Integrating dimensional assessment and categorical diagnosis in DSM-5: The benefits and challenges of the paradigm shift for the anxiety disorders

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Integrating dimensional assessment and categorical diagnosis in *DSM-5*: The benefits and challenges of the paradigm shift for the anxiety disorders

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Abstract

With DSM-5, the American Psychiatric Association (APA) strongly encourages clinicians and researchers to supplement traditional categorical diagnoses with dimensional ratings of severity. To that end, several scales have been created for or adopted by the APA that are brief, psychometrically sound, and easily accessible. Despite these scales' inclusion in the text and online, awareness of them remains low one year after DSM-5's publication. In the present paper, we review the APA's guidelines for dimensional assessment and examine several issues relevant to dimensional assessment including: persuading clinicians of the utility of dimensional assessment, raising awareness of the scales, establishing guidelines for interpretation, incorporating data from multiple informants, assessment across diverse groups, and the risks and benefits of scales accessible to the general public. These issues will be illustrated through the example of the anxiety disorders, due to the fact that this diagnostic category has made significant progress with regard to dimensional classification.

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Introduction

The introduction of the 3rd edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-III;American Psychiatric Assosiation [APA], 1980) dramatically changed the way in which mental disorders were conceptualized. The manual provided clear and consistent definitions and explicit diagnostic criteria that greatly enhanced both the reliability of diagnoses and the communication of research findings. In the three decades that have followed DSM-III's publication, knowledge of nearly every aspect of psychopathology has grown considerably and has called into question the validity and utility of certain aspects of DSM's approach to measuring psychopathology.

Few aspects have received as much attention in the literature as DSM's exclusive reliance on categorical diagnoses, which persisted with the fourth edition (DSM-IV; APA, 1994). Such a system essentially defines an individual as either having a given disorder or not having a given disorder. This approach is convenient for clinical decision-making, but does not incorporate the large body of research that suggests that in addition to being viewed in terms of its presence or absence, psychopathology can be conceptualized dimensionally and that there are many benefits to considering psychopathology in these terms (see Kraemer, 2007 for a review).

The need to incorporate dimensional assessment of psychopathology was recognized many years ago by the DSM-5 Taskforce. In 2007, the Taskforce assembled a meeting in which experts in the field discussed the addition of dimensional approaches to diagnostic classification. The conclusion of this meeting was: "The time to include dimensional diagnosis is now   not only because the arguments for doing so are so strong but also to begin to prepare for the possible inclusion of genetic, imaging, biochemical, or other signals into future diagnostic systems" (Kraemer, 2007). It was agreed that dimensional classification would not replace categorical diagnoses but would supplement them. Citing the ubiquity of dimensional self-report measures in clinical and research settings it was emphasized, "The suggested changes [would] simply add consistency to what most clinicians already do on their own" (Helzer, Wittchen, Krueger, & Kraemer, 2007, p. 126).

When it was published in 2013, DSM-5 (APA, 2013) maintained the emphasis on binary diagnoses but provided guidelines for dimensional assessment in Section III: Emerging Measures and Models. This section includes a chapter titled "Assessment Measures", which emphasizes a dimensional approach "depending primarily on an individual's subjective reports of symptom experiences along with the clinician's interpretation" (p. 733). The first type of measure described is 'cross-cutting' measures, which assess symptoms that cross diagnostic categories. There are two levels of cross-cutting measures. Level 1 measures briefly assess 13 symptom domains for adults and 12 symptom domains for adolescents and children (for adults and children/adolescents: depression, anger, mania, anxiety, somatic symptoms, suicidal ideation, psychosis, sleep problems, repetitive thoughts and behaviors,

substance use; for adults only: dissociation, personality functioning, substance use; for children/adolescents only: inattention, irritability). Level 2 measures provide a more detailed assessment of symptom domains in Level 1 and are designed to be administered if an individual exceeds a certain score on the Level 1 measures. The Level 1 measures are included in the manual text and the Level 2 measures are available online (www.psychiatry.org/dsm5). Clear guidelines for scoring and interpretation are provided.

Although the Level 2 measures are exceedingly useful in providing severity ratings for symptoms that cut across disorders, they do not provide severity ratings for particular disorders. Thus, brief self-report measures that correspond closely to the DSM-5 diagnostic criteria for each major disorder are recommended for widespread use by the APA and available online. These measures are intended to be used once a specific diagnosis has been assigned. In some cases, existing measures that were sufficiently brief and accurately reflected DSM-5 diagnoses were adopted for use (e.g., the 9-item version of the Patient Health Questionnaire (PHQ-9) to assess Major Depressive Disorder, Kroenke, Spitzer, & Williams, 2001). In most cases, however, no such measure existed and new measures were created by DSM-5 work group members and field tested prior to the manual's publication. Currently, several disorder specific scales are available online and additional scales are continuing to emerge. These scales are the primary focus of the present paper.

The final assessment measure described in DSM-5 is the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0, World Health Organization, 2004). This is a 36-item measure that assesses disability in adults over the past 30 days. The WHODAS 2.0 is a replacement for the Global Assessment of Functioning (GAF) score, which was not included in DSM-5 due to the lack of validity and reliability (e.g., Soderberg, Tungstrom, & Armelius, 2005, Vatnaland et al., 2007. Benefits of the WHODAS 2.0 include established psychometric properties, distinct domain scores, and widely available population norms. This measure is cross-cutting in nature as well, as it is not tied to a particular diagnosis but rather reflects the overall functioning of the individual.

It is clear that with DSM-5, the American Psychiatric Association has made a strong statement about the importance of dimensional assessment and has begun to lay the groundwork for future iterations of the DSM that emphasize a more dimensional approach to diagnosis. However, several questions remain and several issues likely need to be resolved for adoption of this approach to become widespread. The purpose of this review is to critically examine issues relevant to dimensional assessment, including 1) persuading clinicians that a binary diagnostic system can be strengthened by the addition of dimensional measures, 2) raising awareness of the availability and validity of dimensional assessment measures, 3) establishing guidelines for interpretation of the measures, 4) establishing the optimal way to incorporate ratings of multiple informants into a single dimensional rating, 5) variations in dimensional measures across developmental periods, cultures, and genders, 6) exploring the risks and benefits of dimensional scales open for use by the general public, and 7) ensuring consistency between the DSM-5 system for dimensional assessment and emerging research initiatives, such as the National Institute of Mental Health's Research Domain Criteria (RDoc). These issues will be examined primarily using examples from the anxiety disorders, due to the fact that this diagnostic category has made significant progress with regard to dimensional classification, but still lacks clear recommendations for severity rating in DSM-5. The category thus provides strong examples of the benefits and challenges of the paradigm shift.

The Limitations of the Categorical System and the Need for Dimensional Assessment

The benefits of dimensional diagnosis over traditional binary diagnosis are widely recognized. Dimensional assessments can provide information about disorder severity, subclinical presentations of disorders, and change in symptoms over time (through repeated assessment), none of which are captured by the currently emphasized categorical diagnostic system. There are multiple dimensions upon which an individual with a given diagnosis may vary, including but not limited to: the number of symptoms experienced, the intensity and duration of those symptoms, and the amount of interference these symptoms cause the individual (e.g., Kessler, 2002; Krueger, Watson, & Barlow, 2005). Researchers and clinicians alike have long recognized the benefits of dimensional assessment, which is reflected by the scales that they use to assess psychopathology in clinical and research

settings. Nearly all of these measures are dimensional in nature. In addition to capturing more of the substantial heterogeneity that exists within diagnostic categories, dimensional assessments can be made of symptoms that cut across multiple diagnoses (e.g., sleep difficulty, anger and irritability), making clearer the full presentation of symptoms within an individual and perhaps clarifying certain aspects of diagnostic comorbidity.

Despite the benefits of dimensional assessment and their increasing ubiquity and brevity, several barriers (both real and perceived) exist that have prevented widespread adoption of this practice. A study by Jensen-Doss and Hawley (2010) asked 1,442 clinicians across multiple disciplines to provide ratings of multiple standardized assessment tools with respect to the following domains – the psychometric qualities of the tools, their benefit over clinical judgment alone, and their practicality. Results suggested that many clinicians, particularly non-psychologists, did not value the tools' psychometric properties, did not believe that they provided important information beyond that gleaned from clinical judgment, and found them to be impractical to implement. Notably, the factor that most strongly predicted whether the clinician actually used such measures was perceived practicality. The emphasis on whether administering such measures is practical makes sense given the fact that medical and mental health care providers are increasingly overworked and susceptible to burn out (e.g., Morse, Salyers, Rollins, Monroe-Devita, & Pfahler, 2012). However, the fact remains that non-psychologists, who provide the majority of mental health care services in the U.S., appear to be ill-informed about the data showing that standardized assessment tools are valid, reliable, and provide useful clinical information.

Raising Awareness of the Cross-Cutting and Disorder-Specific Severity Measures

One year following the publication of DSM-5, awareness of the new edition's emphasis on dimensional assessment and included measures appears to be much lower than that of other aspects – such as the inclusion of new diagnoses and the revised criteria and recategorization of retained diagnoses. Increased awareness of the dimensional measures by researchers and clinicians is essential to evaluate their validity and utility. In the case of the anxiety disorders, the new measures not only provide a standardized method for dimensional assessment but also offer means for improving the efficiency of administration and communication. The DSM-5 Anxiety, Obsessive-Compulsive Spectrum, Posttraumatic, and Dissociative Disorders Work Group developed new dimensional measures for the anxiety disorders that shared a common template and concisely yet comprehensively assessed anxiety severity. Choosing among the hundreds of existing measures is a difficult task due to the lack of consensus on a "gold standard" measure for each anxiety disorder. Further complicating matters is the fact that even among the most strongly validated and widely administered scales, there is substantial heterogeneity in format and content. For example: some scales are linked to diagnostic criteria (e.g., GAD-7, Spitzer, Kroenke, Williams, & Lowe, 2006) and others are not; some are solely focused on beliefs (e.g., Anxiety Sensitivity Index, Peterson & Heilbronner, 1987); some are focused primarily on behaviors (e.g., Mobility Inventory for Agoraphobia, Chambless, Caputo, & Jasin, 1985); and some are focused mainly on physical and cognitive symptoms (e.g., Beck Anxiety Inventory, Beck, Epstein, Brown, & Steer, 1988). Additionally, many of the existing measures are prohibitively long for use in most clinical settings and/or are not available in the public domain and/or cost money, thus limiting access for many clinicians.

The DSM scales feature a common template that assess both anxiety, a future-oriented mood state associated with preparation for possible upcoming negative events, and fear, an alarm response to present or imminent danger regardless of whether it is real or perceived (e.g., Barlow, 1988; Craske, et al., 2009). Anxiety and fear in turn are comprised of response components, characterized as subjective-verbal, physiological, and behavioral (Lang, 1971). As such, the DSM dimensional scales measure the 'units of analysis' of underlying constructs of fear and anxiety that are shared across the anxiety disorders. Each scale is assessed in a ten-item template that was developed by the anxiety disorders work group preparing the DSM-5. The ten items concern the following areas, relevant to all anxiety disorders: 1) fear; 2) anxiety; 3) beliefs; 4) physiology; 5) restlessness/difficulty relaxing; 6) avoiding places; 7) leaving places; 8) preparing; 9) avoiding thoughts; 10) needing help. The scales are made unique to each anxiety disorder through the use of different introductory statements and reference points throughout the items. Dimensional scales were developed for Panic Disorder (PD-D), Specific Phobia (SP-D), Social Anxiety Disorder (SAD-D), Agoraphobia (AG-D), and Generalized Anxiety Disorder (GAD-D). Later, a scale

for Separation Anxiety Disorder (SEAD-D) was also developed, as Separation Anxiety Disorder was included in the anxiety disorder chapter in DSM-5 (see Bögels, Knappe, & Clark, 2013, for a review about adult separation anxiety disorder). A detailed description of the development of these scales can be found elsewhere (adult versions: LeBeau et al., 2012; child- and parent versions: Möller, Majdandzic, Craske, & Bögels, 2014). In the appendix, the adult, child, and parent versions of the separation anxiety disorder dimensional scale are provided as an example.

A series of investigations have demonstrated strong psychometric properties for these scales, including internal consistency, convergent and discriminant validity, test-retest reliability, sensitivity to clinical severity, and sensitivity to change (LeBeau et al., 2012, Beesdo-Baum et al., 2012, Knappe et al., 2013a, Knappe et al., 2013b). These psychometric properties were consistently observed across clinical and non-clinical samples in the U.S. and Germany. However, it should be noted that the psychometric properties for SP-D were substantially weaker than for the other scales. There are several plausible explanations for this, including the fact that specific phobia is actually a group of disorders and thus is likely to have substantial heterogeneity. Regardless, SP-D is particularly in need of further evaluation.

The dimensional anxiety scales have also been adapted for use with children as young as 8 years old, for the children themselves and for parent-report about their children. Preliminary research suggests strong psychometric properties for these scales as well in a non-clinical Dutch sample (Möller et al., 2014). However, when assessing anxiety in children unique considerations need to be taken into account, such as incorporating ratings from multiple informants and developmentally normative fear and anxiety. These issues are discussed in detail in later sections.

The adult and child anxiety disorder dimensional scales have the potential to improve upon the current system by increased utility and enhanced communication. In terms of utility, the ability to print out the complete measures from an open access website means that most clinicians should have easy access to the measures and the one-page, 10-item format and simple scoring rubric is unlikely to be seen as a substantial burden for patients or clinicians. Widespread adoption of these scales also has the potential to significantly enhance communication between mental health professionals. This can occur in two ways. First, when clinicians and/or researchers are using the same set of scales, scores found in chart reviews and empirical studies are far more easily interpreted than when the scales used to assess severity assess different symptom domains and have different cutoff scores. Second, the fact that the scales for different anxiety disorders are consistent in the components of anxiety they are assessing, as well as in their length and scoring, will likely result in an improved ability to delineate certain aspects of comorbidity (e.g., which anxiety disorder is principal, which symptoms cut across diagnoses).

A great deal more research is needed on these relatively new scales the results support their use in research and clinical settings. Major areas of future research for these scales include establishing clinical cutoff scores and establishing guidelines for synthesizing scores on these measures with clinical interview data and other clinical data to generate a valid and reliable severity classification. The latter issue is discussed in detail in the following section.

Establishing Guidelines for Interpretation of the Measures

The DSM-5 took a large step forward regarding dimensional assessment by creating or adopting brief, well-validated, and easily accessible scales and recommending them for widespread use. This decision provides guidelines for researchers and practitioners and (if adopted) may significantly enhance communication among the field. However, there is still work to be done in terms of establishing guidelines for how to interpret scores on the measures and use them to determine the severity of a given disorder presentation.

The DSM-5 includes guidelines for severity specifiers (mild/moderate/severe), for several groups of disorders. Such specifiers are a form of dimensional measurement in and of themselves and provide a straightforward method for integrating categorical diagnoses with dimensional assessment. These markers can be helpful for research, prevention, clinical, and policy purposes. With respect to research, comparison of results from randomized clinical trials (RCTs) is impeded by differing severity of patient samples across trials. RCTs that recruit individuals who meet diagnostic criteria for a certain disorder through advertisement of university-based treatment are likely to recruit less severe samples than RCTs that recruit individuals who meet diagnostic criteria for the same disorder, but who were referred to community mental health care. Severity differences may explain some of the

inconsistencies observed across trials. Furthermore, results found in trials of mild severity disorders may not generalize to severe forms of the disorder, and vice versa. For example, the somewhat positive effects of psychotropic drugs in children with autism proved to be the opposite for the (much larger) group of children with milder forms of autism, who respond better to placebo medication (King et al., 2013). Not only researchers and clinicians, but also policy makers will use these severity markers to inform decisions about which severity level is necessary in order to receive treatment that is covered by health insurance companies.

Many disorder groups in DSM-5 have guidelines for determining severity specifiers, but the guidelines differ across disorder groups in terms of the domains focused on (e.g., number of symptoms, intensity of symptoms, functional impairment) as well as the degree of guidance given in determining the appropriate specifier. For some disorder groups, very specific guidelines are given. For the substance use disorders, the designations are determined by how many symptoms are present (2-3 symptoms = mild, 4-5 symptoms = moderate, 6 or more symptoms = severe). To generate this specifier, going through all of the symptoms in a clinical interview is all that is required. Schizophrenia spectrum disorder severity is determined by "a quantitative assessment of the primary symptoms of psychosis," which is based on data from the Clinician-Rated Dimensions of Psychosis Symptom Severity. For intellectual disabilities very detailed guidelines are provided in the text to help practitioners determine whether the disability is mild, moderate, severe or profound. The same is true for autism spectrum disorders specifiers, which signify whether the affected individual "requires support," "requires substantial support," or "requires very substantial support."

For many other disorder groups, DSM-5 provides general guidelines for dimensional assessment but gives the practitioner more flexibility in determining the specifier. For bipolar and depressive disorders, the manual guides raters to make the severity designation based on a combination of number of symptoms present in excess of the minimum requirement for diagnosis as well as the intensity of symptoms and the functional impairment. Presumably, the clinical interview, self-report dimensional measure, and the WHODAS 2.0 should be integrated to most accurately determine the specifiers. The severity of somatic symptom disorder is determined by the number of somatic complaints present and the number of symptoms endorsed in Criterion B (excessive thoughts, feelings or behaviors related to the somatic symptoms of associated health concerns). Conduct disorder severity is determined by a combination of number of symptoms met in excess of the minimum required to meet criteria for diagnosis and the amount of harm caused by the behaviors. Oppositional defiant disorder severity is determined by the number of settings the behavior is present in (mild = one setting, moderate = two settings, severe = three or more settings).

The DSM-5 anxiety disorders do not include specifiers of severity. Currently, the gold standard in determining anxiety disorder severity is the Anxiety Disorder Interview Schedule (ADIS, adult version: Brown, DiNardo, & Barlow, 2004; child version: Silverman & Nelles, 1996), a widely used semi-structured interview. The interview assesses each DSM criteria for each disorder and provides guidelines for assessors to determine a dimensional severity rating on a 0-8 scale based on symptom severity, distress, and impairment. Although it has been exceedingly useful in research, the interview is quite labor intensive (both in terms of training and length of administration), which prevents it from being used more widely in clinical settings.

As is evident from the heterogeneity in severity specification described above, there are many options for how severity specifiers could be determined for the anxiety disorders using the newly developed scales. One option is to use the methodology established for bipolar and depressive disorders; that is rating severity determined by the clinician based on a combination of number of symptoms present in excess of the minimum requirement for diagnosis as well as the intensity of symptoms and the functional impairment. Another option would be to determine diagnosis from the clinical interview and use the dimensional self-report measure to determine severity. This option may be complicated by the presence of patients who tend to over- or under-report symptoms. One option for dealing with inaccurate self-report is provided in the guidelines of the WHODAS 2.0, which allows the clinician to make a "corrected score" for individual items based on clinical judgment.

Future research needs to be conducted in order to come up with severity markers for the anxiety disorders that are valid and reliable, while also being simple and practical. A key step in this process is further research on the dimensional anxiety scales, particularly with regard to cutoff scores that reliably correspond to levels of severity and impairment

Incorporating Multiple Informants into a Single Rating

In the last section, we reviewed the challenges posed by trying to create a single severity designation when there are multiple dimensions across which an individual's disorder presentation varies. Matters are further complicated when these multiple dimensions are assessed by multiple informants. When assessing children's psychopathology, data are usually gathered from multiple informants (Hudziak, Achenbach, Althoff, & Pine, 2007; Jensen et al., 1999). This approach is believed to yield the most complete diagnostic picture (Ollendick & Hersen, 1993), as each informant can provide uniquely valuable information about the child's problems (Hudziak et al., 2007). However, informants often disagree with each other (see meta-analyses by Achenbach, McConaughy, & Howell, 1987 and Duhig, Renk, Epstein, & Phares, 2000). In the domain of child anxiety, parent and child reports are usually discrepant (e.g., Benjamin, Beidas, Comer, Puliafico, & Kendall, 2011; Comer & Kendall, 2004), mother-father agreement is often only moderate (e.g., Engel, Rodrigue, & Geffken, 1994; Moreno, Silverman, Saavedra, & Phares, 2008), and parents and teachers rarely agree (Hinshaw, Han, Erhardt, & Huber, 1992; Van der Ende, Verhulst, & Tiemeier, 2012, Verhulst & Van der Ende, 1992). Aside from measurement error, observation in different contexts in which the anxiety may or may not become manifest can explain parent-teacher discrepancies, that anxiety is "internal" and is not always expressed by children can explain child-other discrepancies, and biases in parents, for example related to parents' own anxieties, or to processes such as projective identification, can explain father-mother discrepancies (e.g., Comer & Kendall, 2004; De Los Reyes & Kazdin, 2005; Grills & Ollendick, 2003).

Clinicians may also serve as informants on the child's psychopathology, based on their clinical observations and assessment of the child. However, while children, parents, and teachers provide information based on their own knowledge and experience, clinician ratings are usually not only based on their clinical observations, but also on the information they receive from other informants (Klein, Lavinge, & Seshadri, 2010). Thus clinician ratings may be heavily influenced by what informants are available and which informant they perceive as likely to be the most accurate reporter.

Given the disagreement among multiple informants, an important question pertains to the optimal way to incorporate these ratings into a single dimensional rating. So far, only one study has investigated multiple informant agreement (parent-child agreement) on the DSM-5 dimensional anxiety scales (Möller et al., 2014). Results showed that mother-child and father-child agreement on the dimensional anxiety scales was low. Regarding father-mother agreement, it was found that father-mother reports of the child's anxiety were significantly correlated for agoraphobia, generalized anxiety disorder, social anxiety disorder, and specific phobia. As the study of Möller et al. (2014) is until now the only study that has investigated the issue of multiple informant agreement using the DSM-5 dimensional anxiety scales, no definite answer can be given yet to the question of what is the best way to incorporate ratings from multiple informants into a single dimensional rating. However, based on the results of the study of Möller et al. (2014) and other literature on multiple informant (dis)agreement, several recommendations for further research on the dimensional scales can be formulated that may help to answer this question.

A first issue concerns the selection of the informant that can provide the most valuable information on the child's psychopathology. Grills and Ollendick (2003) stress that although informants may differ in their view it should not be assumed that one view is better than another. In contrast, Smith (2007) concludes in his review on multiple informant agreement in child and adolescent psychopathology that depending on the age of the child (younger versus older), the setting (inpatient versus outpatient), and the type of problem (internalizing versus externalizing), one informant might be better than another. Smith suggests that more weight should be given to the ratings provided by the best informant. Here the question arises how it should be determined who is the best informant. Usually, it is assumed that positive reports are the most accurate. Thus, according to this view, the informant that reports the highest levels of anxiety in the child is the best informant. However, an informant may also overreport on the child's anxiety symptoms. Thus, the validity of this approach (i.e., the best informant is the one that reports the highest levels of anxiety) seems questionable (Klein, 1991). DiBartolo and Grills (2006) tried to solve this issue by studying the validity of children's, parents' and teachers' reports of children's social anxiety in predicting children's *actual* socially anxious behavior during a social evaluative task. The authors found that only children's self-reports, and not parent or teacher reports, predicted children's anxious feelings and some of their anxious behavior during the task. More studies are clearly needed to investigate the relative validity of different informants

in predicting other types of children's anxious behavior (e.g., generalized anxiety, separation anxiety). Another way to go would be to assess which informant correlates highest with the child, and give the informant that correlated higher with the child more weight accordingly.

A second issue concerns the fact that most research on parent-child agreement has considered agreement at the diagnostic level, which could inflate disagreement. It has been found that parent-child concordance is stronger at the symptom level than at the diagnostic level, is stronger for observable symptoms than for unobservable symptoms, and is stronger for non-school-based symptoms than for school-based symptoms (Comer & Kendall, 2004). It should be examined whether for the dimensional anxiety scales parent-child agreement also varies according to symptom category. For example, if it is found that parents and children do agree on observable behavior and not on unobservable behavior equal weight might be given to parent and child ratings on those observable symptoms, whereas for the unobservable symptoms, the most weight might be given to the report of the child.

However, the validity of children's self-reports has been called into question. That is, children may find it difficult to communicate information about their internal states (McCathie & Spence, 1991), children may respond in a socially desirable manner to present themselves in a positive way (Dadds, Perrin, & Yule, 1998; Jensen, Traylor, Xenakis, & Davis, 1988), or they may have difficulty understanding questionnaire items and Likert scales (Edelbrock & Costello, 1990). With respect to the DSM-5 dimensional anxiety scales, some children indicated after completing the scales that they found it rather difficult to understand the questions and the five-point Likert scale (Möller et al., 2014). Future research should assess whether the language of the dimensional scales should be adapted to improve the comprehensibility for children or whether children need the guidance of an adult. It might turn out that children under a certain age, even with the help from an adult, are not able to reliably report yet on their anxious symptoms using the dimensional anxiety scales. If this is the case, parents, teachers, and/or clinicians should serve as the informants. As the utility of the dimensional scales has only been tested with non-clinical children aged 8 to 13 years, more research on the dimensional anxiety scales with children from other age groups, with clinically anxious children, and with clinicians and teachers as informants remains to be conducted.

Ensuring that DSM-5 Dimensional Ratings are Valid and Reliable Across Developmental Periods, Cultures, and Genders

The DSM-5 development process employed the use of work groups comprised of experts in the field who were tasked with evaluating the current state of the literature and developing, testing, and refining updated diagnostic criteria for the various diagnoses. Additionally, the APA tasked each work group with taking developmental and cultural factors into consideration. This is a vitally important issue due to the fact that there is a strong risk of incorrectly pathologizing an individual if these various contextual factors are not taken into account or overlooking pathology in individuals who may express it in ways that differ from prototypical presentations. The DSM-5 addresses this in several ways.

With regard to developmental period, a great deal of attention is paid to what is normative development for children and what constitutes pathology. In the case of posttraumatic stress disorder, different diagnostic criteria are provided for children 6 years of age and younger. Typically, however, developmental issues are discussed in the narrative accompanying each disorder in DSM-5. The narrative for each disorder contains a discussion of the development and course of the disorder. For example, for separation anxiety disorder the narrative describes how its expression is normative in young children but becomes increasingly problematic as an individual gets older. Furthermore, it describes how the manifestations of the disorder shift over time. The manifestation and diagnosis of psychopathology in older age is also addressed in the DSM-5 text, such as in the discussion of how specific phobias tend to be less common during this period, but when they do occur are more likely to be manifested atypically, comorbid with medical concerns, and serve as a risk factor for neurocognitive disorders. Substantial consideration was given to whether or not different criteria should be provided for certain disorders as they present in later life (Wolitzky-Taylor, Castriotta, Lenze, Stanley, & Craske, 2010). The final conclusion of the APA was that there was not enough available data to do so accurately and comprehensively.

The DSM-5 narrative also provides information regarding culture and gender for each disorder. In addition to providing prevalence rates across genders and cultural groups (when available), differing manifestations of symptoms across groups is also described. For example, the text details culture-bound syndromes such as taijin kyofusho, a manifestation of social anxiety disorder often seen in individuals of Japanese and Korean descent, which emphasizes the fear that one's own behavior will make other people uncomfortable. The text also mentions that women are likely to express social anxiety disorder with a greater number of social fears and comorbid mood disorders, whereas males are more likely to fear dating and use alcohol and drugs to relieve symptoms of the disorder.

The field has noted that a sole reliance on categorical approaches to psychopathology makes it difficult to incorporate the influence of developmental stage, gender, and culture into the diagnostic process (Hudziak et al., 2007). The current system ultimately leaves it up to the clinician to consider whether an individual meets criteria for a given disorder once factors such as developmental period, culture, and gender are taken into account. The introduction of a standardized dimensional approach to diagnosis may allow researchers and clinicians to take better account of developmental differences in the expression of psychopathology. In their current form, the dimensional anxiety scales only address these issues by providing separate validated versions for children (age 8 to 17) and adults (age 18 and up). Additionally, several investigators outside of the United States are working on developing and evaluating cross-cultural adaptations of the scales. However, there are many other ways that future research could improve the scales' ability to capture differences in developmental period, culture, and gender. Once more studies have been conducted using the scales, conclusions can be made regarding whether different cutoff scores are merited for different genders, races, ethnicities, and age groups. In some cases, it may make sense for the scales themselves to be adapted for different groups so that they emphasize the appropriate symptom domain relevant to that group, although in many cases this could probably be achieved by making relatively minor alterations to the item content of the existing scales. The DSM-5's increased emphasis on dimensional assessment and diverse manifestations of the disorders reflect an underlying movement toward a more nuanced view of psychopathology than was available in previous iterations of the manual.

The Risks and Benefits of an Open-Access Assessment Measure

Among the many benefits of the dimensional measures that have been mentioned here is the fact that they are freely available. This means that clinicians can easily access the scales without needing to provide payment (either at the personal or institutional level) and simply by going online (as opposed to ordering paper copies or photocopying from a handbook). However, the wide availability of these measures also means that any literate, English-speaking individual with Internet access can obtain these scales. Although completing the scales outside of the context of mental health treatment may help some individuals become aware of psychological problems they are experiencing and seek appropriate treatment, it is likely that other individuals may complete the scales improperly or misinterpret their scores, leading to significant concern and treatment utilization in the absence of any real psychological problems. This requires us to think about the benefits and risks of widespread availability, particularly type I (false positive) and type II (false negative) errors.

Using the dimensional DSM-5 scales, individuals can self-assess or be assessed with the same measure. This opens tremendous possibilities for research, prevention, treatment, and policy. Psychopathology symptom levels can be compared across countries, in epidemiologic studies in which the prevalence of disorders using structured diagnostic interview approaches is also assessed. In this way, differences between cultures or countries in the cutoff for certain disorders can be examined. For example, in eastern countries, scores on self-report measures of social anxiety have been found to be among the highest despite the fact that the prevalence of social anxiety disorder in these countries is consistently found to be among the lowest (Heinrichs et al., 2006). This has been explained by the greater tolerance and desirability in eastern countries for shy behavior (Rapee et al., 2011). With the dimensional scales, individuals with low, medium or high levels of disorder symptomatology can be detected, and their course be followed, including their "natural" treatment consumption. Note that the "natural" treatment consumption is already influenced by the feedback they receive on completing the dimensional scales, that is, whether they have expressed mild, moderate or severe levels of that disorder. Based on the results of such large-scale studies, prevention or intervention programs can be developed for individuals with certain levels of the

disorder. Health insurance companies will start to use the dimensional scale results in order to formulate cutoffs for certain therapies or care, hopefully based on solid research.

The DSM-5 dimensional scales will likely contribute to the public awareness of mental disorders and its treatments, promote mental disorder literacy (Jorm, 2000), reduce stigma of mental disorders (Hinshaw & Stier, 2008) and support referral and treatment-seeking in case of serious mental disorders that are treatable conditions. Compare a young adolescent who goes to a general practitioner because of stomach pain, with a young adolescent who goes to the general practitioner with stomach pain, but who has also completed level 1 and level 2 dimensional assessments and has received feedback of moderate/severe depression. In the latter case, the adolescent has a greater chance of receiving the right assessment and attention of the general practitioner. As such, the dimensional scales are likely to contribute to improvements in mental health. However, there is also the risk of type I errors, assuming a disorder that is not there. For example, one can imagine an individual completing a self-report scale for mania and becoming concerned about underlying bipolar disorder when the symptoms are explained by other factors. The examination by a mental health professional on whether or not one meets indeed the criteria of a certain mental disorder is therefore crucial. Though the suggestion of the presence of a disorder that is not there may be painful and lead to unnecessary utilization of mental health resources, the risk of leaving a mental disorder unrecognized is likely to have greater costs for (mental) health, particularly for those disorders for which effective treatments are available. Thus it appears that the benefits of the measures being widely and freely available outweigh the risks.

Creating Synergy between the DSM-5 Approach and Emerging Research

Although refinement and widespread adoption of the DSM-5's proposed system for standardized dimensional assessment is an important step in providing a more nuanced, precise, and useful description of clinical phenomena, it does not address many of the core weaknesses of our current diagnostic system. These weaknesses have been discussed extensively in the literature (see Brown & Barlow, 2009 for a review) and in fact are outlined in the DSM-5 text. They include the failure to find natural boundaries between many mental disorders, the need for intermediate categories (e.g., schizoaffective disorder), high rates of comorbidity, frequent not-otherwise-specified (NOS) diagnoses, and lack of treatment specificity for the various diagnostic categories. These issues provide very clear evidence that the current system is not a particularly accurate reflection of nature. The disorder-specific measures developed or adopted by the DSM-5 workgroups simply provide a brief, standardized method of assessing the severity of the existing categories.

It appears likely that future iterations of the DSM will involve substantial reconceptualization of how psychopathology is defined and measured. Many researchers have proposed alternative classification systems to the DSM that are based on higher-order approaches and have received extensive empirical support (e.g., Clark, 2005; Brown & Barlow, 2009). In 2011, the National Institute of Mental Health announced the Research Domain Criteria (RDoc) Initiative, which encourages research to develop new ways of classifying mental disorders based on dimensions of observable behavior and neurobiological measures (Insel et al., 2010). This initiative encourages researchers to move away from the traditional DSM classification system and, should it continue to shape scientific inquiry, has the potential to profoundly impact clinical assessment in the future. It is unknown how ongoing research will shape future iterations of DSM, but it seems a near certainty that we are moving toward a dimensional system. Although the dimensional assessment discussed herein is heavily reliant on the current classification system (with the exception of the cross-cutting symptom measures, which are more in line with the higher-order and RDoC approaches), they do encourage clinicians to conceptualize psychopathology on a continuum and thus are more likely to be compatible with future systems than the traditional categorical system.

Discussion

With DSM-5, the APA has responded to decades of empirical research suggesting the importance of measuring psychopathology dimensionally, rather than solely relying on an indication of its presence or absence. The APA responded in two ways. First, they developed and adopted brief, well-validated, and widely-accessible self-report measures for many prevalent disorders and promoted them for use in the manual text and on their website.

Second, they provided guidelines for severity specification for several prevalent disorder groups. This marks a substantial improvement over how the issue was addressed (or rather not addressed) in previous iterations of the manual.

Despite this significant progress, a great deal of work remains to be done. First, the field's awareness of these scales and guidelines need to be significantly enhanced. If they are not adopted into widespread and routine practice by the clinicians and researchers alike, their impact will be minimal. Second, the scales and the guidelines themselves need to be continually subjected to empirical investigation so that they can be refined as necessary. Specifically, the validity and reliability of the mild, moderate, and severe specifiers that exist for certain disorders need to be evaluated. This is particularly important in light of the substantially different guidelines for determining the specifiers across disorder groups. Third, severity specifiers for other disorders, such as the anxiety disorders, need to be developed. Ideally, these will incorporate the DSM-5 disorder-specific dimensional scales. Fourth, the dimensional scales need to be evaluated across cultures, genders, and age groups to determine whether changes are needed to accurately reflect and detect psychopathology across diverse individuals. This may be done by creating versions of scales that have altered item content that is particularly relevant to a specific group or by establishing different cutoff scores to define pathology for a group. Fifth, specific guidelines should be provided for the use of the scales by individuals outside of the mental health field in order to help individuals who self-administer the questionnaires determine whether they should seek professional help. Sixth, the DSM should provide guidelines for how to assess when a disorder has been cured or entered remission, that is that an individual who once met criteria for a disorder has had enough reduction in symptoms to no longer meet criteria for that disorder. Cut-off scores on the dimensional scales can assist in establishing this. Finally, research should evaluate whether severity specifiers predict who benefits from which treatments. For example, individuals with mild forms of a disorder may not benefit from the use of psychotropic drugs, but may benefit from low-dose interventions such as E-health programs.

With cutting edge research continually emerging regarding the etiology, assessment, and treatment of psychological disorders, it is unknown what form future iterations of the DSM will take. However, it seems almost certain that the movement toward incorporating dimensional assessment will continue to increase. Thus, it is imperative to address the many unresolved theoretical, methodological, and practical issues related to incorporating dimensional assessment into DSM-5, many of which have been described above.

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Appendix A:

Separation Anxiety Disorder Dimensional Scale - Adult version

The following questions ask about thoughts, feelings, and behaviors that you may have had about being separated from home or from people who are important to you.

Please rate how often the following statements are true for you:

During the past month,

		Never	Almost never	Some-times	Often	Always
1	I felt moments of sudden terror, fear or fright when separated from home or people who are important to me	0	1	2	3	4
2	I felt anxious, worried, or nervous about being separated from home or people who are important to me	0	1	2	3	4
3	I had thoughts of bad things happening to people important to me (e.g., accidents) or bad things happening to me when separated from them (e.g., getting lost).	0	1	2	3	4
4	I felt a racing heart, felt sweaty, had trouble breathing, fainted, or felt shaky when separated from home or people who are important to me	0	1	2	3	4
5	I felt tense muscles, felt on edge or restless, or had trouble relaxing when separated from home or people who are important to me	0	1	2	3	4
6	I avoided going places where I would be separated from home or people who are important to me	0	1	2	3	4
7	I left places early to go home when being separated from home or people who are important to me	0	1	2	3	4
8	I spent a lot of time preparing for how to deal with separation from home or people who are important to me	0	1	2	3	4
9	I distracted myself to avoid thinking about being separated from home or people who are important to me	0	1	2	3	4
10	I needed help to cope with being separated (e.g., alcohol or medications, superstitious objects, other people)	0	1	2	3	4

Appendix B:

Separation Anxiety Disorder Dimensional Scale - Child version

The following questions ask about thoughts, feelings, and behaviors that you may have had about being away from home or from people who are important to you.

Please rate how often the following statements are true for you:

During the past month,

		Never	Almost never	Some-times	Often	Always
1	I suddenly felt panicky, fearful or frightened when being away from home or my family	0	1	2	3	4
2	I felt anxious, worried, or nervous about being away from home or my family	0	1	2	3	4
3	I thought that bad things would happen to people that are important to me (for example, accidents) or that something bad would happen to me when being away from them (for example, getting lost).	0	1	2	3	4
4	I felt my heart beating fast, felt sweaty, had trouble breathing, passed out, or felt shaky when being away from home or my family	0	1	2	3	4
5	I felt tense muscles, was unable to sit still, or had trouble relaxing when being away from home or my family	0	1	2	3	4
6	I stayed away from places where I would be away from home or my family	0	1	2	3	4
7	I left places early to go home when being away from home or my family	0	1	2	3	4
8	I spent a lot of time getting ready for how to deal with being away from home or my family	0	1	2	3	4
9	I did other things to stop thinking about being away from home or my family	0	1	2	3	4
10	I needed help to deal with being away from home or my family (for example, medicines, lucky charms, other people)	0	1	2	3	4

Appendix C:

Separation Anxiety Disorder Dimensional Scale - Parent version

The following questions ask about thoughts, feelings, and behaviors that your child may have had about being separated from home or from people who are important to him/her.

Please rate how often the following statements are true for your child:

During the past month,

		Never	Almost never	Some-times	Often	Always
1	my child suddenly felt terrified, fearful or frightened when separated from home or family	0	1	2	3	4
2	my child felt anxious, worried, or nervous about being separated from home or family	0	1	2	3	4
3	my child had thoughts of bad things happening to people that are important to him/her (e.g., accidents) or bad things happening to him/her when separated from them (e.g., getting lost)	0	1	2	3	4
4	my child felt sweaty, had trouble breathing, fainted, or felt shaky when separated	0	1	2	3	4
5	my child felt tense, on edge or restless, or had trouble relaxing when separated	0	1	2	3	4
6	my child avoided going places where he/she would be separated from home or family	0	1	2	3	4
7	my child left places early to go home when being separated from home or family	0	1	2	3	4
8	my child spent a lot of time preparing for how to deal with separation from home or family	0	1	2	3	4
9	my child distracted him/herself to avoid thinking about being separated from home or family	0	1	2	3	4
10	my child needed help to cope with being separated (e.g., medications, superstitious objects, other people)	0	1	2	3	4