Girls Growing in Wellness and Balance:
Researching Yoga as Prevention in the Schools

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Thank You!

• International Association of Yoga Therapists
• Kripalu
• Symposium on Yoga Research Conference Committee
Svadhyaya or Self-Study
Eating Disorders

- Anorexia Nervosa
- Bulimia Nervosa
- Binge Eating Disorder

Image from: https://genology.files.wordpress.com/2010/07/2ezjlw56-297x300.jpg
Prevalence of Eating Disorders and Rationale for Research

- Prevalence (DSM-V): AN (.4%- .8%), BN (1-3%), BED (1.6%-3.4%)
- 90% of individuals diagnosed are female
- Prevalence for at-risk females (15-29 years-old): 3-10%
- Subclinical manifestations
  - Current estimates suggest that some form of eating disordered behavior occurs in 30% of girls

Stice et al., 2013.; APA, DSM-V (2013)
Dissertation: Body Dissatisfaction

• Body Dissatisfaction in College Women: Identification of Risk and Protective Factors
  – 13% of the 215 women surveyed showed clinical level Body Dissatisfaction
  – In a hierarchical regression- biggest predictors of BD
    • Physical Self-concept accounting for 45% of the variance ($p < .001$, positive relationship)
    • Adding Drive for Thinness accounted for 52% of variance ($p < .001$, negative relationship)
  – Competence and Academic Self-concept did not add to the prediction of BD
• (Cook-Cottone & Phelps, 2003)
Attuned Representation of Self (ARMS)

Internal Self

• Physiology, emotions, and cognitions influence a sense of internal integration and attunement.

• Difficulty with one aspect can affect one’s internal experience of well-being:
  • physiological challenges
  • emotional dysregulation, or
  • cognitive distortions

Cook-Cottone, 2006, 2015a, 2015b
External Self

• Components the external experience of self can affect attunement.

• Disruptive external influences can include:
  • ineffective communication patterns within the family,
  • abuse,
  • community pressures,
  • cultural media influences, and
  • gender inequities.

Cook-Cottone, 2006, 2015a, 2015b
Attunement and Integration

• As we manage internal and external aspects of self, the quality of attunement can be changed by any one aspect of experience.

Cook-Cottone, 2006, 2015
Disordered Self

• Conflict, struggle, and disorder can manifest in the absence and the consequent seeking of attunement (Cook-Cottone, 2006, 2015).
The Attuned Representation of Self Model (ARMS)

- Illustrates the positive experience of individuals in their bodies by explicating the role of attunement,
  - or the adaptive mutual influence and co-regulation
  - among the internal and external aspects of the experience of self.
- Cook-Cottone, 2006, 2015a, 2015b
Centrifugal and Centripetal Forces

Why School-based Prevention for Eating Disorders?

- Access to all kids
- Weight related behaviors and concerns may emerge as early as 4th grade
- Primary prevention programs should begin early, before related concepts solidify.

Developmental Challenges
Middle School

• Achieving a well-balanced sense of self
• Physical and psychological effects of puberty
• Challenging peer relationships
• Objectification (Media)
• Internalization of Societal Messages
• Self-objectification
• Deterioration of self-concept
• Loss of Embodiment
• Loss of Empowerment

The Multitiered Problem-Solving Model and Girls Group


Why yoga?

- Yoga: to yoke or bind; specifically referring to the union of mind, body and spirit (wellness).
- Physical self-esteem and competence
- Mind-body awareness and connection
- Embodied Self-regulation

Prevention of EDs is More than Cognitive

• Stice and colleagues (2015) concluded, 
  – “the lack of eating disorder onset effects may imply that factors beyond the pursuit of the thin ideal now contribute to eating disorder onset” (p. 20).
  – That is, consistent with the function of clinical level eating disorders in patients’ lives, the path to preventing eating disorders may be more than cognitive.
<table>
<thead>
<tr>
<th>Theoretical Facet</th>
<th>Traditional Self-Regulation</th>
<th>Embodied Self-Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target of Intervention</td>
<td>Cognitive driven emotional and behavioral regulation</td>
<td>Mind and body integration within active practice</td>
</tr>
<tr>
<td>Emphasis</td>
<td>Motives, drives, and achievement</td>
<td>Honoring the process or the journey</td>
</tr>
<tr>
<td>Endpoint/Outcome</td>
<td>Achievement of goals</td>
<td>Balanced and sustainable self-mastery</td>
</tr>
<tr>
<td>Ecological Scope</td>
<td>Individual context</td>
<td>Attunement within self and among others</td>
</tr>
</tbody>
</table>

Our Prevention and Treatment Model

Constructivism + Mind and Body Integration = Integration of culture, the external self, the internal self, and the physical self.

Yoga and Eating Disorders

• Cook-Cottone, Beck, & Kane (2008)
  – A modified version of GGWB that integrated attention to symptoms, dialectic behavior therapy, and cognitive behavior therapy.
  – That means we integrated
    • Distress tolerance and emotion regulation
    • CBT approach to symptom reduction

Cook-Cottone et al. (2008) Outcomes

• Participants:
  – 29 females, Caucasian
  – Mean age = 20 years old
  – Diagnosed with and in treatment for
    • Anorexia Nervosa
    • Bulimia Nervosa

Photo from:
http://www.adoreyoga.com/_blog/Adore_Yoga_Blog/post/yoga-eating-disorders/
Cook-Cottone et al. (2008) Outcomes

• No control (full data for 24 participants)
• Paired samples t-tests (pre and post)
• Outcomes
  – Decreased Body Dissatisfaction
    • $t(23) = 4.29, p = .000, \text{Cohen's } d = .876$
  – Decreased Drive for Thinness
    • $t(23) = 2.84, p = .009, \text{Cohen's } d = .58$
  – Decrease and no significant change Bulimia
    • $t(23) = 1.487$
Cook-Cottone et al. (2008)

- Problems with study
  - Small N (underpowered)
  - No controls
  - Not randomized
  - Low dosage
  - No positive outcome measures
    - self-care
    - body appreciation
    - Self-compassion
    - Emotional regulation

Photo from: http://www.bethziegler.com
Klein & Cook-Cottone (2013)

- The Effects of Yoga on Eating Disorder Symptoms and Correlates (IJYT)
  - Studies on yoga and EDs
  - 14 studies
  - (+) New Study- Brennan & Welton (2015, SYR, Poster)

- Focus
  - Body dissatisfaction
  - Self-objectification
  - Drive for Thinness
  - Body and Emotional Awareness
  - Protective Factors (competence, physical self-concept, emotion regulation)
  - Eating Disorder Symptoms
Klein & Cook-Cottone (2013)

- Yoga appears to be safe for those with EDs
- High variation across studies
  - Rigor/Quality
  - Participants characteristics
  - Variations of yoga
  - Dosage

Photo from http://yoganonymous.com/love-your-body-yoga-leaders-speak-out-on-eating-disorders
Klein & Cook-Cottone (2013)

- Of the 14 studies, yoga practitioners are less predisposed to EDs and ED risk factors
  - Body dissatisfaction
  - Self-objectification
  - Drive for thinness
  - Poor body awareness
  - Media influence
  - Bulimic behaviors
  - Binge eating
  - Food pre-occupation
  - One study that integrated yoga/Pilates found decreased BD and increased weight control behaviors

Photo from http://carolineheldman.me/2012/07/06/sexual-objectification-part-2-the-harm/
Klein & Cook-Cottone (2013)

- Of the 14 studies, yoga practitioners have increased protective factors
  - Self-competence
  - Physical and social self-concepts
  - Emotion regulation
- Overall- yoga intervention preferred over no yoga
- Dosage may be important (see Cook-Cottone, 2013)
  - one study with low dosage- no effect- RCT
  - The yoga and dissonance groups each met once a week for 45 minutes over a 6-week period (posttest during last group)- compared to dissonance program

Image from http://www.shamathayoga.com
Girls Growing in Wellness and Balance:
Yoga and Life Skills to Empower
Session Structure:

• **Body**
  – Action (Yoga)

• **Mind**
  – Journaling
  – Discourse or Tutorial
  – Thinking-based activity

• **Mind and Body**
  – Integration
  – Visualization/Relaxation

Curricular Sequence: Grow to Understand

Self (Me)

Me in My World

Me in My World in this Culture
Program Emphases

- Mind and body connection
- **Embodiment of experience and learning**
- Physicality and coping skills
- Emotional awareness
- Creation of personal meaning
- Mindful self-care
- Effective problem solving
- Media literacy
14 Session Sequence: Development of Self (Me)

• **Session One**
  – Introduction, Group Norms
  – Introduction to Yoga (breathing)

• **Session Two**
  – Making Better Choices
  – The Feeling and Thinking Brain
    • I THINK, I FEEL, I SAY, I DO

• **Session Three**
  – Internal Awareness
  – Understanding the Self- internal regulation
  – Beginning Yoga Postures and Breathing
14 Session Sequence: Development of Self (Me)

- **Session Four**
  - Self-care Assessment
  - Self-Care Techniques
  - Advanced Yoga Postures

- **Session Five**
  - Intuitive Eating
  - Exotic Fruit and Vegetable Tasting
  - Yoga and Experiencing the Present Moment

- **Session Six**
  - Feeling sort
  - Emotional Integration, Good and Bad Feelings?
  - Yoga, Relaxation, and Coping

- **Session Seven**
  - Automatic Negative Thoughts
  - ANT eaters
  - Yoga and Competence
14 Session Sequence: Me in My World

- **Session Eight**
  - Assertiveness
  - Setting Boundaries
  - Yoga
- **Session Nine**
  - Strong and Empowered Women
  - Yoga
14 Session Sequence:
Me in My World in this Culture

• Session Ten
  – Sociocultural Pressures
    • This moment was brought to you by...
  – Conceptualizing Beauty and Media
  – Project Work (creating their own media)
  – Yoga
  – This Moment was Brought to You BY....

• Session Eleven- Thirteen
  – Sociocultural Pressures
  – Conceptualizing Beauty and Media
  – Project Work (creating their own media)
  – Yoga
14 Session Sequence: Me in My World in this Culture

- **Session Fourteen**
  - Review and Project Presentation
  - Circle of Closure
Sample Session Content

• Feeling Awareness and Understanding
  – Judging
  – Feeling
  – To yoga
Sample Session Content

• Thinking Feeling Brain- Problem solving in the palm of your hand
• Hot soup to Grandma’s soup
• To Yoga
Review of Studies and Girls’ Group (GGWB)
Scime, Cook-Cottone, Kane, & Watson, (2006)

- First study of GGWB
- 10 weeks of session
- N= 45, No controls, 3 groups
- Paired sample t-tests
  - Change in **Drive for Thinness** (EDI)
    - Significant for group 1, NS for groups 2 and 3
  - Change in **Body Dissatisfaction** (EDI)
    - Significant decrease for all 3 groups
  - Change in **Media Influence** (page 152)
    - Significant decrease in groups 1 and 2, NS group 3
GGWB Results-
(Scime & Cook-Cottone, 2008)

  – Studies the impact of girls group over the course of a few years with 5th grade females
  – Utilized measures of current eating disorder behavior, future intention of eating disorder behavior, perceived stress, and self-concept.
GGWB Results-
(Scime & Cook-Cottone, 2008)

• Participants
  – 75 in intervention
    • 63.5% Caucasian
    • 7% African American
    • 8% Asian American
    • 8% Native American
    • 11% Hispanic
  – 55 controls
    • 82% Caucasian
    • 7.5% African American
    • 1.5% Asian American
    • 1.5% Native American
    • 1.5% Hispanic
GGWB Results-
(Scime & Cook-Cottone, 2008)

• **Significantly decreased** Body Dissatisfaction
  – $F(1,133) = 18.58, p < .001, n^2_{\text{partial}} = 0.121$
  (medium to large effect)

• **Significantly decreased** Bulimia
  – $F(1,134) = 6.34, p < .02, n^2_{\text{partial}} = 0.045$
  (small to medium effect)

• **Not significant**
  Drive for Thinness
GGWB Results - (Scime & Cook-Cottone, 2008)

• **Significantly increased** Social Self-Concept
  – $F(1,134) = 4.17, p < .05, n^2_{\text{partial}} = 0.03$ (small effect)

• Not significant for
  – Competence
  – Physical Self-Concept
  – Perceived Stress
GGWB Matched-Control
(Cook-Cottone, Jones, & Haugli, 2010)

• Matched-controlled, repeated measure study
• Both minority and causation participants, pairs matched for
  – BMI
  – Socioeconomic status.
  – Age
• Participants
  – 50 females
  – Mean age 10.2 years
  – 50% Caucasian
  – 50%-
    • 20% Asian American
    • 18% African American
    • 8% Native American
    • 4% Hispanic

Photo from www.yogisinservice.org
GGWB Matched-Control
(Cook-Cottone, Jones, & Haugli, 2010)

• **Significantly decreased** body dissatisfaction
  – \( (F [1,48] = 15.869, p = .000) \)

• **Significantly decreased** Drive for thinness
  – \( (F [1,48] = 9.302, p = .004) \)

• **Significantly decreased** Eating disorder behavior
  – \( (F [1,48] = 5.625, p = .022) \) with no differences for minority status.
GGWB Matched-Control
(Cook-Cottone, Jones, & Haugli, 2010)

• Physical self-concept significantly increased
  – \( (F[1,48] = 10.275, p = .002) \)

• Social self-concept significantly increased
  – \( (F[1,48] = 10.217, p = .002) \)

• with no differences for minority status.
Personality and Prevention with Yoga (Norman, Sodano, & Cook-Cottone, 2014)

• An Exploratory Analysis of the Role of Interpersonal Styles in Eating Disorder Prevention Outcomes

• Participants:
  • 156 5th grade females
  • Mean age = 10.6
  • 76% Caucasian, 6% African American, 5% Asian, 1% Hispanic, and 12% other or mixed race
Personality and Prevention with Yoga
(Norman, Sodano, & Cook-Cottone, 2014)

• MANOVA- mean score differences for level of treatment, and time.
• Level of treatment and time
  – $F (1, 112) = 3.23, p = .025$)
• Significantly reduced Drive for Thinness
  – $F (1, 14) = 8.847, p < .01$)
• Significantly Reduced Body Dissatisfaction
  – $F (1, 14) = 5.480, p = .021$)
• Bulimia scale- non-significant reduction
Personality and Prevention with Yoga
(Norman, Sodano, & Cook-Cottone, 2014)

- To explore role of interpersonal dispositions on the outcomes of control and program completers
- Change scores were computed for DT, BD, and BU
- Scores were correlated with Dominance and Affiliation dimensions of the CAIS (Child and Adolescent Interpersonal Survey)
Personality and Prevention with Yoga  
(Norman, Sodano, & Cook-Cottone, 2014)

– Controls
  • Change in DT was significantly correlated with lower dominance
  • This relationship was not found in the treatment group

– Treatment
  • Significant, negative correlation between affiliation and BU change scores
  • Lower affiliation was related you higher BU scores
  • This relation was not found in the control group
    – Recall, BU did not significantly decline for treatment group.
    – Low affiliation may be playing a role in the lack of decline in the BU scores for the intervention group.
GGWB Revised
Cook-Cottone et al. (20??)

• A matched-control study of the revised manual, the program:
• Participant (32 matched pairs by BMI, SES, and Age)
  – In total, data for 64 girls was collected.
  – Parent reports of height and weight were used to calculate BMI.
  – Parent surveys reported that 90.6% of girls were Caucasian ($N = 58$), and 9.4% were identified as other ethnicities ($N = 6$).
  – The average age of the group was 10.13 years old ($SD = .333$).
Significantly decreased Drive for Thinness
- $F(1, 62) = 4.264, p = .043 \text{ partial } = .064$.

In right direction- not significant
- Body Dissatisfaction did not have a significant effect for this sample
  - $F(1, 62) = 2.188, p = .144, \text{ partial } = .032$,
- Nor did the Bulimia scale
  - $F(1, 62) = .017, p = .896 \text{ partial } = .000$. 

GGWB Revised
Cook-Cottone et al. (20??)
Mindful Self-Care

• The MSCS showed a significant increase post-prevention program
  • $F(1, 58) = 4.601, p = .036, \eta^2_{\text{partial}} = .073$. 
Yoga Outcomes in Schools Problems

- Serwacki & Cook-Cottone, 2012 (IJYT)
  - Need for improved methodology
  - Lack of randomization
  - Small sample sizes
  - Limited detail regarding interventions
  - Lack of treatment fidelity measures
  - Lack of attention to dosage
Future Directions
New Measures

• Mindful Self-Care Scale (Cook-Cottone, 2015)
• Embodiment (Piran, 2015)
• Body Appreciation Scale-2 (Tylka and Wood-Barcalow, 2015)
• Self-objectification (Tiggemann & Williams, 2012)
• Intuitive Eating cale-2 (Tylka & Kroon Van Diest, 2013)
• Other Eating Disorder measures (EAT-26; EDE-Q)
• Self-Compassion (Tylka, Russell, & Neal, 2015)
• Measures of Self-regulation
Dosage

• Cook-Cottone, 2013, IJYT
  – Dose-response effects key in many fields
  – Exercise Science- lower doses no effects

• How much Yoga
  – May need at least 2 and up 3X a week for robust effects
  – One hour sessions (up to 90 if mixed techniques)
  – At least 8 weeks
  – Look at home practice (practice outside of intervention)
Current Projects

• Encinitas schools
  – yoga outcomes
  – yoga as religion
• Fetal Alcohol Spectrum Disorders (GGWB)
  – physiological measures
  – current functioning assessment
  – Self-report
• Instructor Verbal Content and ED risk
• Development and psychometrics refinement of the MSCS
Self-Care and Self-Regulation
Mindful Self-Care Scale

• the Mindful Self-Care Scale is a tool for the assessment of the aspects of self-care addressing each area of the ARMS through actionable practices.

• Internal
  – physical practices such as hydration, exercise, rest, and sleep.
  – soothing, self-compassion, and spiritual practices

• External
  – environment, relationships, support

Cook-Cottone, 2015
Process

- Mindful Awareness of Self-Care as Essential to Well-Being
- Assessment of Self-Care Domains
- Assessment-Driven, Self-Care Goal Setting
- Engagement in Self-Care Behaviors

Continuous Mindful Awareness and Re-assessment
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www.yogisinservice.org
The Yoga Bag
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• Cook-Cottone, C. P., Olka E. K., Guyker, W., & Talebkhah, K., (manuscript in preparation). Yoga-based prevention of eating disorders: A matched-control comparison of pre-adolescent females


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References (Research Articles)


Other References


