, age 9-13 years, IQ > 69, parental consent Exclusion criterion: children with untreated ADHD or oppositional behavior	IV: Exploring Feelings CBT intervention for 2-hr sessions, 1x/week/7 weeks conducted by experienced psychologists on child and parent Control group: no treatment for 7 weeks followed by same treatment in IV group (delayed treatment group) Exploring Feelings intervention: structured sessions focusing on identifying emotions and education on age-appropriate strategies to cope with anxiety Outcome measures: Clinical Global impressions-Improvement rating anxiety level, Anxiety Disorders Interview Schedule on parent observations of child's anxious behaviors, Spence Children's Anxiety Scale	-10/11 families interviewed post-tx said they would recommend the tx to others -no significance difference between tx groups on CGI and SCAS -statistically significant reduction in severity of primary anxiety disorder on ADIS for IV group (p = 0.014)	-presence of parent during post-tx qualitative interview may have biased child response to reflect parent response in favor of tx -no clear link between reduction of anxiety symptoms and overall functioning -children with ASD have trouble describing feelings, therefore validity of selected outcome measures remains uncertain -small sample size limits generalizability -parent-reported ADIS outcome measure may be biased in favor of tx from placebo effect
McNally, Keehn, Lincoln, Brown, & Chavira, 2013	Evaluate efficacy of Coping Cat program in reducing anxiety in children with ASD aged 8-14	RCT AOTA L I Pyramid E2	N = 22 children, aged 8-14 with ASD, IQ > 70, at least one primary anxiety disorder diagnosis, English as primary language	IV: CBT Coping Cat program designed for children and young adolescents with anxiety disorder. Half of the intervention focused on skills training on awareness of anxiety, coping, and administering self-reinforcement; half focused on exposure tasks with two sessions on collaboration with child's parents. 1 hr sessions 1x/wk for 16 weeks Control group: wait list group receiving same tx after 16 weeks Outcome measures: Anxiety Disorders Interview Schedule, Spence children's Anxiety Scale, child and parent version	-58% of children in IV group post-tx no longer met criteria for primary anxiety diagnosis while 100% of children in control group continued to meet criteria (p < 0.005) -statistically significant improvement in anxiety reduction for ADIS (p < 0.01) -statistically significant improvement on parent-reported SCAS scores (p < 0.05), but not on child-reported SCAS scores -at 2 month follow up, 36% of participants remained free from meeting diagnostic criteria for primary anxiety diagnosis	-limited duration of carry over effect -significant results limited only to parent reported outcome measures which may not be as valid as self-reported measures -small sample size limits generalizability Furthermore, parents were not blinded to tx condition and their answers could have been biased in favor of tx efficacy from placebo effect
Schohl, Van Hecke, Carson, Dolan, Karst, & Stevens, 2013	To evaluate via replication of the Program for the Education and Enrichment of Relational Skills (PEERS) on improving social skills and social anxiety symptoms in adolescents with ASD	RCT AOTA L1 Pyramid E2	n = 58 adolescents w/ ASD dx aged 11-16, 47 male, 11 female, average age 13.65, 52 Caucasian, 3 African American, 1 Asian recruited from local intervention agencies/ Autism support groups with parent-reported social problems, no hx of major mental illness or sensory/physical impairments, verbal IQ <70, verbal expression of interest in making/keeping friends -Individuals failing to meet inclusion criteria were excluded from the study	IV: replication & modification of PEERS program teaching social skills in small group setting Tx group: study author (Hecke) + trained graduate students in clinical psychology implemented IV, 1 90-min session/wk for 14 wks for groups of 10 or fewer adolescents WL group: no intervention until PEERS IV 14 wks later Outcomes: Kaufman Brief Intelligence Test; Autism Diagnostic Observation Schedule for social behaviors; Vineland Adaptive Behavior Scales for functional communication skills; Test of Adolescent Social Skills Knowledge, Quality of Socialization Questionnaire, Friendship Qualities Scale, Social Interaction Anxiety Scale	-no significant differences in pre-tx baseline social Vineland Communication and Socialization subscales between groups or between leaders -tx group significantly improved friendship skills on TASSK (t (27) = -17.91 p < .001), significant increase in hosted and invited get-togethers on QSQ-A-R (t (27) = -3.60, p < 0.001), significant decrease in social anxiety on SIAS (t (27) = 3.19, p < 0.001), significant decrease in core autistic sx on SRS (t (27) = 6.24, p < 0.001, significant decrease in problem behaviors on SSRS (t (27) = 2.10, p < 0.01) while WL group did not on all measures except for significant but smaller decrease in core autistic sx -no significant increase on friendship quality for both groups	-some generalizability only for Caucasian adolescent males with ASD -sampling from population familiar with ASD sx and inclusion criteria of verbal expression of interest in making friends may result in unusually motivated sample inflating true tx results -unequal group sizes for tx session could result in differential receipt of quality of tx effects -some social skill measures such as invites or hosts of get-togethers may be a result of friendships formed from regular meetings for tx rather than tx effect -parent rated outcomes may have been biased: favorable tx outcomes falsely elevated -lack of follow up limits information on carry-over effect -study is not generalizable to other types of anxiety

						commonly seen in children and youth
Storch, Salloum, King et al, 2015	Examine effectiveness of computer-assisted CBT (CCBT) compared to TAU on children with diagnosed anxiety disorders	RCT AOTA L I Pyramid E2	n = 100, 49 in CCBT group and 51 in TAU group ages 7-13 y.o., mean 9.82 w/ dx of separation anxiety disorder, social phobia, generalized anxiety disorder, specific phobia, or panic disorder and with minimum score of 10 on PARS with sufficient reading ability Exclusion criteria: receipt of psychotherapy treating anxiety, antidepressant or antipsychotic medication usage, suicidality, dx of bipolar disorder, psychosis, or ASD	IV: CCBT for childhood anxiety based on Coping Cat protocol (available in references of article) for 50-60 min 1x/wk. for 12 weeks at outpatient mental health center with therapists present on site, computer delivery first 6 sessions Program is interactive virtual camping experience with education on coping skills for managing anxiety including affective education, relaxation training, problem solving TAU: control group had choice of initiating, continuing, or refrain from psycho/pharmacological IVs, 55.3% received psychotherapy Outcomes: PARS, Clinical Global Impressions-Severity and improvement (CGI-S/ CGI-I) for distress from anxiety, Multidimensional Anxiety Scale-Child (MASC), Child Anxiety Impact Scale-Child/Parent (CAIS-C/P) on levels of functional impairment in home, school, and social domains	-CCBT group improved significantly more than the TAU group on PARS and CGI-S ($p < 0.01$) with moderate to large effect sizes (0.45 and 0.62, respectively) -probability of being a treatment responder was 14x greater for CCBT group compared to TAU group (odds ratio= 14.4, $p < 0.001$) -probability of remission for CCBT group compared to TAU group was 7x greater (odds ratio 7.3, $p = 0.002$) when TAU group restricted to only those receiving services -significant improvement in CAIS-P for CCBT group -no significant differences on MASC -treatment outcomes retained at 1 month post for all measures	-control group heterogeneity in receipt of therapy services makes comparison between groups difficult since the comparable group choosing to receive psychotherapy services was smaller in size compared to the CCBT group (28 in TAU compared to 49 in CCBT) -necessity for therapist guidance for last sessions limits portability of treatment and independent maintenance of carry over effects -one month follow up not sufficient to evaluate long-term treatment effect maintenance

Stulmaker & Ray, 2015	Examine effects of child-centered play therapy (CCPT) on anxiety symptoms for 6-8 y.o. children	RCT AOTA LI Pyramid E2	N = 53, ages 6-8, 27 in IV group (16 males, 7 females), 28 in control group (18 males, 10 females) elevated score of Revised Children's Manifest Anxiety Scale (RCMAS-2) or score within clinical range on Teacher Report Form (TRF) on Anxious/Depressed subscale, English speaker, parental consent	IV: CCPT 30 min, 2x/wk. 8 wks. Control: small activity group tx simulating typically conducted activities in schools for same frequency/duration CCPT: developmentally appropriate play IV/Control both conducted by doctoral level counselors environment/materials/therapist use of self with 90% adherence to protocol available in article's references Outcome measures: RCMAS-2, TRF Anxious/Depressed subscale	-IV group had statistically significantly lower anxiety scores than control group with large effect size (F (1, 51) = 6.569, p < 0.025, power 0.71) with decreasing trend in anxiety scores (improvement) and increasing trend in scores in the control group (deterioration) -worry and total anxiety constructs of RCMAS-2 most affected by therapy	-study effects are appropriate only to younger population -IV group received 2x attention from counselors compared to control group that can confound tx results from play therapy with increased counselor attention
Wenck, Leu, D'Amato, 1996	Evaluate biofeedback intervention to reduce children's anxiety	RCT AOTA L1 Pyramid E2	n= 147 7th and 8th graders nominated by teachers and who scored highly anxious on IPAT Anxiety Scale	IV: 12 sessions of biofeedback training; 6 sessions thermal training (skin temperature) and 6 sessions electromyograph training (muscle tension) Outcome measures: Spielberger State-Trait Anxiety Inventory (pre and post)	IV group scored significantly lower state and trait anxiety scores than control group p=<.001; t=-5.4 state anxiety p=<.05; t=-2.25 trait anxiety	No follow up assessment to compare anxiety scores over time
White, Ollendick, Scahill et al, 2013	Evaluate acceptability to patient, reliability in protocol delivery, and outcomes of Multimodal Anxiety and Social Skills Intervention (MASSI) to adolescents with ASD	RCT AOTA LI Pyramid E2	n = 30, ages 12-17 y.o., 77% male, 67% on psychotropic medication, ASD dx w/ generalized anxiety disorder, social phobia, specific phobia, or separation anxiety, IQ>70, no previous dx of intellectual disability, psychiatric medication permitted Exclusion criteria: primary dx of Obsessive-Compulsive Disorder, Panic Disorder w/ or w/o Agoraphobia, Agoraphobia without Panic Disorder	IV= individual customized (based on anxiety sx and social deficits) MASSI therapy based on CBT and applied behavior analysis (up to 13 sessions, 60-70 min), group therapy (up to 7 sessions, 75 min), and parent education (after each individual therapy session, 15 min) for 14 wks, administered by principal investigator and 4 doctoral students in clinical psychology Control group: wait list control condition of equal length (not detailed) Outcomes: Social Responsiveness Scale, social skill and anxiety sx; Child and Adolescent Symptom Inventory-4 ASD Anxiety Scale, anxiety sx; Pediatric Anxiety Rating Scale, Clinical Global Impressions, global functioning in school/ADL/social activities/home; Developmental Disabled Children's Global Assessment Scale, global functioning in children with dev. Disabilities	-significant improvement on SRS and DD-CGAS from pre-post tx(Z= -2.76 and -2.71, respectively, for both p < 0.01), no significant change on CASI-Anx or PARS; significant between-group difference favoring tx group on SRS and DD-CGAS (t = 3.3433 and 2.28 respectively, both p < 0.05) Control group: no significant change on SRS - smaller portion of subjects (compared to tx group) achieved significant changes in all other measures Overall, tx deemed acceptable to families, subject adherence high, therapist fidelity high but decline in anxiety sx not statistically significant	-heterogeneity between groups can confound factors associated with group differences with independent variable -no information on control condition factors that could cause changes in outcome measures -lack of description of tx protocol difficult for clinicians to apply tx or isolate effective tx variables -video-taping could result in observer bias affecting outcome behavior rating -4/5 outcome measures rated by parent/caregiver and may not be objective -limited generalizability to female adolescents -only SRS and CGI-I previously used in clinical trials; validity/reliability of applying other outcome measures to functioning is unclear
				E 3 Data		

Kaboski, Diehl, Beriont, Crowell, Villano, Wier, & Tang, 2014	Evaluate efficacy of a summer robotics program to reduce social anxiety and improve social/vocational skills in adolescents with ASD	AOTA L II Pyramid E3	N=16 adolescents, 8 typically developing, 8 ASD, ages 12-17, all male	IV: Subjects participated in week-long robotics camp 3hrs./day 5 days/week, control subjects were not told some of their peers had ASD; study subjects and control matched in pairs by age, grade in school, language skills; participants received instruction on robotics and "career skills" such as how to listen to others and understand them; participants completed final project in pairs Outcome measures: Social Anxiety Scale for Children, or Social Anxiety Scale Adolescents depending on age; Social Skills Scale (SSiS)	At baseline, control and ASD group differed significantly (p<.05) in scores on SASC/SASA with ASD group exhibiting higher level of social anxiety though not above clinical level of social anxiety; after camp social anxiety score in ASD group decreased significantly (p=.02) Scores on the SSiS did not increase for ASD group after camp Control group means on both measures did not significantly differ after camp	-no females included in study -participants' specific interest in robotics may not be generalizable to ASD population as a whole -small sample size
Knox, Lentini, Cummings, McGrady, Whearty, Sancrant, 2011	Evaluate game-based biofeedback intervention for anxiety and depression in children	Controlled Clinical Trial 2 groups –IV and control pre-post study AOTA L II Pyramid E3	n= 24 from 30 recruited children aged 9-17 referred by nurse practitioners, physicians, mental healthcare providers who reported symptoms of excessive worry or fear or had a diagnosis of an anxiety disorder	IV: relaxation training through biofeedback program that monitors heart rate and skin conductance level through computer games Freeze Framer, Journey to the Wild Divine, that allows client to succeed by slowing breathing and decreasing tension; combined with psycho-education about stress. Outcome measures: MASC, CDI, STAIC	Statistically significant differences (p<.005) in mean score between intervention and control group with intervention demonstrating decline in scores/anxiety level on MASC, CDI, STAIC	-IV group received both biofeedback IV and psycho-education about stress; would have been more powerful for control group to also have received psycho-education about stress -participants assigned to IV group, control group sequentially instead of randomly; IV significantly lower mean anxiety scores at pre-test; difference accounted for in statistical analysis but would be more powerful with randomized groups, equal pre-tests
O 3 Data						
Brezinka, 2013	Examine effect on decreasing OCD symptoms of children ages 6-12 of therapeutic video game Ricky and the Spider	Outcome AOTA L III, Pyramid O3	N = 18 10 males, 8 females, age 6-13, mean 9.94 Inclusion: OCD dx, IQ between 85 to above 115 (typical intelligence scores)	IV: Ricky and the Spider video game (protocol clearly outlined in article) played under therapist guidance offering metaphors to understand OCD, CBT approach, psycho-education, sx hierarchy, coping strategies, exposure-response exercises Mean length 17 sessions (range 5-40) Outcomes: client satisfaction with game, self-report on OCD severity, therapist feedback on perception of game and report on severity of OCD sx in clients	-15/15 children who completed questionnaire reported game satisfaction, increased understanding of OCD, decreased OCD severity -therapist reported 18/18 clients enjoyed game, explanation of CBT concepts most helpful for child followed by increased client motivation in therapy, remarkable decrease in OCD severity sx	-small sample size and lack of control group limits generalizability (at most, it is applicable to OCD rather than general anxiety sx) -outcome measures for 3 subjects were done after intervention had ended that may be systematically different from responses of other 15 subjects -heterogeneity of sample (2 subjects were on pharmaceutical interventions. 11 had comorbid psychiatric disorders) that may confound tx effects with other factors such as medication or interaction of psychiatric disorder sx -positive bias for sample where therapists with preferences towards electronic media were more likely to have their clients participate in intervention -risk of nonresponse bias from children's questionnaires (3/18)

Cotugno, 2009	Examine efficacy of social competence and social skills group intervention program with children with ASD, aged 7-11	Case control pre-existing groups AOTA L III Pyramid O3	N = 28, 18 children with ASD, aged 7-11, diagnosis in Autism Spectrum, average IQ, no significant communication deficits, participation in inclusion program in regular education curriculum 10 non-ASD children, age 7-11, no receipt of special education services	IV: peer-based group intervention using group therapy, CBT, and skill instruction (e.g., develop adaptive strategies to manage social issues, self-management strategies) to address social competency needs specific to the children with ASD, 1 hr/week/30 weeks led by group clinician Control group: no tx in same time period Outcome measures: Walker-McConnel Scale, Social Competence Development Scale	-statistically significant improvement across teacher-preferred social behavior, peer-preferred social behavior, school adjustment behavior, and total score on WMS (t = 2.53, p < 0.01) -significant improvement in parent ratings of stress and anxiety management -control group demonstrated no significant change in outcome measure scores	-ASD sample obtained from self-referred families receiving tx for ASD that may have different characteristics than general ASD population, limiting generalizability -outcome measures limited to teacher and parent ratings of child's social behavior which may have lower validity than self-reported outcome measures -emphasis of tx are different for the age groups, making it difficult to identify which variables of treatment contributed to positive results -no information on carry over effect -no validity data on WMS outcome measure with ASD children
Kosters, MSc, Chinapaw, Zwaanswijk, van der Wal, & Koot, 2015	To investigate whether self, teacher, or peer-reported therapeutic benefits (levels of anxiety and depression for children aged 8-13 years) were maintained 1 year post-intervention of a FRIENDS for Life program based on cognitive behavior therapy implemented in a natural setting (school setting)	Quasi-experimental design/case-control, pre-existing group outcome study AOTA L III Pyramid O3	339 children in grades 6-8 in Amsterdam (equivalent to grades 4-6 in the United States), ages 8-13, 157 in control group Inclusion criteria: current enrollment in elementary school implementing FRIENDS for Life program with high Revised Child Anxiety and Depression Scale (RCADS) scores or who were nominated by teacher	Intervention: 2 mental health prevention workers from a local organization implemented Dutch translation, 10 90-min group sessions, 1 parent session halfway through program, and 1 booster session 1 month after end of program, during school time Outcome: RCADS, Problem Behavior at School Interview (PBSI) for teacher-rated problem behavior, Peer nominations based on popularity, anxiety-based personality, and problem behaviors; collected pre, post, 6 month, and 12 months post-intervention	IV group lower anxiety and depression than control, differences increased over time from small-medium effect size, girls with higher effect sizes where by 6 and 12 months post-IV, anxiety & depression scores were not significantly different from general population. Teacher reports showed no differences at any time post-IV. Peers reported increase in internalizing problems in IV group than control, but by 12 months post-IV both groups no longer showed any differences	-no information on effect sizes for peer perspectives on anxiety behavior, making it difficult to interpret -study design did not allow random assignment of IV thus decreasing the rigor -Control group did not receive a placebo, decreasing the validity of comparing two groups with different environments/amount of attention -differential attrition of older students near the end of study caused more loss of follow-up data for control group, affecting validity of results -general population sample for anxiety data collection was not representative, having profound consequences on external validity of effect sizes -IV protocol details not provided: clinical implications of results thus remain unclear -differences in group sizes decreases internal validity in comparing groups
O 4 Data					

Jarrett, 2013	Evaluate processes of change in children with ADHD and anxiety after implementation of psychosocial treatment	Single group pre-post study AOTA L III Pyramid O4	n= 8 children aged 8-12 with ADHD-C (combined type) and at least 1/3 comorbid anxiety disorders (GAD, separation anxiety disorder, social phobia) Exclusion criteria: ASD, bipolar, acute psychotic sx, current psychosocial/medication treatment for ADHD or anxiety, IQ<80, any other condition requiring tx prior to tx for ADHD and anxiety	IV: combination of parent management training for ADHD and family based CBT, 90 min, 10 wks., not explicit on administration personnel Outcomes: Spence Child Anxiety Scale/Disruptive Behavior Disorders Rating Scale -change for ADHD/ anxiety sx & relationship w/ inattention/hyperactivity/impulsivity; Alabama Parenting Questionnaire/Family Environment Scale/Parent-Child Relationship Questionnaire; CNS Vital Signs/Behavioral Rating Inventory of Executive Function	Significant (p < 0.05) declining slope on inattention (largest magnitude slope= 0.88), hyperactivity (0.95), impulsivity (0.77), anxiety (0.96) at most tx points; overall significant ADHD sx change occurring before anxiety (lag range 0 to +1, p < 0.05); few significant + changes in neurocognitive functioning; limited changes in parent child relationships; and slight changes on family relationships at different points of tx Overall heterogeneous tx responses throughout tx course	-multiple outcome measures tested at multiple points of tx masks the overall effects of treatment and makes it difficult to pinpoint the factors relating to positive outcomes -lack of follow-up limits information about carry-over effect -small sample size limits rigor and generalizability -sx analysis restricted to parent report which may be biased -confounding outcome effects: unclear whether frequency of behaviors changed or parent's ability to manage behaviors/perception of behaviors changed
Selles, R. R., Arnold, E. B., Phares, V., Lewin, A. B., Murphy, T. K., & Storch, E. A., 2015	Investigate maintenance of treatment gains made following CBT intervention for anxiety in youth with ASD; assess anxiety symptoms in youth 10-26 months following completion of CBT	AOTA L III Pyramid O4	N=32, youth with ASD aged 8-16, had completed a 16-session, 60-90 minute family based CBT treatment protocol and demonstrated some level of treatment response	Subjects were evaluated 10-26 weeks post-treatment to assess maintenance of treatment gains Outcome measures: Anxiety Disorders Interview Schedule from DSM-IV, severity evaluated with ADIS Clinician Severity Ratting, PARS, Clinical Global Impression Severity Scale	Treatment gains were maintained on CGI-Severity and ADIS CSR for primary anxiety; scores on PARS and total anxiety indicated small effect toward symptom relapse	-ASD population may not be generalizable to other populations
Tokolahi, Em-Chhour, Barkwill, & Stanley, 2013	Examine outcomes and acceptability of an occupation-based group for children with anxiety aged 10-14 years	Single Group pre-post AOTA L III Pyramid O4	N = 34 Inclusion: aged 10-14 years, presented with anxiety symptoms, able to converse in English, engaged in TAU, not engaging in suicidal or parasuicidal behavior, not suspected of or diagnosed as experiencing psychotic phenomena.	IV: Children's group intervention 1.5 hrs/wk/9x. All included warm up, review of skills, use of activity to learn new skill, relaxation, practice of new skill, planning skills for upcoming week, closing. Focus to use developmentally appropriate outcomes to teach and participate in cognitive, behavioral, and functional skills for managing anxiety. Outcome measures: BYI-child report of current emotional state, OQ-rates child's perceptions of activity importance and level of ability, CBCL-parent report of problematic behaviors, HoNOSCA-parent report of child health and social functioning, CGAS-clinician rating for general child functioning Acceptability measured by attendance	Acceptability demonstrated by 87.9% attendance. -Statistically significant reduction in anxiety symptoms as indicated by reduction in means of parent-rated Anxiety (p < .001) and Internalizing (p < .01) subscales on the CBCL - Reduced factors inhibiting optimal functional performance, indicated by significant decrease in mean on HoNOSCA (p < .001) -Improvement in overall functioning, as shown by increase in mean of CGAS score (p < .01)	-Intervention in a group format to reduce costs, results may change if interventions individualed. -Participants were given opportunity to participate in alternative or concurrent treatments, implications for interpretation of results -Pre and post group measures collected in the presence of the clinicians, which may have skewed the responses

D 2 Data

Baker, Hudson, 2013	Evaluate if friendship quality and friends' anxiety predicts treatment outcome in children with anxiety disorders	1 group pre-post and 6 month follow-up study, correlational AOTA L III Pyramid D2	n= 116 children aged 7-13 years with anxiety disorders who presented for TX at emotional health clinic	IV: 10 group sessions of Cool Kids CBT treatment Outcome measures: Friendship quality assessed with "Your Friends" nomination questionnaire, Friendship Quality Questionnaire; Outcomes assessed with Spence Children's Anxiety Scale; Anxiety Disorders Interview Schedule for DSM-IV	Target child's higher friendship quality predicted absence of primary and all anxiety disorders at post and 6-month follow-up on ADIS for DSM-IV but not reduction of symptoms on SCAS; friends of target child also completed FQQ but results did not predict outcome treatment	-results are associational, it's possible that higher social skills and/or social information processing influence both friendship quality and treatment response -absence of anxiety diagnosis on DSM-IV did not correlate with reduction in anxiety symptoms on Spence Children's Anxiety Scale
Brown, Deacon, Abramowitz, Dammann, & Whiteside (2006)	Describe parent perceptions of Cognitive Behavioral Therapy (CBT) as compared to pharmacological approaches for childhood anxiety disorders	Correlation Study AOTA L III Pyramid D2	-N = 71 -Parents of children with a primary anxiety diagnosis evaluated at pediatric anxiety clinic. -Children aged 5-18 -18 children (25%) had been treated with medication, 5 children (7%) only received CBT, 23 children (32%) received a combination, 25 children (35%) had not received any treatment	IV: CBT, pharmacotherapy All parents received a 90 minute interview conducted with the child and one or both parents Outcome Measures: TPQ-P to assess parent's perceptions of pharmacotherapy and CBT, SCAS-P to measure parent report of anxiety in children, mSDS to measure the degree to which clinical symptoms interfere with work, social/leisure activities, and family/home responsibilities	-Compared to medication, parents CBT as more acceptable, more believable, and more likely to be effective in short and long term for their children (p's < .05) -Parents whose children had a history of taking medication had more favorable perceptions of acceptability and believability of treatments than parents whose children had no history of either intervention (p's < .01)	-only 32% parents of children had received both CBT and pharmacological treatment -No formal interrater reliability established - Bias as a result of the information about the study given by the referral agency to the parents may have influenced parent reports. -Psychometric properties of one outcome measure, the TPQ-P are unknown -Child self-ratings were not reported -mostly homogeneous sample

Key for Abbreviations

ADHD - Attention-Deficit Hyperactive Disorder	MASC- Multidimensional Anxiety Scale for Children
ADHD-C - Attention-Deficit Hyperactive Disorder-Combined	mSDS - Modified Sheehan Disability Scale
ADL- activities of daily living	OCD - Obsessive-Compulsive Disorder
Anx - Anxiety	OQ-Occupational Questionnaire
ASD - Autism Spectrum disorder	PARS - Pediatric Anxiety Rating Scale
BASC-2 – Behavior Assessment System for Children, Second Edition	QSQ-A-R - Quality of Socialization Questionnaire, administered to adolescents
BYI-Beck Youth Inventories	RCT - randomized control trial
CBCL-Child Behaviour Checklist	RCMAS-2- Revised Children's Manifest Anxiety Scale
CCPT-Child-centered play therapy	SCAS-P-Spence Children's Anxiety Scale for Parents
CASI-Anx - Child and Adolescent Symptom Inventory Anxiety Scale	SIAS - Social Interaction Anxiety Scale
CGI-I/CGI-S – Clinical Global Impressions-Improvement/Severity	SMD - standard mean difference
CAIS-C/P – Child Anxiety Impact Scale- Child/Parent	STAI – State-Trait Anxiety Inventory (Adult)
CBT - Cognitive Behavioral Therapy	STAI-C – State-Trait Anxiety Inventory for Children
CDI – Children's Depression Inventory	SX - symptoms
CGAS-Children's Global Assessment Scale	SRS - social responsiveness scale
CNS - central nervous system	SSRS - social skills rating system
DD-CGAS - Developmental Disabled Children's Global Assessment Scale	TRF – Teacher Report Form
ES-Effect Size	TASSK - Test of Adolescent Social Skills Knowledge
GAD - Generalized Anxiety Disorder	TPQ-P-Treatment Perceptions Questionnaire-Parent Version
Hx - history	TX - treatment
HoNOSCA-Health of the Nation Outcome Scales for Children and Adolescents	TAU-treatment as usual
IV – intervention	Wk(s)- week(s)
IQ- Intelligence quotient	WL- wait list

Summary of Key Findings

Summary of Experimental Studies

On average, biofeedback and psychosocial interventions such as Cognitive Behavioral Therapy are more effective for reducing symptoms of anxiety in children and youth compared to no intervention or treatment as usual (treatment received for anxiety that did not utilize the study intervention techniques). Early intervention and prevention programs in schools significantly reduce symptoms, regardless of type of therapy, program leader, or type of control group.

In many studies, CBT was found to have been effective in reducing anxiety symptoms. Additionally, treatment gains from CBT were found to have been maintained 10-26 weeks post treatment, with some small effect in relapse in symptoms. Adding relaxation or adjusting timing of exposure of CBT does not affect intervention efficacy. The PEERS program significantly decreased social anxiety symptoms and problem behaviors for children with ASD compared to children on the waitlist for treatment. Other interventions combining CBT and social skills training significantly decreased anxiety symptoms, social avoidance behaviors, and improved overall social functioning as perceived by the child as well as peers, parents, and teachers. These effects were maintained 9 months post-follow up for the skills for social and academic success (SASS) school-based intervention. Multimodal Anxiety and Social Skills Intervention program lessens severity of social disability for adolescents with ASD, but does not statistically reduce anxiety symptoms significantly. However, one pilot study found that children with ASD who participated in a robotics camp with typically developing peers had a significant decrease in social anxiety levels following the camp.

Multimodal Music Therapy may be effective in the remission of anxiety disorder. Child-centered play therapy significantly decreased anxiety symptoms in young children aged 6-8 with or without a formal anxiety disorder diagnosis, particularly in the worry dimension. Grandin's Hug Machine and the administration of deep pressure was found to have significantly decreased tension and restlessness/hyperactivity in 6 children with ASD, but not anxiety levels. Finally, yoga may also be effective in reducing anxiety symptoms in children.

N = 18 studies

Summary of Outcome Studies

Friendship quality predicts absence of anxiety symptoms. Parent management training in combination with family based CBT significantly reduces anxiety in children with ADHD. The video game Ricky and the Spider may be effective in reducing symptoms of OCD in elementary school-aged children, increasing motivation in therapy, and understanding the nature of the anxiety disorder. Children aged 10-14 respond well to occupation-based interventions, as evidenced by reduced anxiety related symptoms and increased functioning. Peer-based group intervention using group therapy, CBT, and social skill instruction may improve anxiety

symptoms and anxiety management as well as increase perceived pro-social behavior by teachers and peers.

N = 6 studies

Summary of Descriptive Studies

Higher friendship quality predicted absence of primary and all anxiety disorders following CBT intervention at post-test and 6-month follow-up on Anxiety Disorders Interview Schedule for DSM-IV, but not reduction of symptoms on Spence Children's Anxiety Scale. Parents had better perception of perceived efficacy for CBT than pharmacology. Treatment history and current level of anxiety had no influence on parent perceptions of CBT.

N = 2 studies

Implications for Consumers:

Consumers for these interventions are the children (<18 y.o.) with anxiety-related diagnoses and their caregivers. This research shows promise for psychosocial interventions and biofeedback for reducing symptoms related to anxiety. Caregivers could use this information to advocate for these interventions within their settings. Assuming the majority of the consumers are students, caregivers may advocate for early prevention and intervention services that employ psychosocial intervention techniques, as implemented by various trained program leaders, such as teachers, school psychologists, counselors, or graduate students. Consumers should focus on building family social networks, as friendship quality and family involvement in intervention have both resulted in significant reductions in anxiety symptoms. While psychosocial and biofeedback interventions appear to be effective in reducing anxiety symptoms in older children, treatment relying more heavily on child-centered play therapy appears to be as effective in reducing anxiety symptoms in children under 8 years of age. For consumers concerned specifically with social anxiety that commonly occurs with children with ASD, interventions combining principles of CBT with social skills training may be more effective in targeting anxiety related to socializing and improving communication skills. However, MASSI, a social skill intervention for youth with ASD, does not appear to reduce anxiety symptoms. Regardless of the type of intervention, caregivers who advocate for that specific intervention must consider the possibility that other child diagnoses may affect its efficacy.

Implications for Practitioners:

Anxiety in children can impact their daily functioning and affect their abilities to participate in their daily routines and roles as student and family member. Cognitive skills, such as attention, sequencing, and problem-solving, can all be affected or impeded, making it difficult for a child with anxiety to complete their daily tasks, participate in school activities, and can even affect their abilities to complete self-care and ADLs/IADLs. Occupational therapists are uniquely suited to treating this population due to the holistic approach brought by the profession to ensure clients can do the things they need or want to do during their daily lives. Occupational therapy's holistic approach is also well suited to the research, which indicates that intervention strategies that *combine a variety of approaches* to treat

anxiety in children and youth may be the most effective.

To treat anxiety in children, occupational therapists should strongly consider becoming trained to administer CBT treatment or CBT-based anxiety programs, an intervention approach that the research strongly suggests may be effective in reducing anxiety symptoms. CBT certification dictates that any professional who may work with a mental health population, has reached the terminal degree in his/her field, and is licensed for independent practice, is eligible to become certified in CBT. Occupational therapists, as licensed professionals who may treat a mental health population, are well-qualified to become certified to administer CBT treatment. The use of CBT to decrease maladaptive thinking patterns can increase a client's participation in occupations such as work, education, rest/sleep, and social participation and falls well under the domain of occupational therapy. (Not only has CBT has been proposed as an effective treatment for anxiety in this CAT, but CBT may also be effective in working with other clients and mental health populations, indicating the skill may have carryover to other areas of treatment.) If unable to administer CBT, occupational therapists should refer pediatric clients with anxiety for CBT treatment. Additionally, therapists and other mental health practitioners should provide referrals for other interventions that interest the client and that may be effective, such as music therapy.

In addition to becoming trained or providing referral for CBT, occupational therapists may consider incorporating biofeedback into intervention plans, an intervention which preliminary studies have found promising. Biofeedback, which teaches clients to monitor and regulate their own heart rate, temperature, and muscle tension through the use of monitoring technology, helps clients identify stressors and adjust their body reactions accordingly. Computer technology, computer-based CBT, and computer games that facilitate biofeedback monitoring, such as the Freeze Framer and Journey to the Wild Divine, may provide an additional motivation piece for children to participate in the intervention. Additionally, biofeedback intervention could be incorporated with sensory strategies, such as deep pressure, which was found to have decreased tension and restlessness/hyperactivity in children with ASD. Incorporation of biofeedback may facilitate clients' association of certain sensory stimuli and relaxation techniques with decreased heart rate and muscle tension, allowing them to generalize these strategies to help decrease anxiety symptoms.

Video games may also teach children about anxiety and anxiety disorders, increase motivation in participation in therapy, and decrease anxiety symptoms related to OCD. These interventions may be applied in the outpatient setting and those delivered by computers or electronic devices can be implemented at home or in school.

Other intervention strategies that show promising effects in preliminary studies include occupation-based and child-centered play interventions and yoga. Occupation-based and child-centered play interventions, which include teaching and practicing developmentally appropriate ADL and IADL tasks in the context of planning and practicing skills and managing anxiety, may increase functional performance and participation. These occupation-based interventions may also be easily incorporated into existing treatment. Additionally, therapists may become trained in providing yoga treatment or provide referral for yoga programs tailored to youth or anxiety management.

Lastly, some preliminary research finds that high friendship quality may be a strong outcome predictor following CBT treatment for anxiety. Although the social skills intervention MASSI did not reduce anxiety symptoms in children with ASD in one study, another study of 116 children found a correlation between a child's higher friendship quality and the absence of primary and all anxiety disorders at post and 6-month follow-up after Cool Kids CBT treatment. Additionally, participation in a robotics camp with social skills training with typically developing peers was found to have significantly decreased social anxiety in children with ASD.

Accordingly, occupational therapists may consider targeting the child's social skills and ability to build high quality friendships in order to facilitate the strongest outcomes from intervention, whether the child is receiving CBT or other treatment. The evidence reviewed showed that interventions combining CBT and social skill instruction are a potentially effective method to decrease the severity of anxiety symptoms associated with communication that is commonly seen with children with ASD and improve social functioning. The addition of utilizing trained peer assistants to supplement therapist intervention in a school setting may further increase the efficacy of the treatment as the school context provides realistic opportunities for the child to interact with peers and teachers to practice the acquired social skills in a supportive environment that improves self-efficacy, increases motivation to continue using the learned social skills, and prolongs the carry-over effect. However, more research is needed in this area to provide a conclusive recommendation and practitioners should proceed with caution.

Although the interventions analyzed produced encouraging results, therapists should scrutinize the pragmatics of using them as some may require additional training, staffing, purchase of additional equipment, and have limited program availability. In addition, some protocols such as the combination of parent management training and CBT were not explicitly described in some studies and would potentially be difficult to replicate. The risks for adverse effects from the treatments in the research are not known and it is important for therapists to be cautious of potential harm such as increased screen time associated with treatments delivered on a computer or electronic device. Additionally, therapists may also consider that at least one study has found that for younger children ages 6-8, child-centered play therapy may be more appropriate and motivating than CBT or other forms of intervention in reducing anxiety symptoms associated with a psychological disorder, trauma, or comorbidity with developmental disorders.

Finally, there is a limited amount of research examining anxiety treatment for children and youth. Many of the studies that examined anxiety interventions for children are preliminary studies and substantially more research is needed to conclusively say whether these interventions may be widely effective. In conclusion, practitioners may decide a combination of the approaches found in the literature that is tailored to each child's needs and responses to treatment may be the most promising.

Implications for Researchers:

Substantially more research is needed on the effectiveness of biofeedback intervention,

occupation-based intervention, and yoga intervention in the treatment of anxiety in children as a primary diagnosis or as a co-occurring disorder with disabilities such as ASD, ADHD, or developmental delay. Additionally, occupational therapy case studies that incorporate a variety of strategies to treat a child with anxiety may provide a stronger evidence base as well as a multi-approach example for other therapists to follow when treating their own clients. Substantially more research is also needed on the effectiveness of intervention strategies already being used by occupational therapists to treat anxiety, such as sensory kits or computer/video games. More research may also be needed to tease out when, how, and why high quality friendships predict stronger outcomes from anxiety intervention, examine the efficacy of conducting social skills training interventions in a school context compared to the clinic setting, and investigate the effect of child-centered play therapy on other subscales of anxiety other than worry.

Bottom Line for Occupational Therapy Practice/ Recommendations for Best Practice:

Recommendations from this CAT can be incorporated immediately through the use of CBT referrals or administration of CBT-based treatment programs for children with anxiety. Additionally, biofeedback intervention, which in the modern technological era may be relatively inexpensive to set-up, may be incorporated into existing treatment strategies such as sensory strategies. Practitioners can also incorporate occupation-based and child-centered play interventions, an approach especially suited for occupational therapists that may be promising in improving functional performance and participation. Finally, social skills and the ability to build high quality friendships are another area occupational therapists may consider targeting in order to facilitate the strongest outcomes from anxiety intervention. It is important for therapists to monitor their clients' performance on pertinent outcome measures before, during, and after their chosen treatment intervention as well as in follow-up assessments in order to substantiate the applicability of their findings to their practice setting. In addition, collecting and publishing outcome data can contribute information to the emerging area of occupational therapy practice addressing comorbid anxiety in children and youth that can benefit other professionals in utilizing current evidence-based practice.

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Involvement Plan

After meeting with our clinician at the Center for Therapeutic Intervention (CTI), we
found CTI's main goal for anxiety intervention is to increase its clients' functional performance
in expected roles, such as student, child, sibling, and family member. Currently, practitioners at
CTI are choosing to assess children for anxiety through indicators gained during the parent
interview. These indicators may include concerns or problems with a child's emotional reactions,
frustration management, and coping skills. To further assess a child's anxiety levels, CTI relies

on non-standardized, behavioral focused, parent-reported or teacher-reported checklists, the Social-Emotional scale on the Sensory Profile, and the Vineland Adaptive Behavioral Scale.

From information gleaned from the occupational profile and evaluation tools, practitioners then decide on incorporating anxiety reduction into their intervention plans. Usually, up to half of the therapy goals are related to social-emotional performance and may include goals related to decreasing anxiety. Currently, practitioners do not use any form or data sheet for monitoring anxiety during and after treatment. They measure progress from re-administering the same assessments or measuring improved performance in occupations and roles based on parent report.

Despite the high prevalence of anxiety occurrence in the client population, and the large proportion of therapy goals dedicated to this area, there is a lack of strategic ways to assess, measure outcomes, and implement interventions specific to anxiety. There is a need to translate the knowledge gained from the critical appraisal of the topic of interventions for anxiety for children to help clinicians select specific methods of treatment and monitor outcomes.

Our clinician articulated the following knowledge translation methods that could be helpful addressing concerns about anxiety in children in occupational therapy service delivery at CTI:

1) A decision support tool, in the form of a reader-friendly table, to aid practitioners in selecting structured interventions to address anxiety:

- The support tool will focus on interventions based on cognitive behavioral therapy (CBT) and other options that can be administered by COTAs (e.g. yoga, music therapy, social skills training)

● The support tool will include descriptions of key points about the intervention such as materials/equipment, time required to administer, parent involvement, required age range of treatment recipients, duration of intervention, cost, usability, certifications needed for administration, demonstrating competency, and type of questionnaire.

2) An outcome measures table with similar parameters to help in assessing anxiety and monitoring treatment progress.

For our involvement plan, we have come up with a timeline of completing these knowledge translation tools based on our critical appraisal of the topic from the available research.

Task/product	Deadline date	Steps with date to achieve the final outcome
Intervention Decision Support Tool	4/8/2016	-identify interventions based on CBT or ones that can be implemented by COTAs and form an intervention table with key points by 3/12/2016 -fill out table from garnering information from research articles in CAT and/or additional research on information not provided in articles by deadline
Outcome Measures Table	4/8/2016	-identify outcome measures from CAT by 3/12/2016 -select outcome measures that

| | | either appear in more than one study of the CAT or are particularly useful for CTI context by 3/18/2016

-fill out table from articles in CAT and/or additional research by deadline |
| --- | --- | --- |
| | | |

Knowledge translation of intervention strategies may be affected by CTI's setting and context. The Center for Therapeutic Intervention (CTI) is a private outpatient occupational therapy clinic in Gig Harbor, WA staffed by three licensed occupational therapists (OTR) and two certified occupational therapist assistants (COTA). The occupational therapists have a rich mix of experiences in different settings; two of the therapists have spent at least 14 years in pediatrics and some years in adult mental health and rehabilitation, one therapist is in her second year of practice in pediatrics, and the COTAs have experience in adult rehabilitation, pediatrics, and specializations in feeding. The clinic also specializes in treating foster and adopted children, and children who may have been victims of trauma. Common goals include increasing client self-regulation in order to maintain an optimal state of alertness for functioning at home and in school, and increasing social skills and participation. The average length of stay is 6-18 months. Payer sources are mostly from insurance, but some are private pay or state-funded from the Washington Department of Social & Health Services for low-income families who qualify for assistance.

Thus, facilitators to knowledge translation of the intervention strategies include the clinic's small size and the staff's vast experience in working with children and children with anxiety. Changes may be easier for the small clinic to implement, as they will only have to

educate and train a small staff. The staff also works in close proximity to one another within the clinic, which may be helpful to reinforce adapting changes and monitoring progress. Additionally, the staff's vast experience of working with the pediatric and mental health population ensure they are well prepared to trial different intervention strategies and have enough experience to monitor what affect they have on their clients. The culture at CTI is also a facilitator to knowledge translation, as the staff share therapy goals on maximizing their clients' engagement in school and other meaningful occupations via interventions to decrease anxiety and anxiety symptoms which promotes learning of new intervention methods from the critical appraisal of the topic, consistency of the clinicians' role on decreasing childhood anxiety, and a motivation to strategically reach therapeutic goals through optimal allocation of resources and obtaining additional equipment, supplies, or training as needed. The small staff size also provides greater opportunity for democratic inclusive decision making, as each individual is likely to be expected to contribute to team discussions on implementing change or plans for monitoring outcomes.

Barriers to knowledge translation of intervention strategies include the clinic's small size, as well as clients' payer sources. The small size, which in addition to being a knowledge translation facilitator could also be a barrier, means the clinic may not have the funds to implement certain intervention strategies or to train therapists to administer them. Feedback on individual and team performance that facilitates the fidelity of effective knowledge translation is also affected from the small staff size and all members are occupational therapists, limiting constructive feedback to a small number of sources, professions, and methods rather than feedback that is more comprehensive from a variety of different perspectives. Additionally, the clients' varied payer sources mean that the clinic may have difficulty getting some interventions

reimbursed from insurance or Washington State if they are deemed as unnecessary. The clinic may also have difficulty implementing some CBT programs if the program lasts longer than a client is able to receive occupational therapy services based on the regulations of the payer sources.

In conclusion, outcomes of our knowledge translation tools will be monitored and assessed via communication with our collaborating clinician after the staff has reviewed the tables. We will set up an additional meeting with our collaborating clinician in mid to late April as best fits the schedule of CTI. The clinician will be asked to complete a survey asking her ratings on the readability, usefulness, degree of fit with the clinic's prioritized information needs, and likelihood of implementing a change in the clinic's therapy process as a result of the information provided in the decision support table knowledge translation tools. She will also be asked about any remaining contextual factors facilitating or hindering change, feedback not covered by the questions on the survey, as well as plans for monitoring treatment outcomes before and after intervention change. The meeting and survey measures the quality, effectiveness, and productivity of our critical appraisal of the topic and knowledge translation tools on enacting changed based on the latest evidence-based practice. Our outcomes will include clinician perspectives of the usefulness of the table in guiding clinical practice based on the survey, and what specific factors influenced clinical decision making for best practice.

Process of Knowledge Translation Tools

Based on discussion with our collaborating clinician, we created two knowledge translation tools that were tailored to meet the needs of CTI. The knowledge translation measures that we created included an outcome measures table and intervention support tool to better assist decision making in regards to assessments and interventions for anxiety.

The outcome measures table is an easy to read tool created to quickly compare common outcome measures that are used with children who are diagnosed with anxiety or show anxiety-like symptoms. One unforeseen difficulty for creating the table was determining which outcome measures that were mentioned in the literature to include. As a result, the outcome measures chosen for the table were ones that had been referenced in at least two separate articles within the CAT. To compare the measures, the table includes key points of the measure, a website to access for more information, the cost to purchase, intended age of clients, time to administer, the type of measure (questionnaire, self-report, interview), and the qualifications required to accommodate the COTA on staff. Since the majority of the articles were published by disciplines outside of occupational therapy, the outcome measures referenced were those created for the disciplines. We encountered some difficulty distinguishing the qualifications required to administer these measures, and determining if the CTI staff would meet those qualifications. In addition, some websites for measures were difficult to access to find information relevant to the outcome measure without purchasing it. As the occupational therapy research for anxiety increases, we foresee an increase in available measures that are better tailored to occupational therapy, such as a tool to include the impact of anxiety on daily occupations.

The second knowledge translation tool that we created was a table for comparing common interventions for anxiety. After reviewing the CAT, the collaborating clinician discussed the interventions from the literature that appeared to fit most closely to the culture and needs of CTI. The clinician was most interested in the occupation based interventions, yoga, and cognitive behavioral therapy. From this discussion, a table of relevant interventions was created. The table compared key points of the intervention, cost, intended client age and populations (diagnoses), time to administer, qualifications required, materials needed, parental involvement,

usability, and extra information if needed. One main difficulty that was encountered was finding

basic information about the intervention. It seems as though some interventions were created by

the study authors, and as such did not have an established protocol and website to access

information. As with the outcome measures, it was difficult to determine if the therapists at CTI

would meet the qualification requirements to administer the interventions.

These knowledge translation tools were created with the intention to incorporate

evidence-based practice into the evaluation and interventions at CTI, and that these tools could

be expanded upon based easily with increased published evidence and clinical experience.

Products of Knowledge Translation:

See attached PDF files

Scheduled Dates of Completion of Knowledge Translation Tools:

Task/product	Date of completion	Steps to achieve the final outcome
Intervention Decision Support Tool	4/8/2016	-identify interventions based on CBT or ones that can be implemented by COTAs and form an intervention table with key points by 3/12/2016 -fill out table from garnering information from research articles in CAT and/or additional research on information not provided in articles by deadline
Outcome Measures Table	4/8/2016	-identify outcome measures from CAT by 3/12/2016 -select outcome measures

		that either appear in more than one study of the CAT or are particularly useful for CTI context by 3/18/2016 -fill out table from articles in CAT and/or additional research by deadline

Monitoring Outcomes:

After completing the intervention decision support tool and outcome measures table as part of the knowledge translation products, the outcomes of the decision support tool tables were monitored by a structured interview with the clinician approximately 2-3 weeks after receipt of the intervention and outcomes tables. To evaluate the effectiveness of the knowledge translation tools, the clinician is asked to provide feedback on her impressions of the tools and to rate the following parameters on a scale of 1-10, with 10 associated with high value.

First, the clinician is asked general questions about the planning and preparation process of changing protocols to gain insight on any potential barriers to enacting new interventions or outcome measures so that lack of change on intervention for anxiety or measuring outcomes is not confounded with financial or practical hindrances. Then, she is asked to rate the decision support tools on their readability. While the critical appraisal of the clinical question strived to answer the concern in detail, decision support tools aim for ease of usability to provide a concise reference to aid the clinicians in comparing between complex interventions and outcome measures. To highlight the most salient aspects of each intervention or outcome to the Center for Therapeutic Intervention, the decision support tools provide the important points to facilitate clinical decision making.

Second, the clinician is asked to rate the usefulness of the decision support tools. This is to evaluate whether contents of the decision support tables were a good fit with the clinic's priorities in making decisions about the therapy process. In order to help clinicians decide on interventions or outcome measures, there must be a good match between the clinician's information needs and the provided information in the knowledge translation products. Third, the clinician is asked to rate her likelihood of implementing an intervention and/or outcome measure included in the decision support tables in order to measure the outcome of knowledge translation. The purpose of the clinical question is to improve clinical evidence-based practice, and the process of acquiring knowledge in the critical appraisal of the topic and translating it would be unproductive if none of the knowledge is actually implemented. To investigate the outcome of knowledge translation further, the collaborating clinician will be asked about plans to monitor client outcomes before and after implementing change in the therapy process. Establishing a foundation for monitoring outcomes is critical for maintaining changes in intervention and measuring or evaluating client outcomes or factors, tracking progress of change, monitoring any extraneous changes in function not directly related to the chosen outcome measure (e.g. changes in appetite, sleeping, physical function) ensuring client safety, maximizing client health and well-being, and creating new data for future research to contribute to advancing evidence-based practice.

Finally, the clinician will be encouraged to provide feedback on the knowledge translation process to gain additional information pertinent to the efficacy of the products that may not be covered from the parameters outlined above. Her opinions and comments on the reasons for her ratings will be combined into an overall evaluation of the effectiveness of the decision support tools.

Effectiveness of Knowledge Translation Products:

The effectiveness of the knowledge translation tools was evaluated by results of the above survey. Please see attached for completed survey. The therapists at the clinic are all in agreement that an outcome measure for anxiety would be useful for their clientele, if it is both cost-effective (under $100) and easy to administer. The benefits of a small clinic include ease of coming to a consensus for moving forward. The collaborating clinician reports that the employees work well together and are all in favor of use of the knowledge translation tools.

After reading through the knowledge support tools, the staff at CTI has expressed interest in 3 of the listed books, including Cool Kids and Exploring Feels. They plan to set up an all-staff meeting to use the knowledge translation tools and discuss new programs moving forward.

On the administered survey, the staff at CTI has rated the tools as 10/10 for being concise and readable, easy to understand, useful in highlighting the most salient points of interventions and outcomes, and a good fit with CTI's priorities and culture. CTI reports that they are highly likely to implement change in their therapy process with the use of the administered tools.

The director of CTI shared her perspectives on how and why the members of CTI have chosen their assessments so far. For additional development of these knowledge translation tools, the following criteria may be added: recommendations from peers, perceived usefulness for current caseload, ease of scoring, and client's ability to attend to tasks of the assessments. Other considerations include medical insurance coverage for certain interventions, especially those done in groups.

Overall, the collaborating clinician and other members at CTI found the knowledge translation tools useful for their practice. The clinician reports, "I really appreciated the format of the documents you sent us. The concise information regarding cost, client age, time to

administer, qualifications required, materials, and type of measure is exactly what we need to know when deciding if a tool/approach is a good fit for our clinic!".

Based on the results on the feedback survey measuring effectiveness of the decision support tables, the practitioners at CTI have built a consensus on moving forward with investing in 3 books of at least two intervention approaches outlined in the table and plan to monitor effects with two outlined outcome measures. Since the decision support tables have encouraged a change in the therapy process, the knowledge translation tools have demonstrated the ability to streamline the decision-making process for practicing occupational therapists. By choosing interventions and outcome measures that were part of the latest literature included in the systematic review, the knowledge translation tools also help these practitioners incorporate evidence-based practice into their interventions.

Although the intervention decision support table included distinct interventions, the tool can be used as a template to customize interventions by either adding treatment approaches to each outlined intervention and/or combining the outlined interventions to better personalize treatment approaches to best suit the practitioner's client needs. Alternatively, the tool can be used as a template to incorporate key concepts of an intervention while modifying the approach to be directly applicable to occupational therapy in creating or promoting healthy habits, establish or restoring skills to cope with anxiety, maintain therapy gains after termination of services, modify tasks to minimize the effects of anxiety, or prevent disability from maladaptive behaviors resulting from ineffective coping skills with anxiety.

With customization of interventions or choosing one from the table, practitioners at CTI are using methods for decreasing anxiety that are directly applicable to the field of occupational therapy. Since our collaborating clinician is planning to monitor outcomes of the interventions in

using two outcome measures to keep track of participation in school, state of well-being, and role competence as a student, son/daughter, or sibling, she will be one of several therapists at CTI that will become pioneers of contributing data to this emerging area of practice of using intervention approaches to decrease anxiety symptoms in children in youth in occupational therapy literature.

Evaluation of Overall Process of Project

As a result of the process of the critical appraisal of the topic and completion of knowledge translation decision support tools, we brought time dedicated to searching and perusing the latest literature for the clinicians at CTI and opened up accessibility of peer-reviewed research articles and a wealth of information to answer the clinical question. To enhance usability and readability of complicated information included in the critical appraisal of the topic, the knowledge translation tools provided areas of information deemed high priority in table format with concise language to facilitate the ease of clinical decision making. By providing a method to support clinical decision making on choosing anxiety interventions and outcome measures, we created the first step towards implementing change for therapists at CTI to better serve the needs of their clients while also providing the opportunity to use more scientific reasoning in the intervention selection process.

However, we as the research team also greatly benefited from CTI's collaboration. CTI was able to bring to our attention a real world area for research that clinicians would benefit from immediately. Because CTI had noticed they were seeing an increase in anxiety in their pediatric clients, we were able to timely investigate an emerging and growing practice area for occupational therapy. Research into this emerging area also serves to benefit other practicing clinicians who may also be seeing an increase in pediatric clients with anxiety.

Additionally, the clinicians at CTI had many real world constraints that affected their clinical decision making and practice. For example, the owner of CTI reported that constraints, such as reimbursement, greatly affect their decision-making process. She reported that although social skills and CBT training within group treatments was well supported by the research, the clinic has difficulty getting reimbursed for group treatments, and is many times not feasible. Reimbursement and other factors such as these became real constraints to replicating treatments from the literature into the clinic. However, the process of working around these constraints with knowledge translation tools to aid in decision making may provide an example to others of how research evidence may be translated into practice despite real world limits.

In completion of this project, we also encountered other obstacles that challenged our process. For example, when first researching the topic, we had difficulty finding relevant articles in occupational therapy literature. By the end of our search, we were only able to acquire one related article that was published in the British Journal of Occupational Therapy. Since the majority of our researched articles were published by disciplines outside of occupational therapy, we were challenged by interpreting the findings of these articles within the occupational therapy lens. After completing the CAT table and knowledge translation pieces, we were challenged by the rapid turnaround before expecting outcomes. Our collaborating clinician would have benefitted more from a longer time period to incorporate our knowledge translation pieces into her practice before completing an outcome survey about their effectiveness.

Recommendations for the Future

During the project, additional questions were raised by the partnering clinicians that may be potential areas for future research and projects. In particular, the clinicians became interested in knowing: Which assessments for anxiety in children are valid, reliable, and "easy" (time-

constraints, cost, training, etc.) for the therapists to administer? Although we were able to compile a list of the most used assessment measures in the research, understanding the reliability and validity of these assessment measures reached beyond the scope of this project and may be a potential area for future projects or research.

Related to assessments for anxiety, the clinicians were also interested in learning the best way to track their outcomes from intervention. It is possible that CTI could benefit from consultation on tracking outcomes with an in-service regarding ways this might be done. Information regarding how to best track outcomes could also apply to all the clients and diagnoses the clinic serves and treats, and the clinic's population as a whole.

Other areas of research were raised during the initial phases of the project that the clinic may still be interested in exploring. In particular, the clinic was also interested in exploring interventions for executive functioning in children. The clinicians noted this as another common area of treatment of which they had little evidence to support their practice.

Finally, our research on this topic also raised areas for further research in occupational therapy literature. Most of the research we found emerged from other disciplines, such as psychology and education, and did not address an occupational therapy approach to treating children with anxiety. Occupational therapy is unique to other disciplines with its holistic approach, and treatment might include a combination of the interventions found in the research as well as others not addressed, such as sensory integration. A project for the future may be collaboration on a case study outlining how an occupational therapist treated a child/children with anxiety and a report on the outcomes. A case study such as this could serve as an outline and example for other therapists to follow and fill a gap in the literature.

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