

# the Behavior Therapist

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### SCIENCE FORUM

## Gender Differences in Perceived Nightmare- and Insomnia-Related Sleep Disturbances and Their Relationships to PTSD Symptom Severity in Treatment-Seeking Veterans

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WOMEN APPEAR at increased risk of developing  
posttraumatic stress disorder (PTSD; Tolin &  
Foa, 2006). However, the persistence of this  
finding within military populations is mixed  
and may be, in part, an artifact of increased  
exposure to specific types of traumas that

[continued on p. 293]



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- Brief articles, approximately 6 to 12 double-spaced manuscript pages, are preferred.

- Feature articles and brief articles should be accompanied by a 75- to 100-word abstract.

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confer a greater risk for negative mental health outcomes (Hourani et al. 2015, Tolin & Foa, 2006). Researchers have attempted to identify differences in trauma responses and outcomes with recent amplified attention toward sleep impairments, considered a hallmark symptom of PTSD (Germain, 2013; Ross, Ball, Sullivan, & Caroff, 1989). Research implicates nightmare- and insomnia-related sleep disturbances (NISD) as potential etiological contributors, exacerbating factors, and prohibitory features of trauma response and recovery (Kobayashi, Sledjeski, Spoonster, Fallon, & Delahanty, 2008; Kobayashi & Delahanty, 2013; Koren et al., 2002; Mellman, Bustamante, Fins, Pigeon, & Nolan, 2001; Wittmann, Schredl, & Kramer, 2007). Harvey, Jones, & Schmidt (2003) posit several explanatory models to explain the strong correspondence between sleep and PTSD. For instance, although empirical investigations of proposed underlying mechanisms are needed, NISD and sleep avoidance may serve as nighttime extensions of hyperarousal and anxiety related to a perceived lack of being "in control" or able to assess and respond to threats. Additionally, nightmares may become conditioned stimuli and accompanied arousals are hypothesized to limit memory processing and habituation. Finally, they suggest poor sleep may also be characterized by abnormalities in (REM) eye movement sleep that further reduce learning and emotional process functions and lead to deteriorations in daytime coping capacity.

In non-PTSD sleep research, women report greater frequency and intensity of nightmares and insomnia (Kobayashi & Delahanty, 2013; Levin & Nielsen, 2007; Schredl & Reinhard, 2011). Levin and Nielson articulate potential foundations for gender-related divergences: self-report predispositions; discrepant risk histories such as childhood trauma or nightmares exacerbated by comorbid insomnia; elevated depression rates in women; differential coping repertoires; and gender-based physiological variances in cognitive and affective processes. Yet, research facilitating an understanding of gender-related differences in NISD following trauma and whether these mirror divergences seen with community populations is limited. In a notable exception with mixed findings, Kobayashi and Delahanty's (2013) research on trauma symptom onset indicated females did not report more pretrauma insomnia than their male counterparts. Yet, they did evidence significantly wors-

ened sleep subsequent to exposure. Interpretation of results must remain cautionary, as the percentage of participants who met diagnostic criteria for PTSD was small. Further investigation into gender differences in NISD may clarify important variables associated with etiological risk and recovery efforts in trauma-exposed individuals.

Further, despite mounting attention to gender differences in the prevalence of PTSD and sleep disturbances, research with veteran populations is sparse. Considering potential differences in clinical presentations, client preferences, and care needs following service, such investigations are particularly salient in light of the rapidly expanding number of female veterans presenting for care. Indeed, the limited research currently available raises concerns that noted gender differences with community samples may not be as generalizable to those who have served in the armed forces. For instance, in PTSD treatment-seeking veteran populations, men are twice as likely as women to articulate reduction in nightmares as their primary goal for mental health care. Specific to insomnia, nearly a third of males identified sleep improvements as one of their top three goals for recovery in contrast with less than 4% of women (Rosen et al., 2013). Further research is needed to assess whether these are gender-related differences in articulated priorities or if nightmare and insomnia complaints vary in perceived distress, intensity, or frequency in this population.

Another important contextual factor associated with military populations is the high rate of psychotropic medication utilization during and after service. For instance, within the Veterans Healthcare Administration (VHA), the psychotropic prescription rate for veterans with PTSD connected to military service is about 80% (Bernardy et al., 2012), notably higher than the 60% of privately insured civilians with PTSD seen in community settings (Harpaz-Rotem et al., 2008). Further, gender differences are noted in the selection of prescription medications. Large-scale longitudinal research (Bernardy et al., 2013) indicates, of those diagnosed with PTSD, women seeking VHA care are more likely to receive all classes of psychiatric medications with the exception of prazosin and that current prescribing trends indicate a decrease in benzodiazepine prescription rates in males while they are increasing for women. These noted gender differences in current prescribing practices

might have further implications for veterans' sleep and PTSD complaints.

Recent research by King, Street, Gradus, Vogt, and Resick (2013) evaluating gender differences in PTSD symptoms among Operation Enduring Freedom/Operation Iraqi Freedom (OIF/OEF) veterans is a notable exception to the sparse literature in this domain. Contrary to the broader literature on gender differences in nightmares, they identified a small, though significant, increased likelihood of nightmares for male veterans and no observed differences in insomnia as measured by the PTSD Checklist–Military Version (PCL-M; Weathers et al., 1993). It is important to note this survey research did not incorporate veterans currently seeking care nor those with PTSD, *per se*, and that results were restricted to trauma events experienced during deployment. In this study, the average observed PCL-M for both genders was approximately 34, markedly below that typically reported by veterans with PTSD and the generally established cutoff of 50 for a positive PTSD screen. As such, results may not be generalizable to veterans meeting diagnostic criteria for PTSD, non-OIF/OEF veterans, treatment-seekers, and those who may identify non-combat focal traumas. Additionally, the PCL-M contains an estimation of subjective NISD distress but does not specify intensity or frequency. Methodologically, the disparate conclusions described by King et al. and other sleep and trauma researchers may reflect important contextual differences in veterans or an issue of the specific NISD facet (i.e., intensity, severity) assessed with insomnia and nightmare measurement. For instance, Belicki (1992) emphasized that the relationships between nightmare and insomnia frequency and intensity (i.e., arousal, ability to reinitiate sleep, waking distress) are slight. Despite the comparatively stronger association between intensity and mental health outcomes, existing self-report research most generally considers the rate of occurrence only or is not phrased with enough specificity to prohibit a confounding of frequency, intensity, and distress. She stressed that, while increased occurrences may amplify dream processes, intensity is more associated with emotional adjustment while awake. Continued research with military populations on multiple aspects of sleep characteristics will improve our understanding of these domains.

We aimed to clarify existing gaps in the literature and contrary findings with veteran populations by assessing for gender



differences in NISD with those seeking treatment for PTSD. Additionally, we sought to evaluate the differential salience of nightmare and insomnia intensity, frequency, and self-reported distress. Finally, we aimed to evaluate the associations between these aspects of poor sleep and PTSD severity. Within the context of the broader literature, we hypothesized the following:

1. Female veterans would exhibit poorer sleep than their male peers in all investigated domains and that gender-based differences would be stronger for symptoms of sleep intensity than sleep frequency.
2. Strong and significant relationships would emerge between the sleep domains assessed and PTSD severity, with nightmare and insomnia intensity yielding a greater association with PTSD severity than nightmare and insomnia frequency.
3. Stronger NISD and PTSD symptom relationships would emerge for women.

## Methods

### Procedures

Data for this study was obtained as part of the standard evaluation procedures within a VA PTSD specialty clinic between the years of 2006 and 2013. Evaluations within this clinic consist of two potential sessions. During an initial visit, veterans complete a series of self-report questionnaires, including the PTSD Checklist (PCL-C; Weathers et al., 1993) and the Mini-Neuropsychiatric Interview (MINI; Sheehan et al., 1998) is administered to

screen for PTSD and evaluate comorbid complaints. Veterans screening positive on the MINI are requested to return for a second treatment-planning interview, which includes the administration of the Clinician Administered PTSD Scale (CAPS; Blake et al., 1990), to confirm the diagnosis of PTSD. In order to prevent undue burden for veterans seeking care, those referred from another mental health clinic in which the broad based interview are conducted or individuals returning to the clinic after previous attrition complete the CAPS only.

For the purposes of this study, the relationships between gender, PTSD, and NISD symptoms were examined separately using self-report measures and clinician interviews. Self-report PCL-C data from 1,320 veterans (1219 males; 110 females) and clinician interviews from 1,473 (1,363 males; 112 females) veterans were used in this study. Based on the years in which this data was collected, all of the measures used and findings reported are based on DSM-IV-TR criteria.

### Measures

**PCL-C.** The PTSD Checklist (PCL-C; Weathers et al., 1993) is a 17-item self-report questionnaire that assesses the symptoms of PTSD found in the DSM-IV-TR. Participants are asked to rate items on a 1 (*Not at all*) through 5 (*Extremely*) scale, indicating how much they have been bothered by each of the symptoms in the past 30 days. Studies on the psychometric properties of the PCL have shown that it has strong psychometric properties; including a high internal consistency (e.g., Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Keen et al., 2008), good test retest

reliability (e.g., Weathers et al., 1993), and strong convergent validity (e.g., Keen et al., 2008). To investigate the first aim (gender differences), individual items regarding nightmare and insomnia were used. For the second aim (association between sleep complaints and PTSD severity), the total PCL-C score minus the insomnia and nightmare items were used as the criterion variable.

**CAPS.** The Clinician Administered PTSD Scale (CAPS; Blake et al., 1990) is a semistructured diagnostic interview for PTSD. Individual symptoms are assessed related and rated on a 0–4 scale for both frequency and intensity, which results in a range of 0–8 for each symptom, where higher scores represent a greater severity. Scores within this study represent symptom levels within the past month. Previous research on the psychometric characteristics of the CAPS has shown that it is a sound measure with findings indicating that it has good test-retest, internal consistency, and convergent validity (e.g., Blake et al., 1995). In the current study, only participants with a total score of 50 or greater were included in analyses with the CAPS in order to increase the likelihood that the participants being examined either meet full criteria for PTSD, or were at least expressing significant current symptoms. To investigate the first aim (gender differences), individual items regarding nightmare and insomnia frequency and intensity were used. For the second aim (association between sleep complaints and PTSD severity), the total CAPS symptom frequency and symptom intensity scores minus the sleep items were used as the criterion variables.

**Table 1.** Demographic Characteristics

	PCL-C ( <i>n</i> = 1,329)				CAPS ( <i>n</i> = 1,475)			
	Males ( <i>n</i> = 1,219)	Females ( <i>n</i> = 110)	<i>F</i> / $\chi^2$	<i>p</i>	Males ( <i>n</i> = 1,363)	Females ( <i>n</i> = 112)	<i>F</i> / $\chi^2$	<i>p</i>
<b>Age</b>	48.28	40.92	<i>F</i> =71.48	<.001	47.32	39.98	<i>F</i> =61.15	<.001
<b>Married</b>	44.38%	23.64%	$\chi^2$ =17.75	<.001	46.07%	22.22%	$\chi^2$ =23.07	<.001
<b>Caucasian</b>	81.70%	68.18%	$\chi^2$ =11.80	.001	83.49%	69.44%	$\chi^2$ =13.66	<.001
<b>Era</b>			$\chi^2$ =66.60	<.001			$\chi^2$ =98.18	<.001
Vietnam	39.50%	13.53%			42.31%	2.78%		
OEF/OIF	1.87%	13.08%			26.41%	21.30%		

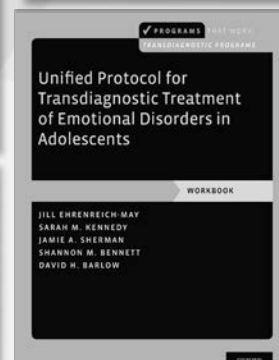
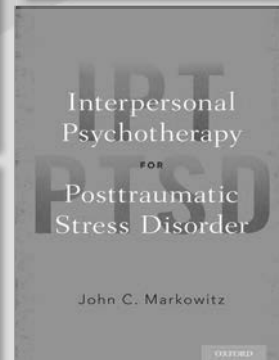
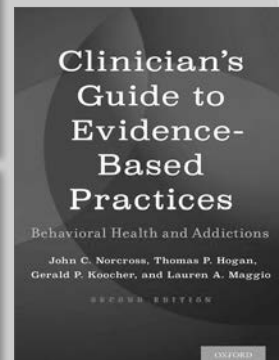
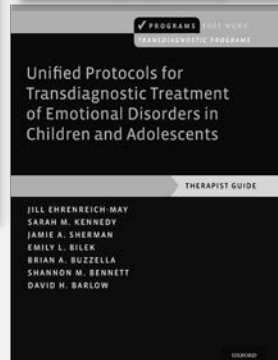
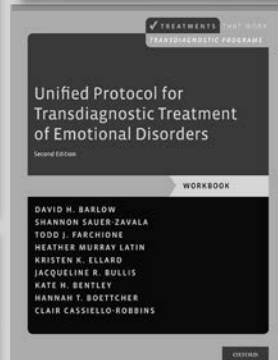
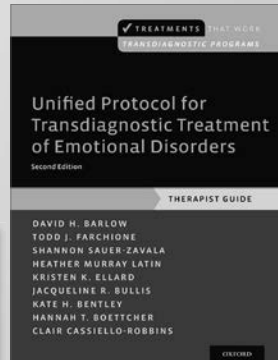
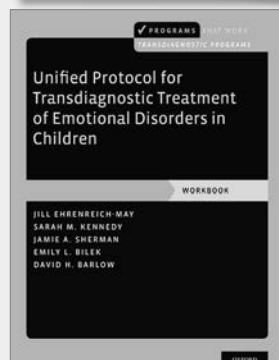
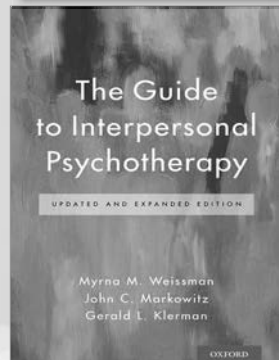
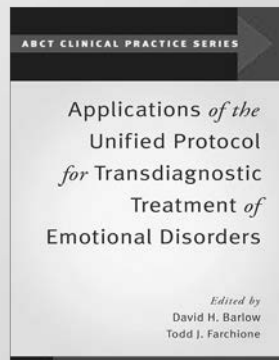
*Notes.* PCL-C = PTSD Checklist-Civilian; CAPS = Clinician Administered PTSD Scale, OEF/OIF = Operation Enduring Freedom/Operation Iraqi Freedom era Veterans.



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**Table 2.** Contrasting Female and Male Veterans Complaints of NISD

Sleep Domain	Women	Men	<i>t</i>	<i>p</i>	<i>d</i>
PCL-C					
Nightmare Distress	3.95 (0.9)	3.61 (1.1)	3.72	<b>&lt;.001</b>	.31
Insomnia Distress	4.38 (1.0)	4.07 (1.1)	2.09	<b>.002</b>	.28
CAPS					
Nightmare Frequency	2.07 (1.3)	2.06 (1.3)	0.07	.944	.01
Nightmare Intensity	2.06 (1.3)	2.30 (1.2)	2.51	<b>.014</b>	.29
Insomnia Frequency	3.36 (1.2)	3.37 (1.2)	-0.08	.938	.01
Insomnia Intensity	2.91 (1.1)	2.70 (1.1)	1.766	.081	.19

Notes. NISD = Nightmare and Insomnia-Related Sleep Disturbances; PCL-C = Posttraumatic Stress Disorder Checklist items; CAPS = Clinician Administered PTSD Scale items.

**Table 3.** Sex Differences in Regression Models with PCL-C and CAPS Sleep Items Predicting PTSD Severity

Outcome	Predictor	$\beta$	SE	$p$	Item correlation ( $r$ ) with total PTSD score	R <sup>2</sup>	f <sup>2</sup>
PCL-C Total							
Females	Nightmare Distress	.479	1.028	<.001	.579	.378	.607
	Insomnia Distress	.230	0.938	.008	.438		
Males	Nightmare Distress	.409	0.261	<.001	.376	.370	.587
	Insomnia Distress	.317	0.271	<.001	.290		
CAPS Total							
Females	Nightmare Frequency	.280	1.410	.008	.483	.418	.718
	Nightmare Intensity	.032	1.351	.760	.397		
	Insomnia Frequency	.127	1.151	.252	.493		
	Insomnia Intensity	.362	1.723	.002	.574		
Males	Nightmare Frequency	.194	.482	<.001	.381	.250	.333
	Nightmare Intensity	.129	.485	<.001	.373		
	Insomnia Frequency	.101	.497	.003	.398		
	Insomnia Intensity	.229	.548	<.001	.362		

Notes: PCL-C = PTSD Checklist, CAPS = Clinician Assessed PTSD Scale, PTSD severity = PTSD scale total score minus sleep items.

### Data Analyses

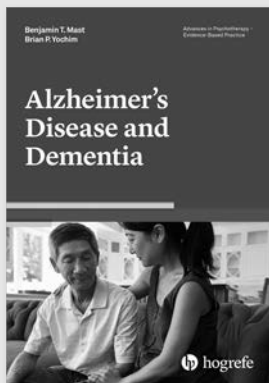
To investigate study aims, *t*-tests were conducted to contrast female and male veterans on nightmare and insomnia distress, intensity, and frequency. In order to assess for the potential confound of age, Pearson correlations were completed between age and sleep items. Sleep items with statistically significant age associations were also

analyzed with ANCOVA tests to assess for age-controlled gender differences.

To assess the strength of associations between NISD and PTSD severity, we subtracted sleep items from PCL-C and CAPS total scores. Pearson correlations were analyzed separately for women and men. Relationships between NISD distress items and PTSD were calculated by correlations to the PCL-C. Similar associations between

NISD intensity and frequency were evaluated with the CAPS. Multiple linear regression analyses were calculated to discern the variance of PTSD severity scores accounted for by NISD items. Cohen's *d*, Cohen's *f*, and partial eta squared ( $\eta_p^2$ ) were computed to provide effect size estimates. Data was managed and analyzed with SPSS 22.0.





Benjamin T. Mast /  
Brian P. Yochim

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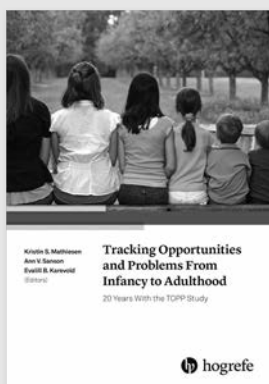
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## Results

### Participants

Participants included 2,139 treatment-seeking veterans (males  $n = 1,974$ , females  $n = 165$ ). Demographic characteristics are included in Table 1. Of those presenting for care, 661 completed the PCL-C only, 810 completed the CAPS only, and 668 completed both. As would be expected for a clinical sample, PTSD symptom screens and diagnostic interviews exceeded recommended cutoffs suggestive of significant trauma-related symptoms. The mean PCL-C and CAPS scores were 61.5 ( $SD = 13$ ) and 68.8 ( $SD = 21$ ), respectively.

### Gender Differences in NISD-Related Sleep Distress, Intensity, and Frequency

Nightmare and insomnia-related distress was notable for women and men (see Table 2). On the PCL-C, women reported significantly higher distress in both cases. The differences were small-to-moderate in size. Pearson correlations detected a significant relationship between nightmares and age ( $r = .089$ ,  $p = .001$ ). A subsequent ANCOVA controlling for age indicated that the relationship between nightmares and gender retained significance ( $F = 6.052$ ,  $p = .002$ ,  $\eta_p^2 = .009$ ). Results were mixed regarding differences in clinician-evaluated symptoms (Table 2). Specific to nightmare intensity, women demonstrated significantly higher scores. The effect of the difference was small-to-moderate. A Pearson correlation detected a significant negative relationship between clinician-assessed nightmare intensity and age ( $r = -.078$ ,  $p = .001$ ). The relationship between gender and nightmare intensity was no longer significant when controlling for the effect of age ( $F = 1.447$ ,  $p = .236$ ). Between-group differences did not emerge for insomnia intensity, nightmare frequency, or insomnia frequency.

### Relationships Between NISD Distress, Intensity, Frequency and PTSD Severity

Initially, Pearson correlations were conducted between NISD items and PTSD symptom scales (PCL-C or CAPS). For all veterans, each NISD item was significantly and positively associated with higher PTSD severity (Table 3). On the PCL-C, the effect sizes of the correlations were large for nightmare distress and medium for insomnia distress for women. Men also demonstrated significant positive, though weaker, associations between nightmare and insomnia distress with medium and small-

to-medium effect sizes, respectively. Similarly, when assessed by clinicians, the associations between NISD items and CAPS totals were higher for women. For women, a medium effect size was observed for nightmare intensity, a medium-to-large effect for nightmare and insomnia frequencies, and large effect for insomnia intensity. Men's NISD items demonstrated medium effects for all CAPS comparisons.

Linear regressions were subsequently calculated to evaluate the variance in PTSD severity scores attributable to NISD items. For the PCL-C, significant regression equations were found for veteran females,  $F(2, 105) = 31.921$ ,  $p < .001$ , and males,  $F(2, 1198) = 352.490$ ,  $p < .001$ . The amount of PCL-C total score variance accounted for by nightmare and insomnia distress was similar and 37.8% ( $f^2 = .607$ ) and 37% ( $f^2 = .587$ ) for women and men, respectively. However, divergences in explanatory power were noted between women and men for associations between nightmare and insomnia frequency and intensity and CAPS scores. For women, the multiple linear regression evidenced a strong relationship between NISD and CAPS,  $F(4, 102) = 18.331$ ,  $p < .001$ , with  $R^2 = .419$  ( $f^2 = .718$ ). Clinician assessed interrelationships between NISD items and PTSD severity was significant, but much weaker for men,  $F(4, 1350) = 112.353$ ,  $p < .001$ , with  $R^2 = .25$  ( $f^2 = .333$ ).

## Discussion

Our results highlight important NISD gender variances based on the characteristics of sleep assessed (distress, intensity, and frequency). Consistent with our hypotheses and extant research with non-veterans (Kobayashi, 2013; Levin & Nielsen, 2007; Schredl & Reinhard, 2011), women in the PCL-C sample reported greater distress associated with nightmares and insomnia. In the context of nightmare and insomnia intensity and frequency, hypotheses were only partially supported. Specifically, clinicians rated female veterans higher on nightmare intensity than male peers (i.e., greater loss of sleep due to trauma-specific nightmares), though this effect was no longer observed when controlling for age. In contrast, and counter to our hypotheses, women did not evidence more significant insomnia intensity. We anticipated the strength of gender differences in sleep differences would be less pronounced, we did not observe expected differences between women and men on

measures of nightmare and insomnia frequency.

Each aspect of NISD assessed was positively and strongly associated with PTSD severity. The self-assessment of NISD found a closer relationship between nightmare distress and PTSD than insomnia. The predictive utility of PCL-C nightmare and insomnia scores were similar for both men and women (approximately 37% of the variance). In contrast, when reviewing associations between nightmare and insomnia intensity and frequency complaints based on the CAPS sample, sleep items were less predictive of PTSD for men than their female peers, with 25% and 42% of the variance of total CAPS scores accounted for, respectively. In contrast to our hypothesis, males did not differ in the strength of associations between sleep symptom intensity and frequency and PTSD severity. For women, relationships were more varied with insomnia intensity yielding the closest relationship to CAPS total scores and nightmare intensity the least, resulting in mixed support for Belicki's (1992) findings of greater associations between intensity and mental health outcomes. Overall, relationships between sleep problems and PTSD symptoms were greatest for clinician-assessed NISD for females and weakest for clinician-assessed NISD with male veterans.

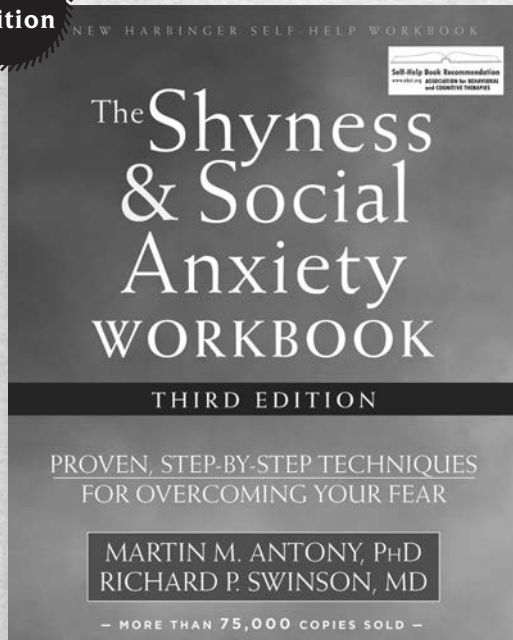
There are several clinical implications of these findings. In contrast to King et al.'s (2013) PCL-M research with recently returning veterans, our results based on the PCL-C indicate female veterans do, in fact, report greater distress associated with NISD when presenting for trauma-focused care in the context of probable PTSD and more intense nightmares. Rather, our findings appear more consistent with the general literature of gender differences in sleep with non-veterans. It may be that King and colleagues' use of a relatively asymptomatic sample influenced their findings. Moreover, women's self-reported and clinician-assessed NISD was more closely associated with PTSD severity than observed for male peers, with the exception of similar correlations for clinician-assessed nightmare intensity. This is particularly interesting in light of Rosen's research that male veterans are overwhelmingly more likely to identify improved sleep as a key recovery objective. Given that female veterans may prioritize other goals when asked to articulate presenting issues, it is imperative providers directly assess for the presence of sleep problems when developing care plans. This indicates that without clinical assessment,



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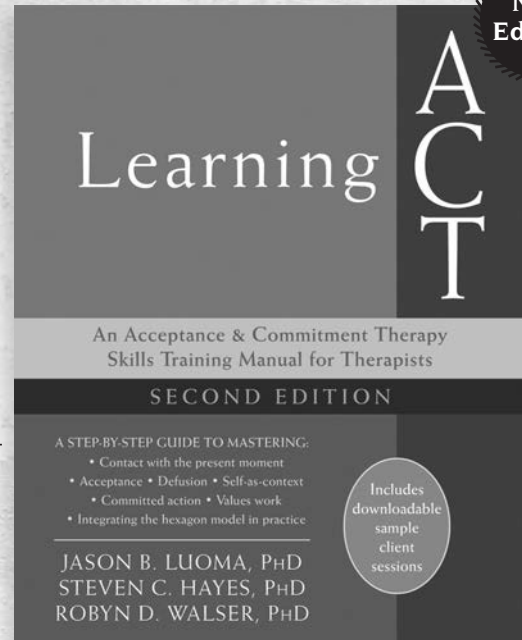
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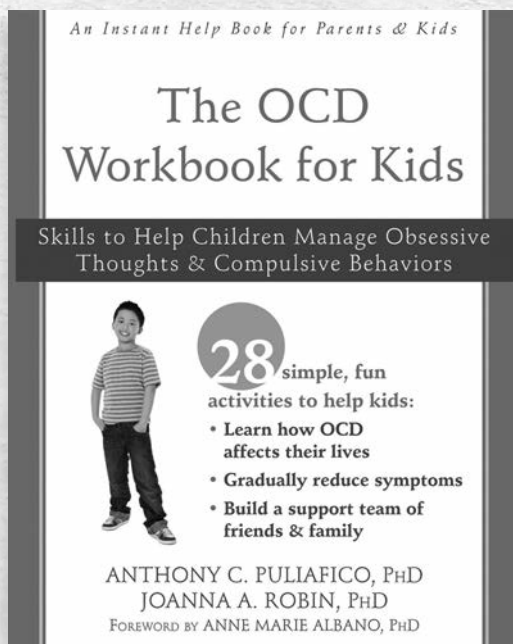


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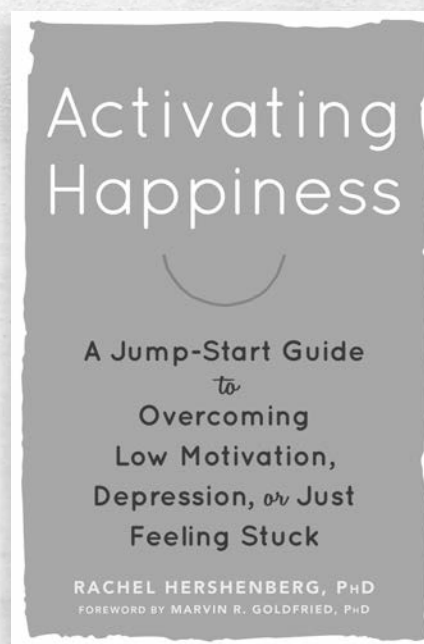
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female veterans' sleep may be undertreated.

Male veterans' tendencies for spontaneous articulation of improved sleep as the primary treatment goal may partially explain Bernardy and colleagues' (2013) observation of gender differences in prescribing practices. While there may be several reasons for divergences in medication use (i.e., patient preference, provider biases in prescription treatment planning, preconception counseling, etc.), each medication class they investigated has identified relationships with sleep functioning (Maher et al., 2006). For instance, prazosin has been associated with reductions in nightmares and total PTSD symptoms. The use of benzodiazepines within the context of PTSD does not significantly improve NISD or other core trauma-related symptoms, may impede recovery, and is not consistent with current guideline-concordant care recommendations. Prescribers and patients who focus on sleep as a primary treatment motivator may be more likely to use these sleep-associated agents despite practice guidelines that suggest use of an SSRI if full PTSD is apparent. Integrating this research with our findings, further policy and research efforts are warranted to address psychotropic use with female veterans, gender-related divergences from best practice recommendations, and sleep and trauma symptom treatment outcomes.

Several of our analyses did not identify gender-related differences in sleep and, even when differences occurred, distress, intensity, and frequency of NISD were elevated in both groups and differences were not large. Further, clinician-assessed NISD with female veterans demonstrated the strongest indicators for more severe PTSD symptoms. In light of the extensive and cumulative impairments associated with chronic sleep problems, continued investigations are needed. While it is clear subjective problems are noteworthy, the association with physiological sleep correlates are poorly understood. Individuals with PTSD may experience reduced sleep efficiency, increased time awake after initiating sleep, or a differentiating pattern of arousal throughout the sleep period that may promote the perception of sustained sleeplessness (Maher, 2006). However, research using polysomnography and actigraphy has not consistently substantiated self-reported complaints of difficulties initiating or maintaining sleep in both PTSD and insomnia populations (Harvey et al., 2003). These discrepancies between perceptual

and physiological findings and inconsistent results based on physical observations are challenging to assimilate and signal a continued need to examine gender-related differences in NISD and associations between perceptions of poor sleep and null findings with certain biological assessments.

Some limitations of this study deserve attention. While perceptions of NISD in this population are regularly observed, the correspondence to objective physiological measures varies. Future research with biological monitoring and validated sleep-specific measures is warranted to improve our ability to discern whether identified differences are reflective of subjective NISD, as often demonstrated in the empirical literature, or if differences extend to gender-based variations of sleep architecture. We were unable to assess or control for other types of sleep disorders (e.g., obstructive sleep apnea, pain-related sleep impairments, restless leg syndrome) that tend to vary in prevalence by gender and are common in veterans. We aimed to focus on gender differences in veterans currently seeking care for PTSD. Thus, our findings may not extend to individuals with PTSD who are not seeking treatment, veterans who do not utilize VHA care, or non-veterans.

Despite these drawbacks, this study makes several unique contributions. To our knowledge, this is the only study that has examined gender differences in NISD with treatment-seeking veterans. This study demonstrates female veterans' risk for NISD within the context of trauma-related symptoms rivals or exceeds that seen in male veterans and demonstrates a markedly stronger correlation with PTSD severity. Recognizing differences and commonalities in sleep-related symptoms and their associated trauma complaints permits the opportunity to make better informed decisions about treatment plans, particularly in light of the extensive and cumulative impairments associated with chronic sleep impairment and veterans' articulated desire to improve sleep when presenting for care.

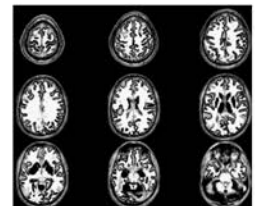
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# Translational Research in Mental Health: Challenges and Opportunities

Rahel Pearson, Derek Pisner, Christopher G. Beevers,  
*University of Texas at Austin*

MENTAL HEALTH DISORDERS pose an enormous individual and societal burden: 4 mental health disorders (bipolar disorder, major depressive disorder, schizophrenia, and obsessive-compulsive disorder) are listed among the 10 leading causes of disability worldwide by the World Health Organization, and in the U.S. the costs of loss of productivity, morbidity and mortality related to mental health disorders is estimated to be \$148 billion annually (Rice & Miller, 1998). Despite this enormous impact, available mental health treatments have not yet reached their full potential, with nonresponse and relapse frequently occurring (Lieberman et al., 2005; Thase, 2007; Warden, Rush, Trivedi, Fava, & Wisniewski, 2007). There are various barriers to appropriate patient care, including deficits in provider training (Weissman et al., 2006), stigma associated with mental health treatments (Corrigan, 2004), and inaccessibility of treatment due to cost or geography (Fortney, Rost, Zhang, & Warren, 1999). Additionally, the development of effective treatments might be stymied because the mechanisms underlying the development and maintenance of mental health disorders remain poorly understood.

In an effort to accelerate the development of innovative treatments and treatment targets in the U.S., the National Institute of Mental Health (NIMH) has encouraged the development of translational research programs. Translational research uses findings from basic science to improve health by developing and improving diagnostic tests, as well as enhancing prevention and treatment efforts. Importantly, basic science includes preclinical (animal-based) research, discoveries in behavioral processes (e.g., cognition, reward processing, motivation), as well as findings from other scientific disciplines such as genetics, neuroscience, and data science. We believe advances gleaned from these basic science domains are very important to translational research efforts in the area of mental health. Animal

models and other preclinical research is integral to translational science in psychopathology and has greatly contributed to our understanding of neurobiological and environmental processes relevant to (components of) disorders; however, an extensive review of preclinical research is beyond the scope of this review, which will focus mainly on the translation of experimental human research to clinical care.

Although the importance of translational research is well understood, only a minority of relevant basic science findings are translated into clinical care, and there are often significant delays in this process (Contopoulos-Ioannidis, Ntzani, & Ioannidis, 2003). For instance, in medicine, it takes an average of 17 years for discoveries in the laboratory to reach clinical practice (Morris, Wooding, & Grant, 2011). Alarmingly, the translational gap is even greater in psychiatry where it takes an average of 20 years to transition from basic scientific discoveries to clinical application. As just one example, despite significant advances in our understanding of the neurobiology and genetics of psychotic illness, there has been almost no change in antipsychotic treatment in the past 50 years (O'Tuathaigh & Waddington, 2015; Pratt, Winchester, Dawson, & Morris, 2012).

Various reasons for these delays have been suggested, mostly pertaining to translational research in biomedical science, which does not specifically include mental health, although findings likely generalize to this domain. A recent review (Fudge et al., 2016) identified five factors that hinder translational research in biomedical science: (a) unfamiliarity with translational research, (b) a lack of understanding of basic science methods, (c) a separation between clinical and basic scientists, (d) perceived difficulties with establishing interdisciplinary collaborations necessary for the exchange of knowledge, and (e) perceived difficulties balancing opportunities to make significant scientific contributions with opportunities to secure (private or public) funding.

Although these factors are relevant for translational mental health research, this area also faces unique challenges and opportunities that merit exploration. In this paper, we will outline several opportunities for translational mental health research. Specifically, we will examine how a translational focus could potentially enhance knowledge about the etiology and classification of psychopathology and also impact mental health treatment selection and implementation. In doing so, we will also briefly highlight ongoing projects from our laboratory that illustrate both the benefits and challenges of pursuing translational research questions.

## Mental Health Disorder Etiology and Classification

The reliability of the current mental health disorder diagnostic system is well-established, but its validity remains an open question. DSM/ICD categories are phenotypically heterogeneous and group together diverse disease entities that very likely have different causes, maintenance factors, and treatment needs. Partly in an effort to address these issues, the NIMH developed the Research Domain Criteria (RDoC; Insel et al., 2010), an initiative aimed at informing psychiatric nosology based on underlying neuroscience, genetics, and behavioral processes. Thus, RDoC aims to incorporate basic science findings into a classification system with the goal of bridging the divide between research and clinical decision making.

The RDoC initiative has stimulated much research into intermediate phenotypes of psychopathology. Intermediate phenotypes are traits that are positioned between gene-environment influences and a disorder. For example, alterations within hypothalamic-pituitary-adrenal axis functioning is a promising intermediate phenotype for stress-related internalizing psychopathology. Ultimately, the hope is that discovering reliable intermediate phenotypes that are closely associated with specific symptom profiles will provide homogenous treatment targets, which could be more successfully treated with specific pharmacological or psychosocial interventions than traditional diagnostic categories. Although promising, this approach to classifying and treating psychopathology is relatively new, and it remains to be determined whether an RDoC-inspired approach will be an improvement over more traditional classification (i.e., DSM) approaches.



Research emerging from our laboratory has focused on putative intermediate phenotypes of major depressive disorder (MDD), with an emphasis on cognitive processes relevant to MDD. Cognitive models of MDD posit that biased information processing plays a central role in the onset and maintenance of depressive symptoms (Beck, 1974), and many studies support the presence of biased information processing in MDD (for a review, see Disner, Beevers, Haigh, & Beck, 2011). Attentional biases, where individuals show a preference for negative information over positive information, prospectively predict the development of depression in a sample of soldiers exposed to war zone stress (Beevers, Lee, Wells, Ellis, & Telch, 2011) and have been longitudinally linked to the maintenance and worsening of depression symptoms in adults with elevated symptoms of depression (Disner, Shumake, & Beevers, 2016).

Although much more work needs to be done, these results suggest that information processing biases may help identify people likely to experience depression. These results do not appear to be specific to

depression, and are in line with previous research which suggests that information processing biases can predict the emergence of suicidal behavior (Cha, Najmi, Park, Finn, & Nock, 2010), alcohol use (Janssen, Larsen, Vollebergh, & Wiers, 2015), and substance use (Cousijn, Goudriaan, & Wiers, 2011). Additionally, the presence of these information processing biases in the nonaffected offspring of those diagnosed with anxiety (Dodd, Hudson, Morris, & Wise, 2012; Morales et al., 2017), depression (Joormann, Talbot, & Gotlib, 2007; Kujawa et al., 2011), bipolar disorder (Gotlib, Traill, Montoya, Joormann, & Chang, 2005), and substance use (Zetteler, Stollery, Weinstein, & Lingford-Hughes, 2006) suggests that these biases may be useful early transdiagnostic markers. These markers could potentially identify subgroups of individuals, irrespective of specific diagnosis, that might benefit from preventative treatments or treatments aimed at correcting information processing biases (e.g., attentional bias modification, cognitive restructuring). Using behavioral data, such as information processing biases, to inform diagnostic decisions, thus seems

like a natural extension of recent studies which suggest that neurobiological intermediate phenotypes (e.g., neuroimaging) can be used to define homogenous subgroups that cut across diagnostic categories and show differential treatment response (Clementz et al., 2015; Drysdale et al., 2016).

### Mental Health Disorder Treatment

Beyond the demand for diagnostic advances in mental health care, there is also a pressing need for more effective treatments. Developments in genomics, imaging, and biological science have yielded vast improvements for medical treatments, with mortality rates for the leading causes of death, cancer and cardiovascular disease, declining significantly in the last decades (Devesa et al., 1995; Levi, Lucchini, Negri, & La Vecchia, 2007; Weisfeldt & Zieman, 2007). These statistics stand in sharp contrast with mortality and morbidity rates associated with mental health disorders, which have not declined despite increased rates of treatment (Kessler et al., 2005).



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Large-scale NIMH-sponsored medication effectiveness studies have demonstrated that psychopharmacological treatments have significant limitations, with side-effects, discontinuation, and nonresponse being common (Lieberman et al., 2005; Thase, 2007; Warden et al., 2007). Furthermore, psychosocial interventions are often better tolerated by patients and preferred over medication treatment (van Schaik et al., 2004), however response varies widely between and within disorders. For example, individuals diagnosed with panic disorder have been shown to respond better to psychosocial treatment than those diagnosed with general anxiety disorder and social anxiety disorder (Cuijpers et al., 2016); however, some patients respond only minimally or not at all (Brown & Barlow, 1995). For severe mental health disorders, such as bipolar disorder and schizophrenia, psychosocial interventions are considered adjunctive treatments to medication (Falkai et al., 2006; Grunze et al., 2002). These treatments mostly aim for symptom improvement rather than remission, leaving individuals with disabling severe mental health symptoms with relatively few good options for alleviating acute suffering.

Translational research is uniquely positioned to address these concerns by developing and augmenting both existing and emerging interventions that contribute to mental health disorder remission, recovery, and rehabilitation. Ultimately, this line of research aims to provide targeted treatment for the biological and behavioral mechanisms that maintain the disorder. Translational research should emphasize mechanisms that are: (a) potentially tractable, (b) causally implicated in pathogenesis, and (c) present in a significant portion of the population of interest (Freeman et al. 2016). This approach to treating mental health disorders is in contrast to many manualized psychosocial treatments, which often incorporate various components that may or may not be mechanistically implicated in the pathogenesis of the disorder (Ahn & Wampold, 2001). This targeted treatment approach has the potential to improve treatment outcomes by improving time and cost efficiency, as well as reducing provider training requirements.

Using a targeted treatment approach has several major implications for treatment development. First, if we are to develop targeted treatments, we must recruit participants with observable deficits in the treatment target. It makes relatively

little conceptual sense to engage a treatment target (e.g., negatively biased attention) if the treatment target is not maladaptive or even present within a given individual. Second, in order to identify participants who will be ideal candidates for a targeted treatment, we must measure the treatment target with highly reliable and valid instruments. This is true for both behavioral assessments and biological measures, which are often assumed to have high reliability even in the absence of such data. Without such instruments, not only will it be difficult to recruit participants who are most likely to respond to treatment, it will be difficult to determine whether the treatment effectively altered the treatment target. Third, it will be important to continuously assess the treatment target throughout treatment. This will enable clinicians to determine whether a treatment is effectively altering the target and, if not, prescribe any necessary treatment adjustments. Indeed, there is evidence from Attentional Bias Modification (ABM) training (discussed in more detail below), that successful treatment hinges on altering the putative target thought to maintain the disorder (MacLeod & Clarke, 2015).

ABM training, a translational treatment that has been examined in our laboratory, aims to improve symptomatic outcomes in depressed and dysphoric patients by altering biased attention towards negative stimuli. Although ABM has been applied to a number of different psychopathologies, in the area of depression, some of the evidence suggests that ABM training does reduce negative attentional bias (e.g., Beevers, Clasen, Enock, & Schnyer, 2015; Wells & Beevers, 2010); however, findings for the effect of ABM on symptom improvement have been decidedly mixed (Baert, De Raedt, Schacht, & Koster, 2010; Browning, Holmes, Charles, Cowen, & Harmer, 2012; Kruijt, Putman, & Van der Does, 2013). One possibility is that negative attention bias might not have a causal role in MDD. If this turns out to be the case, then this highlights a potential strength of a translational approach to treatment development—if the treatment target is engaged but symptom improvement does not follow, then this suggests that the treatment target may not have a causal role in the disorder.

Alternatively, it is possible that the treatment target does maintain the disorder, but the treatment target was not altered effectively or change in the treatment target was only temporary (e.g.,

change was observed immediately after treatment but was not sustained into follow-up). Accordingly, training paradigms may need to be reconsidered and more potent versions developed, or current approaches that weakly engage the target could be augmented by complementary treatments designed to enhance the primary treatment. For example, we recently completed a pilot trial that attempted to augment ABM with Low Level Light Therapy (LLLT), a treatment that uses transcranial lasers to target the putative cognitive systems involved in ABM. Results, although very preliminary, indicated that the addition of LLLT that stimulates the right prefrontal cortex to ABM training led to greater depression symptom improvement over the short term than stand-alone ABM training (Disner, Beevers, & Gonzalez-Lima, 2016).

Overall, cognitive bias modification and other translational mental health treatments hold great promise for improving clinical outcomes. It is important to note, however, that many of these treatments are still in their infancy and their use has been primarily restricted to research settings and often with clinical analog samples. Further, many studies to date have used training paradigms based upon tasks traditionally used to measure cognitive biases—thus, intervention tasks aimed at attenuating cognitive biases may need to be modified to enhance learning. In general, much more work is needed to determine whether effects of translational interventions can be enhanced, how durable these effects can be, and how their effectiveness compares to more traditional treatments. Thus, more research is needed before widespread implementation into community clinical care can be justified.

### Improving Mental Health Treatment Selection

Translational scientists in the field of mental health care have the unique responsibility of ensuring that findings from basic science can be reconceptualized in ways that directly benefit clinical professionals and their patients, as well as bring about improvements to standards of care more generally. A newly emerging field called precision mental health care may finally bring us closer to meeting that call. In this rapidly growing area of behavioral research, there is now a high demand for intervention tools that are capable of identifying individuals that are most likely to benefit from a given treatment before those



individuals actually receive it (DeRubeis et al., 2014).

Individuals vary widely in their response to treatments for psychological disorders. In fact, approximately half of patients diagnosed with anxiety disorders or MDD do not achieve remission after an initial course of treatment (Wang et al., 2005). Nevertheless, poor response to one form of treatment does not determine poor response from other treatments (Cuijpers et al., 2012). At present, however, clinicians lack an empirically validated set of tools for determining a priori how a patient is likely to respond to a given treatment before that treatment is actually delivered. Although some early efforts have been made to identify candidate mediators and moderators of treatment response (Arch & Ayers, 2013; Lester & Eley, 2013; Schneider et al., 2015), these efforts have limited translational value outside of research settings. To fill this gap, data-driven personalized treatment recommendations may be particularly useful because they aim to use moderators and mediators of treatment response, on a person-by-person basis, to effectively match patients to treatments. Such tools

could revolutionize mental health care and more efficiently address the growing demand for mental health services from a climate of high mental disorder prevalence. Still, no such personalized recommendation system is routinely offered in current mental health care settings.

Equipped with cutting-edge statistical learning techniques, along with rapid advances in high-powered statistical and scientific computing, data-driven personalized treatment recommendations may uniquely address this translational need. In fact, efforts are already under way to develop predictive models that are capable of forecasting personalized probabilities of treatment response on a patient-by-patient basis (Chekroud et al., 2016; Hahn et al., 2016). Although previous attempts have been made to apply machine learning to person-specific data for purposes of diagnostic classification, these pursuits have demonstrated varying levels of success (Acharya et al., 2015; Allen & Reznik, 2015; Chekroud et al., 2016; Chu, Torre, & Cohn, 2013; Cohn et al., 2009; Lamers et al., 2016; Li & Abu-mostafa, 2006; Schnyer et al., 2016).

It is well accepted that the etiology and maintenance of mental disorders are multifaceted (Chaby et al., 2015; Guimond et al., 2015; Lester & Eley, 2013; Steca et al., 2013; Whittle et al., 2014) and dynamic (Fisher, 2015; Zvielli, Bernstein, & Koster, 2015). Correspondingly, algorithms that rely on any one idiographic factor in isolation risk producing predictions based on a phenomenologically incomplete "snapshot" of a patient. In contrast, it appears that there are many relatively weak predictors of treatment response that when considered in isolation do not predict treatment response very effectively. When multiple weak predictors are considered simultaneously, however, their ability to predict treatment response may improve substantially.

Ensemble machine learning techniques may uniquely address this limitation. They are particularly promising, not only because they can be employed in situations where clinical intake data is incomplete, but because they can incorporate multimodal data and can therefore accommodate the multifaceted nature of many forms of psychopathology (Cuthbert, 2014). In this respect, ensemble learning techniques



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could serve as an ideal vehicle for the next generation of clinical diagnostics that aggregate data across multiple levels of the RDoC matrix. At the physiological levels of analysis, for instance, ensemble machine learning approaches could synergistically incorporate patterns of gene expression (Lester & Eley, 2013), speech and vocal prosody (Cohn et al., 2009; Yang et al., 2013), eye movement and pupillometry (Woody et al., 2016), facial expressions (Chu et al., 2013; Kreifelts et al., 2007; Wu et al., 2012), as well as biosignatures represented by electroencephalographic (EEG) recording (Allen & Reznik, 2015) and brain connectomics (Castellanos et al., 2013). At the behavioral unit of analysis, dynamic tracking techniques such as Ecological Momentary Assessment (Dunton et al., 2016), social media usage patterns (De Choudhury & Gamon, 2013), geolocation and entropy of movement in space-time (Hsieh et al., 2015; Palmius et al., 2016), and census-derived demographic patterns by zipcode may also yield a wealth of data about how patients uniquely interact with their environment (Casey et al., 2016; Lester & Eley, 2013; Patrick et al., 2012). When this data acts as a concert of features whose collective sensitivity and specificity can accommodate for multiple different dimensions of the human condition, such an algorithm may consequently afford greater epistemic privilege for projecting the probability of treatment response for a given individual under a given set of conditions.

Since the success of these translational projects and others like them hinge on the availability of "big data" captured using multiple modalities, translational clinical science may soon be faced with a new set of challenges. Among the most urgent are a host of methodological obstacles, since human subjects research typically deals with small-to-moderate sample sizes and a limited variety of data capture modalities. To build and establish dependable ensemble machine learning algorithms for matching patients to treatments, significantly larger and representative subject pools will be needed (Dipnall et al., 2016). Through future multisite collaborative projects, this obstacle may be more effectively addressed. Indeed, the field of cognitive neuroscience can be used as a role model for its impressive efforts to pool big-data across multiple institutions through multisite collaborative projects such as the highly successful Human Connectome Project (HCP; Van Essen, 2011), ENIGMA Consortium (Thompson et al., 2014), and

others. Moreover, the use of multiband neuroimaging technology (Feinberg & Setsonpop, 2013), massively parallel genome-wide assays for high-density gene-mapping (Aberer et al., 2014; R. Li et al., 2009; Menon, Bhat, & Schatz, 2011; Wheeler et al., 2008), web-crawling (Olston & Najork, 2010), mobile smartphone technology (Dunton et al., 2016), along with the availability of more flexible, parallel, and automated open-source software in general, could mean that translating multifaceted person-specific data into clinical practice may soon become a reality. Contrary to popular belief, the technologies needed to facilitate this kind of research are already available, such as the AWARE framework for mobile context instrumentation (Ferreira, Kostakos, & Dey, 2015), NGSUtils for next-generation genetic sequencing (Breese & Liu, 2013), AffyPipe for automated Affymetrix Axiom genotyping (Nicolazzi, Iamartino, & Williams, 2014), and NEURODATA's cloud-computing infrastructure for automated analysis of person-specific neural connectomes (Kiar et al., 2016). Perhaps the biggest obstacle slowing this area of research, however, is a lack of adequate computational training for both existing and emerging clinical researchers in the field. That setback that will continue to slow the progress of translational science unless changes are made at the policy level of graduate education (Knowlton et al., 2013).

With successive refinement, treatment-matching algorithms are one form of translational science that could drastically improve clinical outcomes for a range of mental disorders. These novel treatment-matching techniques are gaining widespread interest among clinical researchers (Arch & Ayers, 2013; DeRubeis et al., 2014; Fisher, 2015). They are expected to become increasingly cost-effective and resource-efficient (Arch & Ayers, 2013; Insel, 2012; Simon & Perlis, 2010), as well as highly scalable with ongoing advances in computer and statistical sciences (W. Y. Ahn & Busemeyer, 2016; DeRubeis et al., 2014). Substantial work remains, however, before they can be systematically translated into clinical practice.

### Training and Education

Although the development of treatment-matching algorithms is by no means the only avenue for translational science in mental health research, what is becoming increasingly clear is that data-science and the technologies that drive it are creating

new possibilities for translation in the field. That is, computational approaches have shown tremendous promise for assisting in the translation of basic science into clinical practice—a trend that is only expected to continue (W. Y. Ahn & Busemeyer, 2016; Gibbons et al., 2013; Luxton, 2014; Richards & Richardson, 2012; Schneider et al., 2015). For this reason, numerous factors should be considered in regards to reforming education and training for graduate students, researchers, and clinicians in the field of mental health care.

The landscape of clinical research is rapidly evolving. In the early days of evidence-based treatment research, large-scale clinical trials usually included approximately 100 to 200 participants, where data primarily consisted of participant self-reports as well as clinician diagnostic reports, and analyses were focused on psychotherapeutic processes and psychometric validity (Owen & Imel, 2016). In contrast, today's clinical data is available through a significantly wider variety of sources that also includes social media, electronic medical records, mobile smartphones, census data, genome sequencing, as well as numerous neuroimaging and physiological monitoring tools. This surge of data that is suddenly at the fingertips of researchers brings clinical psychology as a discipline to a new crossroads—we must determine how we can integrate "big data" with the rich diversity of clinical observations at the core of the scientist-practitioner model so as to inform the next generation of clinical researchers. This work will be unavoidably multidisciplinary, requiring much more than the traditional scientist-practitioner model currently offers. Specifically, "clinical data scientist-practitioners" are needed who are capable of augmenting existing diagnostic and intervention methodologies through the use of highly quantitative computational and statistical techniques.

Despite the growing dominance of quantitative techniques in clinical research, researchers in psychology often receive inadequate training in quantitative methods and many of the recent concerns about research quality, replicability, and reporting practices are likely directly related to questionable use of quantitative methods (Counsell et al., 2016). In terms of graduate training, research has demonstrated that courses on statistics and research methods are among the most important for fostering critical thinking and reasoning (Lehman & Nisbett, 1990), yet these



courses are often students' least favorite (Conners et al., 1998; Schutz et al., 1998).

One of the reasons for this lack of enthusiasm for quantitative courses may be "statistics anxiety" (Onwuegbuzie, 2003), which further leads to avoidance of statistical education (Johnson & Onwuegbuzie, 2004). Although some methods used in clinical psychology were imported directly from the field of statistics, many were divined within the social sciences or modified to suit the needs of clinical researchers. The quantitative needs of clinical researchers are vast and the instruction for these methods must emphasize their translational value; that is, maintaining a steady balance between theory and application—breadth and depth. Although some psychology departments have begun to address this by offering a specialization in quantitative methodologies that attempt to meet these instructional needs, graduate students in clinical psychology can also be easily deterred from such options given the high workload that is often required, combined with traditional clinical course requirements mandated by the American Psychological Association. Further, few if any of these tracks offer courses in data-driven statistical learning that may soon become invaluable for adequate progress in the field of mental health care research as a whole.

Beyond quantitative learning, training is needed in computational methodologies such as computer programming—a tool that will also become increasingly more important for efficiently capturing, munging, aggregating, storing, visualizing, and modeling the wealth of "big data" that is now available to clinical scientists. Although "computational psychiatry" has emerged as a promising area of specialization (Huys et al., 2016), few, if any, graduate-level clinical psychology programs offer training in computer programming, let alone advocate for the need for such training (Counsell et al., 2016). Future curriculums may need to provide interested students with options for basic training in computer programming, particularly using flexible, data-science oriented programming languages such as Python, R, SQL, and UNIX, along with high-powered computing methodologies to accommodate the demands of an ever-growing library of computational tools (Hastie, Tibshirani, & Friedman, 2009). Moreover, computer programming, like statistical training, should be offered without overwhelming students with unrealistic standards of depth, given the necessary breadth

required to meaningfully apply that type of specialized knowledge into clinical research.

### Interdisciplinary Collaboration

Interdisciplinary collaboration lies at the heart of translational research. There is a growing awareness that the complex behaviors observed in mental health disorders cannot be fully understood using the knowledge and methods of a single discipline, and the translation of basic science findings into real-world application necessitates the integration of research and clinical care. In response, there has been a rise in programs, both federal and university-based, that emphasize interdisciplinary collaboration. Understanding the factors that hinder and facilitate interdisciplinary collaborations is essential for the success of these translational research programs.

One of the first priorities of interdisciplinary teams should be to establish clear and supportive communication between team members. Disciplines use different terminology and methods, and although this diversity of approaches contributes to the richness of interdisciplinary collaboration, they can also act as potential barriers to the successful exchange of knowledge. In collaborations, it is easier to share common knowledge, held by multiple team members, than unique knowledge (Stasser, Vaughan, & Stewart, 2000), and a working understanding of other disciplines' epistemology can help facilitate the search for unique information.

The gap in knowledge that exists between disciplines can be mitigated, however, by reading literature recommended by collaborators, and attending boot camps, workshops, and interdisciplinary conferences. Additionally, interdisciplinary team leaders need to emphasize the importance and solicit the inclusion of all the available expertise (Cacioppo, 2007). Further, high-quality leadership is essential to developing successful interdisciplinary collaboration. Typically, the best leadership comes from senior investigators, who can conduct research outside of their discipline, without the associated professional risks. Additionally, senior investigators have the professional contacts and status that can be helpful in assembling interdisciplinary teams, and overcoming institutional obstacles.

An ideal interdisciplinary research environment is one that creates conditions for the possibility of collaboration. For instance, physical proximity among inter-

disciplinary team members has been shown to be a determining factor for sustained and successful collaboration (Stokols, Misra, Moser, Hall, & Taylor, 2008). Although physical proximity is desirable, it is not the reality in most research environments, where psychologists are housed together, separate from other disciplines. Furthermore, interdisciplinary teams often include researchers from different universities and countries. In those cases, additional measures may be necessary to overcome physical barriers to face-to-face collaboration. Technology can be used to support remote collaborations, including virtual meetings and open-science platforms that enable swift and secure sharing of data between and within institutions. Additionally, it is important to facilitate face-to-face time when possible, especially at the start of projects, where establishing initial levels of trust, understanding, and expectations among team members is perhaps most critical.

A lack of funding opportunities might serve as a potential barrier for researchers wishing to engage in interdisciplinary research: A recent analysis of funding decisions found that interdisciplinary research is less likely to be funded than proposals limited to a single discipline (Bromham, Dinnage, & Hua, 2016). This may be due in part to the make-up of grant review panels, which are often comprised of scientists with expertise in areas pertaining to the grant announcement, but who may not have strong expertise in interdisciplinary methods. Nevertheless, there are various ways to address the limitations of the translational review process. Submitted proposals should avoid the use of discipline-specific terminology and justify internal versus external validity tradeoffs. Additionally, reviewers with expertise in translational science should be included in review panels and all reviewers should be aware of the challenges inherent in the review of translational science proposals. Last, if translational research is indeed a funding priority, there might be opportunities for the scoring system to reflect this, with higher scores assigned to those proposals that are translational in nature.

There is also a need to create a supportive environment within research institutions. Since interdisciplinary collaborations often progress more slowly and result in fewer first author publications, institutions can encourage collaboration by recognizing interdisciplinary research efforts in tenure and promotion decisions. These institutional incentives are important,



since there is evidence that junior researchers are less likely to engage in interdisciplinary research than senior researchers or graduate students, presumably because single discipline research efforts are more likely to lead to academic career advancement (Van Rijnsoever & Hessels, 2011). This is unfortunate, since junior researchers are likely less embedded in their research program, and therefore have more flexibility to adjust the scope of their research or experiment with new methodology.

Our laboratory is part of the Institute for Mental Health Research (IMHR), an interdisciplinary research unit, which includes faculty with primary appointments in psychology, social work, human development, behavioral neuroscience, and communications, as well as faculty with expertise in biostatistics. The IMHR pursues a translational research agenda with the overarching goal of improving and developing mental health disorder treatments. Our physical environment is designed to promote collaboration between members, with members' work spaces being close together to encourage informal communication. There are also multiple, readily available, meeting rooms, which can be used for discussions. Additionally, there are monthly meetings that include all institute members, where graduate students and faculty have the opportunity to present their research and receive feedback from researchers outside of their discipline. The IMHR has successfully encouraged collaboration across multiple disciplines, which has further led to the funding of a variety of translational research grants and the publication of articles with a clear interdisciplinary focus.

## Conclusion

Significant work remains in the development of mental health treatments. At present, available treatments are lacking in precision, personalization, and technological utilization. Addressing these limitations can at least partially be accomplished by furthering our basic scientific understanding of mechanisms underlying the onset and maintenance of psychopathology, but such scientific advances will be limited if they do not actionably impact the way that psychopathology is diagnosed and treated in real-world clinical settings. Translational science can help to fill these research gaps by leveraging discoveries in basic science to improve the way that psychopathology is diagnosed and treated, as

well as streamline the execution of research itself to foster greater collaboration and interdisciplinary advancement. In a climate where the rising prevalence of mental disorders outpaces the resources available to contain it, and technology enables the seamless exchange of basic scientific knowledge, translational science is uniquely positioned to revolutionize research in mental health care.

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## CLINICAL TRAINING

# Implementation of Routine Outcomes Monitoring Into a Graduate Training Clinic: A Case Illustration

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ROUTINE OUTCOME MONITORING (ROM) improves clinical outcomes. From the early work of Howard and colleagues (1996) to the growing body of reviews and meta-analyses (e.g., Carlier et al., 2012; Goodman, McKay, & DePhilippis, 2013), ROM has earned its place as an evidence-based practice (EBP). It takes, however, 17 years for research evidence to turn into clinical practice, with the majority of this time (9.3 years) standing at the gap between review papers and clinical implementation (Balas & Boren, 2000).

Barriers to implementing ROM include costs, time burdens, multiple stakeholders with different needs, beliefs about assessment, fear and mistrust about how measures will be used, and confidentiality issues surrounding data collection systems (Boswell, Kraus, Miller & Lambert, 2013). In a past issue of this journal, Levine and colleagues (2017) extended these barriers to graduate training clinics, categorizing them as organizational, philosophical, and practical barriers unique to graduate programs.

Graduate training clinics are uniquely tasked with shaping the next generation of clinicians, educators, and researchers. Because they provide an initial socialization into a clinical environment and set norms for routine clinical care, training clinics that implement EBPs like ROM are likely to have a significant impact on reducing this implementation gap. The implementation science literature offers many strategies to overcome these barriers and, indeed, such strategies have been applied to implement ROM among independent clinicians, for example, through facilitating the adoption and integration of EBPs into a clinician's workflow (e.g., Persons, Koerner, Eidelman, Thomas & Liu, 2016).

In a recent effort to elucidate the “black box” of implementation science, several implementation scientists operationalized and articulated effective implementation strategies (see Powell et al., 2015). Facilitation was identified as one such strategy (for an example, see Kirchner et al., 2014). Facilitation designates a site-specific “champion” who leads an implementation effort, along with a “facilitator” who rallies

support from multiple stakeholders, works collaboratively to develop an implementation plan, and oversees the ongoing adaptation of the implementation plan while monitoring its progress and achievement of goals through regular audit and feedback. Facilitation strategies are conceptually similar to cognitive behavioral therapy (CBT) strategies for change—but modified to address systems-level change. Combined with initial planning and goal-setting, facilitation strategies include fostering leadership support and buy-in from multiple groups of stakeholders, setting site-specific goals, developing an implementation plan, identifying barriers and facilitators to implementation, problem-solving barriers and tailoring solutions to context-specific needs, providing structural support, and developing a system for monitoring, feedback, and accountability across the implementation process (Kirchner et al.).

In this case study, we illustrate the use of facilitation strategies to overcome the organizational, philosophical, and practical barriers described by Levine and colleagues (2017) in establishing ROM in the University of California (UC), Berkeley Clinical Science Program. We conclude with a description of the ROM achieved, as well as lessons learned for improving clinical meaningfulness and plans for sustainability.

## Method

### Context: The UC Berkeley Psychology Clinic and Center for Assessment

The Clinical Science Program of the UC Berkeley has been a leader in integrating research and clinical practice, with original



writing by Dr. Robert Levenson on the specialty clinic model (Levenson, 2014; Levenson, Cowan & Cowan, 2010), a training grant and coursework focused on treatment development, a set of faculty members who conduct treatment research, and graduate students who are deeply invested in understanding the interface of clinical and scientific work. The graduate training clinic at UC Berkeley is led by the Clinic Director (NL) in partnership with in-house faculty members and two full-time staff members (i.e., administrative assistant and program administrator). Supervisors include faculty members in the clinical science program, experienced, well-respected community clinicians, scientist-practitioners from research organizations and academic medical centers, and research-focused-clinical psychologists who have served as clinicians in clinical treatment studies. Supervisors work individually with 2nd, 3rd, and advanced-year doctoral student clinicians. The philosophical, organizational, and practical barriers to implementation are described below.

#### *Organizational, Philosophical, and Practical Barriers*

As described by Levine and colleagues (2017), barriers to implementing ROM in graduate training clinics include organizational, philosophical, and practical barriers.

Organizational barriers include buy-in, costs, training, and conducting research in a service setting. Organizationally, the empirical focus of the UC Berkeley program lends itself well to the implementation of ROM and similar EBPs. In particular, the specialty clinic model (described elsewhere by Levenson et al., 2010, and Levenson, 2014) served as a subset within the Clinic and was an exception to not implementing ROM: these focused on treatment innovations led by faculty, served a subset of the Clinic's population with a subset of student clinicians, and faculty guided the implementation of the treatment with ROM through a specific seminar focused on discussing these issues. Additionally, specialty clinic teams chose different measures and this limited the ability to rely on data for program evaluation, as each team gathered a small set of noncomparable data. Similarly, many student clinicians gained experience in ROM through work with their research advisors on treatment development or with specific supervisors; however, this expertise did not always generalize across the Clinic and did not apply to the entire clinical population served. As a result, ROM was instituted

with diverse and uncoordinated measures, in historical epochs, for a subset of the Clinic's population (i.e., through a specialty clinic or with certain supervisors only), and with specific student clinicians and supervisors.

Although all faculty supported the use of ROM (and applied it directly when leading a specialty clinic), there was a lack of consensus across the wider Clinic, especially from all stakeholders (including clinic leadership, supervisors, and student clinicians) for ROM to be applied more broadly across the entire Clinic population. The client population consisted of a wide range of ages and clinical concerns and there was no prior articulation about the best measures or procedures to apply ROM. This lack of consensus led to inconsistency in ROM implementation: supervisors and student clinicians who used ROM selected measures specific to a given population, and most were tailored to client-specific problems or preferred measures.

This resulted in a fragmented and inconsistent use of ROM. Costs were another barrier. The Clinic's sliding scale fee limits financial resources that would allow for the purchase of technology that would support student clinicians with an easy-to-use and seamless system for integrating ROM. For clinic leadership, there was no protected time for focused programmatic strategizing for the development of a ROM system or process for the broader clinic population, although again, specialty clinics were an exception, with a specific seminar focused on discussing these issues. Clinically, the perceived time cost of adding a measure further limited the implementation of ROM. There was limited and inconsistent training in ROM, and most occurred through specialty clinic seminars geared at a subset of the Clinic's population, individual supervision, and/or course offerings in CBT. Although ROM was implemented at various time points in the Clinic, e.g., in a specialty clinic or regularly with certain supervisors, it was never comprehensively applied across the full Clinic's client caseload. Outside of specialty clinics, there were no existing protocols or discussions surrounding how these data would be used or how to confidentially store the data. Although an Institutional Review Board (IRB) approval had been developed (e.g., during a specialty clinic), these were often time-limited and project-dependent. Organizationally, the logistics and details surrounding wider ROM use were not fully explored and likely increased the perceived cost of a wider, sustainable

implementation effort across the entire Clinic population.

Philosophically, the program emphasizes breadth and diversity in psychotherapy training. Theoretical orientations include CBT, interpersonal psychotherapy (IPT), emotionally focused therapy, short-term psychodynamic therapy, as well as many third-wave approaches, including acceptance and commitment therapy (ACT) and dialectical behavior therapy (DBT). Supervisors and clinicians with a CBT-focused approach appeared to most consistently apply ROM. Some non-CBT supervisors reported that measures were not useful and could not adequately capture the complexity of clients; others were concerned that administering measures would negatively affect rapport. Student clinicians also differed in their perceptions of measures, with many adopting the approach of their assigned supervisor. For this reason, non-CBT supervisors and their students likely viewed ROM as separate and distinct from their own clinical approach.

Some supervisors, who were senior clinicians, had never been trained in nor ever used ROM. Advanced student clinicians often prepared incoming clinicians for future clinical responsibilities, and this "passing of the knowledge" likely contributed to the maintenance of clinical norms without ROM. Practical barriers included a lack of a secure, technological support system for integrating ROM simply and efficiently into clinical work.

#### *Implementation Strategy and Processes*

We applied facilitation strategies for the implementation of ROM into our Clinic. It is noted that during this time, no additional specialty clinic was being offered simultaneously. The "champion" and "facilitator" were the Clinic Director (NL), who spearheaded the implementation of ROM and had previously been trained in facilitation by Dr. Joanne Kirchner. Implementation of ROM was initiated in November 2015, planning and buy-in meetings lasted from December 2015 to May 2016, structural support developments lasted from June 2016 to August 2016, and implementation, monitoring, and feedback started in August 2016. In March 2017, an anonymous, web-based survey was developed and implemented by peer student clinicians (AD and CG), who also aggregated results.



### *Overcoming Organizational, Philosophical, and Practical Barriers*

During the buy-in and planning process, faculty, student clinicians, and supervisors were given ownership of the decision-making process. Although there was no single time when all stakeholders could meet together, discussion of implementing ROM was integrated into regularly scheduled meetings with each group, and the Clinic Director served as the liaison between groups. For faculty, at a faculty meeting headed by the Director of Clinical Training, all faculty were supportive of implementing ROM across the entire Clinic population. Discussion surrounding historical barriers helped to clarify why prior efforts were not broadly sustained. For student clinicians, at a case conference meeting led by the Clinic Director, nearly all were open to ROM and understood its value; however, some expressed the misgivings of their supervisors and expressed that it would be difficult to implement ROM measures halfway through treatment and recommendations were made to implement at a later time. To decide which measures would be most useful, student clinicians provided their feedback about the “best” measures to use, and consideration also included other values, such as cost of measures (ideally free), sensitivity of measures across the broad Clinic population and range of clinical concerns, and availability in non-English languages. For student clinicians who were entering the Clinic, in a prepracticum course taught by the Clinic Director, rising student clinicians were folded into these discussions. Students were able to problem-solve time issues and suggested requesting that their clients come in a few minutes early to each session to complete measures. For supervisors, in individual meetings with the Clinic Director, many expressed either full support, asked questions about the purpose of these measures, or expressed concerns about measures. Discussion surrounded the value and validity of symptom measures, advantages and disadvantages of measuring specific symptom domains (e.g., depression, anxiety) versus general distress, incorporating transdiagnostic measures, and questions about nonsymptom domains (e.g., relationships and occupational functioning), especially whether ROM measures could capture this complexity. For staff, at a weekly staff meeting, Clinic staff members were receptive, understood the value of measures, and expressed a willingness to provide support. For example, our administrative assistant

had previously worked in a large, measurement-based health care setting, and was willing to give paper measures directly to clients upon their arrival to reduce the time burden of student clinicians.

In ongoing meetings, an implementation plan was developed. The final measures that were selected included the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) and the World Health Organization Disability Adjustment Scale (WHO DAS 2.0; WHO, 2014). Child measures were also selected to parallel these symptom and functioning domains and were tailored to age appropriateness (e.g., under and above 5 years old). Several student clinicians and supervisors already had familiarity with these measures; in the plan, flexibility was allowed for adding additional measures as necessary—therefore, no one felt limited to only use the selected measures but all were expected to use at least those identified measures. At the faculty meeting, there was support for both measures, and one faculty member was conducting a clinical research trial that also used the WHO DAS 2.0; the selection of this measure resonated with a larger program value of integrating science and practice. Supervisors continued to express some reservations but were more willing to engage when they had heard that as a program, all faculty were supportive of its implementation, accepting this as part of the empirical focus of the program even if it was not part of their own approach. Supervisors also appeared to appreciate that selected ROM measures had a suicide item to consider risk issues that might not otherwise come up at each therapy session. Most supervisors endorsed support of ROM, even if initially only for this purpose. Revisions of the implementation plan factored in supervisor concerns. For example, after one supervisor questioned the time burden of two measures (i.e., that it would reduce total therapy time), we incorporated this into ongoing discussions with student clinicians and faculty, and identified the briefest versions possible. For this reason, our final implementation plan included the 12-item version of the WHO DAS 2.0, which accounts for 81% of the variance in the 36-item version (WHO, 2014). Due to budget constraints, we opted for paper-and-pencil versions of the measures.

Procedurally, the final implementation plan included that all clients would be given both paper-and-pen measures at each session by our Clinic administrative assistant, after being prompted to arrive 5

minutes early to their appointment by their student clinician. Scores would be entered into an Excel database that would be developed by the Clinic Director and stored on a secure student clinician workstation in the Clinic. This Excel file would include scoring and interpretation functions, including flagging risk issues and severity levels. Student clinicians would enter scores directly into the Excel file as well as on a standard progress note to facilitate the regular scoring and viewing of measures. Regular case conference meetings, in which all student clinicians were enrolled, included case presentations, which required a graph of ROM measures over time.

During June 2016 to August 2016, this implementation plan was formalized into Clinic processes through updating our policies and procedures to reflect the use of measures at every session. The Excel file was developed during this time; a supervisor had access to an Excel-based scoring measure for the DASS, and the WHO DAS 2.0 has an automated scoring system available for download (WHO, 2014). The Clinic Director combined these two into one Excel-based scoring and data collection system in a Clinic workstation, which was also password-protected and de-identified. The Excel file included room for child measures, additional client-specific measures, and was able to score and flag risk issues, interpret scores into severity levels, and provide a larger database to which students could return to when it came time for their case conference presentations. To overcome the burden of additional paperwork, Clinic paperwork was also reviewed and updated at this time and condensed it into fewer pages to reduce any redundancy across phone screening, intake, and client information forms.

To address training and effective timing issues, the implementation of ROM was scheduled for 3 months after the buy-in meetings to coincide with (a) the Fall opening of the Clinic which included a new cohort of student clinicians as well as advanced student clinicians and (b) the Fall semester teaching of a CBT course by Dr. Jacqueline Persons, who highlighted the importance and value of ROM and provided an initial model for the application and use of data alongside its implementation in the Clinic. A majority of the student clinicians (9 out of 11) in the Clinic completed this course at this time. It was expected that embedding this training about ROM alongside clinical work would facilitate any troubleshooting of ROM



implementation. No formal ROM training was provided to supervisors.

Last, to assess use of ROM in the training clinic, a brief, anonymous, web-based survey was developed and implemented by peer student clinicians (AD and CG). Questions such as “How often have you reviewed your clients’ progress monitoring scores with them while in a session?” were presented in a multiple-choice manner, with answer options of “Never,” “Once or twice throughout the course of therapy,” “A few times a month,” and “Every week,” and questions regarding the merit and helpfulness of such measures were asked in an open-ended fashion. Data was aggregated and analyzed for presentation below.

## Results

### Current Status

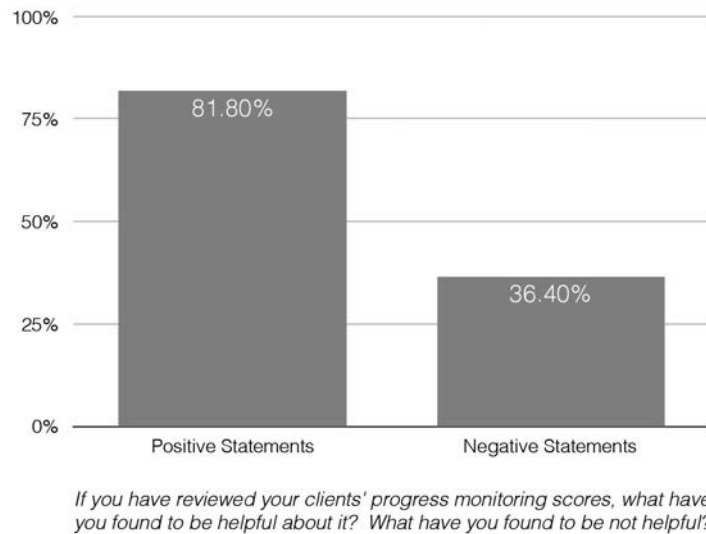
Graduate students (N = 11) were in their 2nd, 3rd, and advanced years in the program and their 1st, 2nd, and 4th years in the Clinic, respectively, and none were enrolled in a specialty clinic. Through a review of the Clinic database and files, 100% of student clinicians collected DASS-21 and WHO DAS 2.0 measures for their clients. All student clinicians reported using measures in addition to the DASS-21 and WHO DAS 2.0. One hundred percent of student clinicians reported reviewing patient scores at some point: 90.9% (10 of the students) reported reviewing the

DASS-21 and WHO DAS 2.0, and the remaining student reported only reviewing a measure relevant to their own therapy approach. A majority (72.7%) of the students reviewed scores with their clients, with over half (54.5%) reporting that they reviewed these once or twice through the course of therapy, and the remaining 18.2% noting that they reviewed the scores either every week or a few times a month. A large majority (81.8%) reported reviewing the scores with their supervisors, with close to half of those (44.4%) reporting that they reviewed the scores every week with their supervisor. Only 18.2% of the student clinicians never reviewed scores with supervisors.

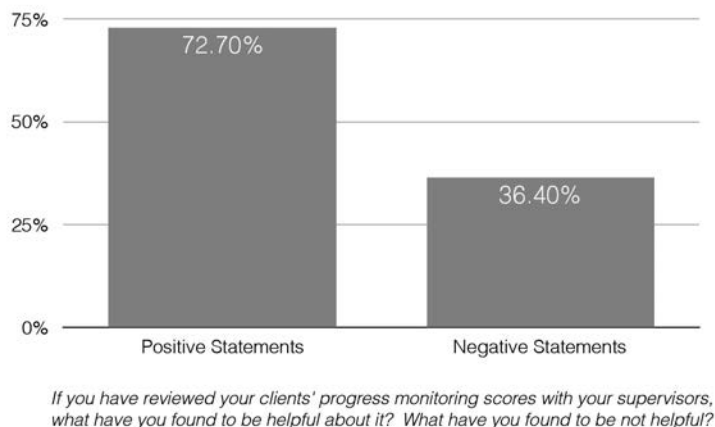
**Table 1.** Sample Statements From Students Regarding Their Feelings Towards Routine Outcome Monitoring in the Training Clinic

	Positive Statements	Negative Statements
Reviewing scores on own	<p>“It is hugely helpful to track movement in clients’ scores across symptoms. It is useful to see which symptoms seem to respond to which forms of intervention.”</p> <p>“I found that the DASS suicidality items were useful for keeping an eye on risk. Occasionally, a discrepancy between a client’s reporting during a session (or their observed behavior) versus their reporting on progress monitoring measures highlighted something interesting about their insight, their willingness to disclose on a standardized form, or even their case conceptualization.”</p>	<p>“These measures are more useful for some clients over others.”</p> <p>“Overall, I haven’t found either the WHO DAS or the DASS specifically to be exceptionally useful tools for the particular clients that I have seen—scores tended to start in the low range and stay low throughout treatment.”</p>
Reviewing scores with supervisor	<p>“Helpful as a communication tool with both client and parents and to assess progress over a longer period of time.”</p> <p>“Reviewing progress monitoring with my supervisor has been really helpful in guiding interventions. These measures are a good sign of when therapy is working or when it is not.”</p> <p>“Helpful to talk about how/why a client might be benefiting from a particular intervention.”</p> <p>“It has been most helpful to my supervisor to be able to have a quick snapshot of progress that week.”</p>	<p>“We haven’t really discussed it. We have other things we use to track progress (e.g., homework completion) and it is not sensitive for one of my clients.”</p> <p>“We usually mark progress using DBT diary cards [i.e. other ROM methods than the chosen ones in the clinic].”</p>





**Fig. 1.** Students' qualitative responses regarding reviewing their client's routine outcome monitoring scores.



**Fig. 2.** Students' qualitative responses regarding reviewing their client's routine outcome monitoring scores with their supervisors.

Regarding the qualitative feedback, students were asked open-endedly about their experience with ROM on two levels: reviewing progress monitoring themselves, and reviewing progress monitoring in meetings with their supervisors. At both levels, some students made both positive and negative statements; in this case, each one was counted separately. If a statement included both positive and negative aspects, it was counted for both positive and negative.

Regarding the first level, if students found reviewing their client's scores to be helpful, 81.8% of the students made positive statements about the use of ROM, and 36.4% made negative statements about ROM. Details of the nature of these statements can be found in Figure 1.

Regarding the second level, if students found reviewing their client's scores with their supervisors to be helpful, 72.7% of the students made positive statements about reviewing clients' ROM with their supervi-

sors, and 36.4% made negative statements about reviewing clients' ROM with their supervisors. Additionally, if a statement included both positive and negative aspects, it was counted both for positive and negative. Details of the nature of these statements can be found in Figure 2.

While most students found the scores helpful and understood their value, as seen in Table 1, several reported that the measures selected for this ROM effort did not capture the needs of their clients. For some who were implementing certain treatments (e.g., DBT), the use of ROM measures may not have been as valuable as treatment-specific measures (i.e., diary cards).

## Discussion

We offer three lessons learned from this implementation and describe our goals for moving forward and sustainability. First, our Clinic successfully implemented 100% use of ROM (defined as routine use and review of measures at every session) across all clients with limited resources and without a costly outcome measurement program, even when some supervisors expressed initial misgivings. It appears that a clinical leader can take on the role of "facilitator" and "champion" to spearhead and implement change. Our implementation approach has also allowed for greater collaboration, feedback, and even innovation, in our graduate training clinic. In collaboration with our faculty, students, staff, and supervisors, we have continued to add new measures to a larger database, including an assessment of working alliance and a brief assessment of specific skills that clients remember from treatment (Lee, Worrell, & Harvey, 2016), both given at termination. New measures have been selected based on their brevity and limited additional time burden (i.e., only given at termination). We are also developing a long-standing Institutional Review Board for the Clinical database and encouraging the publication of case studies and reports using these clinical data.

Second, we remain optimistic but cautious about interpreting our ROM results as fully implementing its more clinically meaningful version of progress monitoring, defined as "using a written or online tool at the beginning of every session to monitor changes in a patient's symptoms or functioning and using that information to inform treatment" (Persons et al., 2016, p. 25). ROM is best used as a navigation tool with systematic, ongoing feedback aimed at guiding student clinicians and



supervisors in formulating the next step of treatment or in changing the clinical formulation. Our results indicate there were a few situations where measures were not discussed with clients or between student clinicians and supervisors.

Although we provided training in using ROM, we did not emphasize training in the “micro- skills” of using scores as feedback to inform and modify treatment. In our ongoing efforts, we will provide additional training in this through role-plays of clinician-client and clinician-supervisor discussions around scores, especially difficult client situations or when supervisors may be less familiar with ROM. As our progress monitoring data set grows, we will also add case illustrations of when scores were informative for guiding treatment and changing a treatment plan or trajectory.

Finally, although we successfully rallied support, buy-in, and ultimate implementation of the regular use of measures, there remains disagreement about whether we are using the “right” measures. Miller and colleagues (2015) predicted that, “the most likely next phase in the development of ROM is a growing rivalry or competition among proponents of the various outcome measurement systems. Similar to what happened among the competing schools of psychotherapy, each will attempt to make a case for its particular product. Differences will be emphasized in applicability, user friendliness, ease of implementation, empirical support, and of course, cost” (p. 451). Indeed, several supervisors and student clinicians who strongly supported ROM had different preferences for specific measures and measurement systems. Although we did not (because we could not) purchase a measurement system for ROM, this freed us from any allegiance to a specific measure; however, even after the implementation of ROM, disagreement lingers about whether we have chosen the “right” measures. Nevertheless, it appears that the time spent in consensus-building during the implementation planning process has allowed us to continue with our current measures. For our purposes, the use of the same measure across clinicians and clients is part of our larger sustainability plan, specifically through preparing an annual program evaluation report and comparison of changes over the years. We view this as one way to “feed back” the data collected by our clinicians to summarize outcomes of the Clinic and inform decisions about the ways in which the Clinic can improve. Although it is possible to consider use of ROM without the need for the

same measure used by all clinicians, in our case, the historical lack of consensus regarding which measure to use across clients likely led to inconsistent use of ROM in the past and time-limited collections of noncomparable data among a subset of the Clinic’s population. Additionally, because outcome scores are reported in case presentations during regularly scheduled case conferences, the use of a single measure facilitates interpretation of scores and communication among student clinicians and supervisors. Future specialty clinics will at minimum use these measures but add their own measures. Similarly, we will continue to allow student clinicians and supervisors to use additional measures that suit their preferences. If ROM becomes the new norm in clinical work, it will be interesting to see whether, as predicted, these new allegiances to measures or measurement systems develop.

In summary, we were able to successfully implement ROM into our graduate training clinic, even with limited resources. We recognize, however, that several factors were unique to our situation that may not be as generalizable to other settings. For example, the Clinic Director (NL) had been trained in facilitation strategies and had experience in implementation efforts in other clinical settings. The most necessary and potentially costly components appear to be a “champion” to spearhead the effort and who also has familiarity with implementation best practices among clinicians (e.g., Persons et al., 2016; Powell et al., 2015), as well as the time and dedication to push the effort through to completion. It is our belief, however, that clinic leadership, faculty, and students can utilize the implementation literature to better understand these strategies to bring changes to their own clinical settings.

These results are promising. If graduate training clinics and other clinical settings can successfully implement and sustain EBPs using the implementation science literature, the larger outlook for the provision of evidence-based mental health services might be more optimistic than previously predicted. Put another way, these results demonstrate an old idea: the scientific literature should permeate all areas of clinical work, including clinical training—in this case, the implementation science literature has much to offer clinical training settings. Although we present an illustration of one clinic with a unique set of resources implementing ROM, the implications can go beyond our Clinic: it is possible for implementation resources or lessons learned to

be shared among graduate training clinics and other clinical settings. For example, practice-based implementation networks, such as those developed within the Veterans Affairs health care system for dissemination and education efforts, provide one way to bolster efforts to bring change and allow for the sharing of resources, best practices, and lessons learned from successful implementation (U.S. Department of Veterans Affairs, 2017). Careful consideration of the above lessons can be helpful for graduate training clinics and other clinical settings to successfully, sustainably, and in a clinically meaningful way, implement progress monitoring in their own settings.

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## NEWS

# Report on the 2017 NIMH Professional Coalition for Research Progress

Nathaniel R. Herr, *American University*

ON MARCH 30, 2017, the National Institute of Mental Health (NIMH) hosted the 8th Professional Coalition for Research Progress meeting on their campus in Bethesda, MD. In attendance were members of about 30 national organizations representing the interests of psychological scientists and practitioners. I attended as the representative of ABCT along with representatives for organizations such as the American Psychological Association, the Asian American Psychological Association, the Association of Black Psychologists, the American Psychiatric Association, the Association for Psychological Science, and the National Association of Social Workers. Leading the meeting were Joshua A. Gordon, M.D., Ph.D., Director of NIMH, Sarah Hollingsworth Lisanby, M.D., Director of the Division of Translational Research at NIMH, and Bruce N. Cuthbert, Ph.D., Chief of the Research Domain Criteria Unit at NIMH. The goal of the meeting was to inform and elicit feedback from the organizational representatives about the priorities of NIMH under Dr. Gordon, who began his role as NIMH director in the fall of 2016.

After discussing the mostly unknown impact of the transition from the Obama to Trump administration and the appointment of Tom Price as Secretary of Health and Human Services (which is now likely complicated due to Price's resignation), Dr. Gordon presented a budget update and recent statistics on grant applications to NIMH. He reported that 23% of applications to NIMH in 2016 were funded, up from recent lows of 19% in 2013 and 2014. This increase in success rate is in part due to an increase in NIMH's total budget in 2016 (now approximately \$1.55 billion), after a period of relative stagnation since 2003. For 2016, grants scoring above the 18th percentile were very likely to be funded, while a small proportion of projects scoring between the 19–25th percentile were funded and those scoring below the 25th percentile were very unlikely to be funded.

An area of particular importance for Dr. Gordon was his desire to emphasize his commitment to funding psychosocial intervention research. He expressed concerns that there was a growing feeling among researchers that funding for psychosocial research was gradually being eliminated at NIMH, with funds being devoted primarily to pharmacologic and device-based interventions. Dr. Gordon rejected this notion and pointed attendees to his recent statement on the issue of psychosocial interventions (see <https://www.nimh.nih.gov/about/director/messages/2017/an-experimental-therapeutic-approach-to-psychosocial-interventions.shtml>). A key change made by Dr. Gordon was the creation of a separate funding announcement for exploratory intervention research that is specifically titled "Development of Psychosocial Therapeutic and Preventive Interventions for Mental Disorders (R61/R33 and R33)." These are not new grant mechanisms; rather, the intent is to divide the existing mechanisms into two announcements using language that is more appropriate for psychosocial vs. pharmacological or device-based interventions. I posed two questions about this new track: First, I asked if the specialties of members of grant review panels will be separated into these same partitions, and was told that this would be the case. Second, I inquired if there is a specific budget earmarked for the psychosocial partition (separate from the pharmacological and device-based portion), and the answer was there is not a separate pool of funding and the relative amount that will go to each partition is not specified. This latter point leaves open the question of how much funding will actually be devoted to psychosocial intervention research. Thus, while I and other attendees felt that Dr. Gordon appears to be responding to the concerns of psychosocial researchers, it will be important to evaluate whether or not this announcement partition actually leads to increased funding for psychosocial intervention research in the coming grant cycles.



Next, Dr. Lisanby spoke on the topic of experimental therapeutics, a cornerstone of the NIMH Strategic Plan for Research. Her presentation focused heavily on pharmacologic, device, and genetic research, but the experimental therapeutics standard will be expected for all types of intervention research. Experimental therapeutics is analogous to existing psychosocial intervention methodologies such as mechanism research or examining mediators of change, but it is clear that NIMH wants researchers to shift to the specific conceptualization and language of experimental therapeutics when conceiving of research projects and applying for grant funding (see link above for more information). Dr. Lisanby outlined limitations of existing lines of intervention research, with a particular focus on uninformative treatment failures. When making funding decisions, NIMH will value intervention research that leads to meaningful clinical data even in the event that the intervention does not have a significant impact on the intended mental health outcome (i.e., treatment failure). Dr. Lisanby placed particular emphasis on assessing the adequacy of dosing of a given intervention and establishing target engagement (or lack thereof). Dosing, for psychosocial intervention researchers, corresponds to issues such as number or length of sessions, homework compliance, and treatment adherence. The need to establish target engagement stems from the fact that a lack of intervention efficacy is the most common cause of treatment failure, yet in much intervention research (both psychosocial and pharmacologic) there is inadequate measurement of whether or not the treatment made an impact on the proposed mechanism of action. For example, in the context of psychosocial intervention research, an investigator who found null results when testing a treatment that seeks to improve depression through the use of social skill building would want to be able to establish whether or not the treatment did in fact improve participants' social skills. In her conclusion, Dr. Lisanby highlighted a key challenge caused by this shift to an experimental therapeutics approach, in conjunction with RDoC: How can an intervention targeted to a domain of function rather than a diagnosis be incorporated into research and practice? It would seem that the members of ABCT are well suited to the task of developing answers to this question.

Dr. Gordon then discussed his intention to work toward a balanced NIMH research portfolio, a conversation which

continued during a break-out session led by Shelli Avenevoli, Ph.D., Deputy Director of NIMH. This goal will be achieved by striving to fund a range of projects such that, across all NIMH-funded research, there is diversity in the scientific workforce, study participants, subject matter, and timeframes. Elaborating on diverse timeframes, Dr. Gordon highlighted work on increasing suicide screening as meeting short-term goals, auditory thalamocortical disruption in mice that could lead to advances in understanding human genetic predisposition for psychosis as meeting medium-term goals, and large datasets with multiple layers of analysis and advanced computational modeling (as in recent research on connectivity biomarkers and subtypes of depression) as meeting long-term goals.

Regarding diversity in the scientific workforce, the discussion focused on the concern that mid-career researchers (i.e., those above age 45) are receiving less support from NIMH under current funding practices due to being squeezed between programs specifically targeting young investigators and well-established researchers who have higher success rates due to long track records of funding. It was noted that there has been a particular struggle with helping investigators who benefitted from early career awards transition into funding during mid-career when they are competing with the more established researchers. When the NIMH representatives discussed the possibility of imposing a cap on the funding amount or number of grants a given researcher could receive from NIMH, it produced a forceful rebuke from attendees. The primary argument against this restriction centered on the fact that this could artificially hamper the advancement of quality research. It was also clear, however, that many institutions rely on large amounts of funding coming from a few researchers with many active grants, thus capping these individuals' funding was perceived as a risk to these institutions' financial stability. This back and forth mirrored the subsequent conflict that occurred in May 2017 when NIH did in fact attempt to institute a funding cap (to the equivalent of three R01s) in an effort to free up funding for mid-career investigators. After a swift and angry reaction, NIH abandoned the plan a month later, instead introducing a \$1.1 billion plan to increase the likelihood that mid-career researchers scoring in the top 25th percentile will have their projects be funded. The change is revenue-neutral, so well-established research

laboratories still stand to see a decrease in their overall funding, and thus may push back against this latest plan.

Finally, Dr. Cuthbert reviewed the NIMH implementation of the Research Domain Criteria (RDoC), which was further explored in a break-out session led by Uma Vaidyanathan, Ph.D., and Jenni Pacheco, Ph.D., Scientific Program Managers in the NIMH Research Domain Criteria Unit. These discussions emphasized NIMH's move away from the DSM/ICD diagnostic approaches toward a framework for studying psychopathology based on dimensions of observable behavior and neurobiological measures. Critiques of the DSM/ICD approach include heterogeneity within diagnoses, high rates of comorbidity between diagnoses, and the dimensional nature of nearly all psychopathology syndromes. The RDoC seeks to address these concerns by identifying fundamental components (e.g., emotion dysregulation, social withdrawal, language delay) that may underlie several disorders, quantifying the range of variation of these components, integrating levels of analysis (e.g., genetic, behavioral, environmental), and developing reliable measures of each fundamental component. Dr. Cuthbert's presentation included a statement that the RDoC Matrix, as outlined by NIMH (see <https://www.nimh.nih.gov/research-priorities/rdoc/constructs/rdoc-matrix.shtml>), is a malleable system that is always under construction. This was met with skepticism and disbelief by many in the audience who stated that their perception was that NIMH was limiting research on constructs that fall outside of RDoC and that they felt that NIMH was not receptive to feedback on proposed modifications. Dr. Cuthbert pushed back on these comments, assuring the audience that the RDoC functions more like an open-source document that is intended to be edited and re-edited by scientists in the field and it is therefore able to accommodate a wide range of research topics beyond those that are currently delineated in the RDoC Matrix.

Overall, I came away believing that Dr. Gordon is serious in his commitment to increasing receptiveness and funding to psychosocial intervention research, so long as grant applicants identify treatment targets within the RDoC Matrix and conform to an experimental therapeutics approach in their methodology. It appears that Dr. Gordon has perceived the low morale among many psychosocial intervention researchers due to recent trends at NIMH and he intends to change both the tone and



funding practices of NIMH to reengage these investigators. Thus, with an increasing budget, new announcements targeting psychosocial intervention research, and efforts to bring a more diverse group of scientists into the portfolio of NIMH research, there appear to be reasons for members of ABCT to feel more optimistic about the upcoming funding cycles at NIMH.

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## NEWS



## Spotlight on a Mentor • Dr. Gregory Stuart

The ABCT **Spotlight on a Mentor** program highlights accomplished mentors within ABCT's membership ranks. This article presents an interview with Dr. Gregory Stuart, our current spotlighted mentor. Dr. Stuart received his bachelor's degree from the University of Michigan and his doctorate in clinical psychology from Indiana University. He completed his internship at the Brown University Clinical Psychology Training Consortium and a postdoctoral fellowship at the Brown University Center for Alcohol and Addiction Studies. He is currently Arts and Sciences Excellence Professor and Sally and Alvin Beaman Professor at the University of Tennessee-Knoxville. He is an adjunct professor in the Department of Psychiatry and Human Behavior at the Alpert Medical School of Brown University, and he is the Director of Family Violence Research at Butler Hospital. His work includes over 300 publications (most of which are coauthored with students) and approximately 40 collaborative grants. Dr. Stuart's program of research has a particular emphasis on the role of substance misuse in intimate partner violence perpetration and victimization. His work has addressed a broad spectrum of factors that are relevant to the etiology, classification, assessment, prevention, maintenance, and treatment of intimate partner violence and addictive behaviors. His research on alcohol and intimate partner violence has been funded by the National Institutes of Health (NIH) since 2000. He previously served as the director of the Adult Psychopathology Track of the Brown University Clinical Psychology Training Consortium, and he was a Brown University internship rotation supervisor for 8 years. He has served as a mentor on postdoctoral training grants funded by the National Institute on Alcohol Abuse and Alcoholism, the National Institute on Drug Abuse, and the National Institute of Mental Health, as well as on NIH-funded F31 and F32 NRSA grants, a fellowship grant funded by the Canadian Institute of Health Research, and career development awards funded by the National Institutes of Health. Dr. Stuart is a licensed clinical psychologist who supervises graduate students conducting therapy at the University of Tennessee and he teaches an upper-level undergraduate seminar on intimate partner violence.

He also conducts group psychotherapy at a residential treatment facility for substance use disorders.

Many of the former trainees who nominated Dr. Stuart for the Spotlight on a Mentor recognition have continued to maintain active collaborations with him, illustrating the meaningful and far-reaching relationships Dr. Stuart establishes with his mentees. Dr. Jeff Temple, one of Dr. Stuart's former trainees, described Dr. Stuart's mentorship style this way: "He leads by example, is invested in and committed to his students' careers, and is great to be around. There is no one I would rather model my career after than Dr. Stuart. If I am half the researcher and mentor he is, I will be elated and effective."

Dr. Stuart is described by his nominators as gifted in his ability to strike an effective balance between encouraging his mentees' autonomy while also providing them with appropriate guidance and oversight. For example, Dr. Julianne Flanagan, one of Dr. Stuart's former mentees, commented, "Greg demonstrated confidence in me very early on, including times when my self-confidence faltered. I learned from him the most important lesson there is to learn in psychology training: that I was teachable, adaptive, and capable." Several nominations also spoke of Dr. Stuart's wonderful collegiality and the respect that he demonstrates for each of his trainees, catering his mentorship to each individual's professional goals. As former trainee Dr. Todd Moore stated, "...working with Greg means working with a wonderfully caring person who is genuinely invested in helping others achieve their goals."

In addition to Dr. Stuart's dedication to research mentorship, Dr. Moore commented on Dr. Stuart's skill as a clinical supervisor at Brown, stating that "the rotation [Dr. Stuart] supervised was typically rated as one of the most popular of over 20 rotations. He provides an excellent balance of positive reinforcement with constructive criticism, and he does both infusing empathy and appropriate humor to the difficulties inherent in conducting therapy. His feedback is tremendously concrete and easily incorporated into subsequent sessions, and he actively participates in role-playing exercises to demonstrate particular skills."

Dr. Stuart responded to questions from ABCT's Academic Training and Education Standards Committee about his experience



and goals as a mentor, as well as his mentorship philosophy and mentorship practices.

***For how long have you been a member of ABCT?***

I joined ABCT almost 25 years ago (when it was AABT). My first ABCT annual convention was in Boston in 1992, and I believe that I have attended ABCT every year since.

***For how long have you engaged in the type of mentoring that you engage in now?***

I started mentoring bachelor's-level research assistants and undergraduate students in 2000 when I became an assistant professor at Brown University. In 2001 I began mentoring postdoctoral fellows at Brown University, and in 2002 I started mentoring psychology interns when I assumed the role of coordinator of the Adult Psychopathology Track of the Brown University Clinical Psychology Training Consortium. In 2008, I joined the faculty at the University of Tennessee-Knoxville, where I began mentoring undergraduate and graduate students. Along the way, I also have had the privilege to mentor a cadre of incredibly talented junior faculty members.

***What type of mentor do you aspire to be? Do you have a mentorship philosophy?***

Mentoring undergraduate students, research assistants, graduate students, psychology interns, postdoctoral fellows, and junior faculty is an essential part of my core professional mission. My overarching mentoring philosophy encompasses a few primary objectives. First, I strive to teach mentees to think critically, as I believe that critical thinking can be transported to virtually every academic and nonacademic domain of our lives. I encourage my mentees to question assumptions and to seek alternative, parsimonious explanations. Second, I strive to teach students and mentees the importance of respecting all others. My goal is to treat students, trainees, mentees (and all others for that matter), as I would like myself and my family to be treated. I have found that this leads to great success in mentoring. Third, I strive to get my junior colleagues to believe in themselves. I believe in them—and I show it in every way that I can. I try to normalize the “imposter syndrome” that most all of us feel at some points in time. I also aspire to motivate my mentees to just try their best. When we do our best, we can be happy with the outcome, no matter what it is. Also, in my experience, the most effective mentoring

relationships are the ones that are the most interactive and bidirectional. This also affords me the wonderful opportunity to get to know and learn from my mentees, and to learn from them how to become a better mentor.

***What practices do you engage in that foster your mentorship style?***

One critical thing that I try to do is to thoroughly assess the career goals and aspirations of each mentee. I recognize that each mentee has her/his own unique skills and aspirations, and these skills and goals change over time. Thus, my mentorship of each mentee needs to be tailored to the individual. On the basis of their evolving goals, I make every effort to unite my mentees with the resources, connections, and opportunities that will maximize their success.

***What are your strengths as a mentor?***

I believe in my mentees. I am an optimist, and I have confidence that they will be able to achieve anything that they focus their attention on. I make every effort to take a positive approach in my interactions with them, which is generally consistent with my worldview. I also know my own limitations. If I cannot deliver something that meets the needs of my mentee(s), then I seek out resources and opportunities from others who carry that skill set.

***Whom do you perceive to be your most influential mentors? Describe the main lessons that you have learned from your mentors.***

I have/had many mentors! I have enormous gratitude for Amy Holtzworth-Munroe (my graduate school mentor), Timothy O'Farrell, Ken Leonard, Don Baucom, Deborah Welsh, Anthony Spirito, Richard Brown, Larry Price, and many others. They have taught me more lessons than I can articulate here, but they all made significant contributions to the kind of mentor I am today. My most important and influential mentor is my father, Richard Stuart. I credit (and blame) him as being largely responsible for who I am today. As a Past President of ABCT (from 1974-1975), my Dad was a big fan of Social Learning Theory. I am proud to say that he has been the best role model imaginable. He taught me how to be warm, positive, expressive, and kind; he showed me how to balance career with family; he loved me even when I made it challenging; and he inspired me to go into psychology and pursue my love of science, teaching, and mentoring.

***What do you tend to look for in potential mentees?***

Every mentee I have ever had is an incredible talent. It is my job to help each mentee elicit their best performance, typically using a positive, encouraging approach. The overwhelming majority of my mentees are smarter and more capable than I am, which makes my job pretty easy.

***What advice would you give to other professionals in your field who are starting out as mentors?***

First, I would tell other professionals that mentoring is an incredible gift and a rewarding experience. I would also want to help them recognize that they have likely achieved their career goals to date in large part from standing on the shoulders of their mentor(s). Providing positive mentoring experiences is an opportunity to pay it forward, while improving the quality of their mentees' lives and making positive contributions to the field.

***What do you enjoy doing for fun/relaxation?***

I enjoy watching University of Michigan football (my alma mater). I hesitate to admit this, but I have been known to play hooky from the annual ABCT convention on Saturdays to watch Michigan football with my friends and mentees. I always cross my fingers when the schedule comes out in hopes that our ABCT presentations will not conflict with the football game. I'm also a runner. When ABCT was in Philadelphia, I ran the Philadelphia marathon and some of my graduate students ran the half marathon. This year, I ran the Knoxville marathon and all of my awesome graduate students either ran the full or the half marathon. It's been a nice lab bonding experience.

**Spotlight on a Mentor** interviews are presented by ABCT's Academic Training and Education Standards Committee with editing by Helen Z. MacDonald. If you are interested in learning more about Dr. Coffey's work as a mentor, to learn about other exceptional ABCT mentors, or to add your mentorship profile to the ABCT Mentorship Directory, please visit [www.abct.org/mentorship/](http://www.abct.org/mentorship/).

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## Updates From the Sexual and Gender Minority Special Interest Group

Brian A. Feinstein and Michael E. Newcomb, *Northwestern University Feinberg School of Medicine and Northwestern University Institute for Sexual and Gender Minority Health and Wellbeing*

Jae A. Puckett, *University of South Dakota*

THE PAST YEAR has been an exciting time for the Sexual and Gender Minority (SGM) Special Interest Group (SIG), formerly known as the Study of Gay, Lesbian, Bisexual, and Transgender Issues SIG. First, we changed our name to the SGM SIG to be more inclusive of the diverse range of sexual minority (e.g., gay, lesbian, bisexual, pansexual, queer) and gender minority (e.g., transgender, genderqueer, nonbinary) individuals in our community. This change is consistent with terminology used by prominent organizations, such as the National Institutes of Health (NIH). For those who are unfamiliar with the SGM SIG, we provide opportunities for networking, collaboration, and mentorship for researchers and clinicians interested in the application of cognitive and behavioral

principles to understanding and improving SGM health.

Second, Dr. Jae Puckett (pronouns: they/them) was elected as the incoming co-chair. Dr. Puckett is an Assistant Professor of Clinical Psychology at the University of South Dakota, where they teach undergraduate/graduate courses and supervise doctoral students in clinical work. Dr. Puckett graduated from the University of Massachusetts Boston in 2014 after completing their internship as part of the first cohort in the LGBTQ Health track at Northwestern University's Institute for Sexual and Gender Minority Health and Wellbeing (ISGMH) and the Center on Halsted. They also completed their postdoctoral fellowship at ISGMH and were awarded a grant from the NIH to study the

social and psychological mechanisms through which stigma impacts the lives of transgender and gender diverse individuals. Their program of research examines concerns that disproportionately impact SGM individuals, including mental health issues, substance use, and HIV, with an emphasis on transgender and gender diverse communities.

The SGM SIG continues to grow and thrive, and we are excited for all of the SGM representation throughout the program for the upcoming convention. We are particularly excited to see increased attention to diverse communities within the SGM population, including transgender/gender diverse and bisexual/nonmonosexual individuals. In the upcoming year, we plan to continue to create opportunities for networking, collaboration, and mentorship in an effort to bridge research and clinical practice with SGM individuals. To learn more or to join the SGM SIG, please contact co-chair, Dr. Brian Feinstein, at [brian.feinstein@northwestern.edu](mailto:brian.feinstein@northwestern.edu).

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**K. Ong, Ph.D.**

## CBT and Its Discontents

### • PART TWO •

Jonathan Hoffman, *Neurobehavioral Institute*

Dean McKay, *Fordham University*

#### Two Weeks Ago

Not knowing whether to laugh or cry, Dr. Ong made his way to the coast after his presentation ended, well, let's say "abruptly." He placed his belongings, including monocle and rep tie, into a designer-labeled waterproof rucksack tied to one of his legs, and strode into the surf. Striking out to sea toward his Island home, he thought, "This is just what the doctor ordered." He'd often found distance swimming therapeutic. He thought back to before the CBT conference, trying to put what happened there into perspective.

#### Dr. Ong's Conference Submission

Ong had decided to attend his first CBT conference in-person (in-gorilla?) when he experienced a mid-life crisis, or its nearest approximation for an immortal. He immediately started working on an abstract. He never considered simply attending; in fact, his learning history would show that this thought couldn't occur to him. Also, not on his radar: The problems inherent in his utter lack of preparedness for giving a solo presentation at a gathering of revered CBT theoreticians (really, what other kind of CBT ideologue is there?) given his unique educational and training background.<sup>1</sup>

Throughout history, wanton disruption of the status quo was highly correlated with Ong's public appearances. From Ong's point of view, however, none of this calamity was his fault. To the contrary, it

was entirely due to others' limitations and lack of vision. Could he help it if he was the biggest and smartest deal-maker? Even in the rare instances when his dominance was challenged, such as by his only semi-worthy competitor, a supersized fire-breathing atomically-enhanced lizard who came ashore from time to time,<sup>2</sup> the worst that ever happened was a very temporary setback which he quickly turned to his advantage. Since he always prevailed and was never subject to any discouraging long-term contingencies, his confidence was absolute. Simply put, he was too big to fail.

Hence, it was entirely in character for him to assume that his submission to the CBT conference would be accepted, and that his presentation would be a HUGE triumph. The only thing about it he didn't like was the word "submission." "Yech," he thought. With bile coming up in his massive throat, he vowed to repeal and replace this terminology if he had the chance.

#### Dr. Ong's Abstract

##### *Origins of CBT in Parts Unknown*

K. Ong, PRIVATE PRACTICE

It's said, "there's nothing new under the sun." CBT is no exception. For example, commanders in the Roman Republic utilized exposure-based methodologies for training legionnaires for battle. They did this by presenting them with horrific and

inescapable gore, and not the imaginal kind, made more salient due to the then current practice of decimation.<sup>3</sup> Granted this intervention did not require informed consent; and the desired outcomes—maximizing mayhem and casualties—were not the same as in contemporary protocols. However, the theory and practice applications of these ancient "clinical practitioners" remain coherent to us modern ones, once contextualized. This is well known. However, what is not well known is that CBT has roots in geographical areas that were not integrated into Western civilization, or Eastern for that matter. Certainly, the very use of the word "civilization" in exploring and valuing CBT's antecedents is suspect!

This presentation aims to rectify this exclusionary gap in the history of CBT and recognize the contribution of "non-civilized" regions in its evolution, as it were. Hence, CBT-relevant mental healthcare traditions in one such locale will be explicated in both an historical and cultural framework; specifically, the Island where the presenter serves as its one licensed, CBT-oriented psychologist. The available literature and data record will be discussed, and audience questions will be encouraged. Attendees will be so edified that they'll get tired of erudition. It will be terrific!!

Even considering how the presentation had unfolded, Dr. Ong couldn't help but remain impressed with his abstract, especially given the onerous character limit of the portal. He whispered to himself, "genius!" He also decided that his audience must have been infiltrated by dissenters, likely "cognitivists"; no other explanation for why he hadn't gotten a standing "O" was conceivable. Butterflying just to break up the monotony, his recollections now turned to his initial reception at the conference, beginning with the reaction to the abstract itself.

Not only had his abstract been accepted, the conference organizers were so thrilled to have a speaker from his hitherto unknown Island that they offered him a partial scholarship to defray the attendance fee. Ong was mortified by this false presumption about his financial state; he was wealthy beyond imagination. But since he had decided to be on good behavior and liked a bargain, he stayed quiet. Now that it was over, Dr. Ong couldn't believe he had agreed to do all that work for the conference without pay, and incur travel and other expenses besides. He took some con-

<sup>1</sup> As explicated in Part One.

<sup>2</sup> Interestingly, this noted reptilian had also dabbled in clinical psychology, specializing in urban trauma. He ultimately was drummed out of the profession for violating the PILL (Pacific Island Large Lizard) ethics standards by soliciting clients who were victims of the very same metropolitan mayhem he had caused.

<sup>3</sup> Cohorts of Roman soldiers were divided into groups of ten for a lottery, the "winner" was slaughtered by his nine former best friends; no need for Motivational Interviewing in that paradigm!



solation that his talk was highlighted in the conference literature, extolling its diversity, both in topic and presenter.

### Arrival at the CBT Conference

The expressions on the faces of the other attendees when he showed up at the conference site were hilarious. If he hadn't been trying to make a good first impression he might have punked them by running amok.

Instead, he leaned over and offered his business card, which compared to the size of his hand must have looked as if he was proffering an ant. Dr. Ong stood very still, and eventually one of his colleagues mustered up the courage to take it. It was a Past President of ABCT, a squad known for their extreme ability to accept dissonant stimuli. Well, once it became evident that he was a presenter, the air cleared, which was good because not a few of the less courageous CBTers had experienced involuntary somatic responses to his charismatic aura.

But when Ong went to register, there was a problem that despite its obviousness he hadn't anticipated. It was his extreme size. The very notion that he could fit into even the largest venues within the conference center was an absurdity. Suddenly, his body image issues flooded him. Although he hid it well, he identified he was having a panic attack. But he wasn't going to let social anxiety stop him at this point.

Remembering his Barlow, Ong reminded himself, "It's just a false alarm," and he lightened up the situation with a witty comment. He said, riffing on a favorite Muhammadian quote, "If Dr. Ong can't go to the conference, then the conference must go to Dr. Ong." This immediately put everyone at ease, and plans for facilitating his stay and presentation were rapidly assembled, truly illustrating CBT's inclusiveness. Arrangements were made for Dr. Ong to follow the conference program via a drive-in-movie-sized screen that was jury-rigged in the parking lot. This area did double duty as his sleeping quarters. He was on his own, however, when it came to taking care of his natural functions and obtaining food, and though he tried his best to avoid animal protein, he did slip up now and again, perhaps the less said about

that, the better. (He had mixed feelings about many of his colleagues throwing bananas at him in the parking lot, but decided not to react to being stereotyped, and just see it as generosity, albeit misconceived).

### Dr. Ong's Presentation

It had all started off well enough. It seemed that everyone at the conference wanted to hear him speak. Though originally scheduled for a mid-sized salon, his presentation was moved to a large meadow in a nearby park. Still, it was standing room only. Ong cleared his throat, and commenced. He couldn't wait to tell the audience that the data he was presenting were not retrospective, but observational; he had personally witnessed some of the inflection points in history that culminated in modern CBT, and on his Island, no less (no doubt disseminated to distant shores over the centuries by intrepid travelers). He was especially excited to tell them that the holes found in ancient skulls, contrary to the textbooks, were designed to allow healing thoughts from primordial clinical practitioners in, not let demons out. Yes, trephining was a precursor of positive psychology! As a side note, he mentioned that his Island's original name was "Numbskull Island" and that its abbreviation obscures the indigenous populations' pioneering use of local herbs as anesthetics for cranium-drilling. Dr. Ong mentioned that he would spearhead a referendum to restore the traditional name of his Island when he returned home.

However, Dr. Ong had barely begun his talk when a few of the attendees raised their hands. Dr. Ong said, "I'm happy to entertain questions, but kindly wait until the formal part of my presentation is completed; I promise to not only leave ample time, but to stay afterwards if needed." He then tried to continue . . .

But not a moment had passed before an audience member shouted out, "Weren't you the one that snatched that girl in Manhattan back in, oh I dunno, the 1930's?" Before he could reply, another one yelled, "Tell us about why you attacked that poor giant moth . . . what did it ever do to you? Do you know that was the last of its species?"<sup>4</sup> Yet another asked, "Didn't you

extort the impoverished villagers on your Island for years, demanding human sacrifices in exchange for not sacking their homes?" And finally, the coup de grâce, "Aren't you just a monster in scientist-practitioner clothing? Where did you get your training and license anyway?"

At first, Dr. Ong attempted to keep his composure and asked the audience to settle down and give him a chance to explain. But they wouldn't. The accusations kept flying. All he could do was to intone "fake news" after each one. But nothing helped, and instead the crowd chanted back "alternative facts!" Finally, Dr. Ong decided he'd had enough. "They want a reaction, I'll show them one they'll never forget," he thought.

Ong put his monocle away, and loosened his rep tie . . . and began to roar and wreak havoc as only he could. The audience, quickly deciding that "I-statements" would be futile in dealing with this level of aggression, ran for their lives.

### Ong's Return to His Island

Dr. Ong walked ashore with a sense of clarity that he had not experienced since his interest in psychology had begun. Indeed, as he'd expected, the swim across the globe had been restorative. He'd truly been disheartened about how his foray to the CBT conference turned out, but working it through had brightened his mood immeasurably. Now he had a sense of humor about it, even at his own expense, which was the psychologically healthy approach, in his professional opinion. "Cognitive restructuring is awesome," he thought. He'd had a moment when he thought he might need to do some insight-oriented work on why his ego had demanded he be a presenter, and why he had blocked out the reality of how his size and lack of familiarity with organized psychology might be obstacles at the conference; indeed, what was the "real" reason he had become a psychologist? Then he concluded, as any bona fide CBTer would, "Nah."

Clinical Psychologist was just one of the numerous careers that Ong had attempted in time immemorial. For instance, in the ancient world he had claimed the title of "biggest real estate developer"; some of his work, advertised of course as "the best ever," is still standing (this was only one of many sources of his objectively high net worth; a figure he habitually exaggerated nonetheless). Ong was particularly proud of his largest pyramid project, though it

<sup>4</sup> How unfair! This overgrown moth was an old friend who enjoyed pretend fighting with Ong in proximity of highly populated human areas. (Granted, sometimes they had done this on a fee-for-service basis to drum up business for a giant reptile psychologist, but this ended when said clinician lost his license to practice.)



had ended in controversy when the workers claimed that he hadn't paid them and walked off the job without notice (that's when Ong first came up with the phrase "Fake News").

It would have been easy for Ong just to find something else to do, but he truly liked being a CBT-oriented psychologist. And, he thought, "Let's face it, it's not like anyone is going to question my credentials or licensure." His presentation interruptus had also sparked an epiphany regarding how to improve the efficacy of his CBT interventions but enjoy his work more, one inspired by those old Romans: From now on he'd be TELLING not ASKING his patients to make changes, and there would be consequences for being refractory, not decimation certainly, but he'd come up with a contingency befitting these times. Third Wave, pshaw, he'd be a Fourth Wave gang of one. He was ready to move forward practicing CBT in an ego-syntonic way. Now that made him laugh!

The CBT conference also made him realize he needed to raise his profile so that hecklers would think twice before they dared to confront him in the future. And to heck with his heart-healthy diet! He could almost taste the juicy pterodactyl meat in his maw. For the sake of his public image,

he'd stick with not knocking over trees, for now.

### Present Time

The one concern Ong had after the CBT conference was whether it would affect his practice negatively; but it was just the opposite. And given the coverage his presentation had received, his secret identity was out of the bag to his patients . . . and they loved it, and were amazingly supportive. They just wanted him to be himself. "Let Ong be Ong," it was said. Best of all, he could now do telepsychology—his patients wouldn't have it any other way. His body image had never been better; his putative "mid-life crisis" was over, and his new "no choice, just change" methodology was incredibly effective.

Yet, by nature Dr. Ong was forward looking and restless. And there was another problem that irked him: his local "reputational issues" were still hampering the growth of his "in-person" practice. What ever happened to "forgive and forget?" Ong thought, not that he'd ever applied this philosophy toward himself.

Ong suddenly had another idea: The Internet had made the world smaller, and even those from remote places such as his

Island could compete in the worldwide media marketplace. He'd always wanted to be a "YouTuber."

The idea was that he would get the fearsome prehistoric creatures on his Island to compete for a chance to be his sidekick. Hmm, "What would be a good title?", he wondered. "Got it! I'll call my destined-to-be-a-hit show 'Monster Apprentice.' Then he thought of a great tag line for when he eliminated (literally) a contestant in each episode—"You're food!"

As he finished off his pterodactyl hoagie, Dr. Ong thought, "Who knows what career this could lead to next? Sky's the limit!"

. . .

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