Elemental psychopathology: Distilling constituent symptoms and patterns of repetition in the diagnostic criteria of the DSM-5

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Abstract

Background: The *DSM-5* features hundreds of diagnoses comprising a multitude of symptoms, and there is considerable repetition in the symptoms among diagnoses. This repetition undermines what we can learn from studying individual diagnostic constructs because it can obscure both disorder- and symptom-specific signals. However, these lost opportunities are currently veiled because symptom repetition in the *DSM-5* has not been quantified.

Method: This descriptive study mapped the repetition among the 1,419 symptoms described in 202 diagnoses of adult psychopathology in Section II of the *DSM-5*. Over a million possible symptom comparisons needed to be conducted, for which we used both qualitative content coding and natural language processing.

Results: In total, we identified 628 distinct symptoms: 397 symptoms (63.2%) were unique to a single diagnosis, whereas 231 symptoms (36.8%) repeated across multiple diagnoses a total of 1022 times (median 3 times per symptom; range 2-22). Some chapters had more repetition than others: For example, every symptom of every diagnosis in the *Bipolar and Related Disorders* chapter was repeated in other chapters, but there was no repetition for any symptoms of any diagnoses in the *Elimination Disorders*, *Gender Dysphoria*, or *Paraphilic Disorders*. The most frequently repeated symptoms included insomnia, difficulty concentrating, and irritability—listed in 22, 17, and 16 diagnoses, respectively. Notably, the top 15 most frequently repeating diagnostic criteria were dominated by symptoms of major depressive disorder.

Conclusion: Overall, our findings lay the foundation for a better understanding of the extent and potential consequences of symptom overlap.

Key words: diagnosis, classification, mental disorders, psychopathology, DSM-5

Elemental psychopathology: Distilling constituent symptoms and their patterns of repetition in the diagnostic criteria of the DSM-5

The limitations of traditional diagnostic systems for mental disorders—such as the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*; American Psychiatric Association, 2013)—have received increasing attention in the 21st century (e.g., Insel et al., 2010). For example, the heterogeneity within traditional diagnostic categories means that studying these constructs can obscure causes, treatment effects, and outcomes that are specific to one symptom or a tightly bound syndrome nested within a traditional diagnostic category (e.g., Bentall et al., 2012; Fried & Nesse, 2015a; Parker, 2005). Similarly, the overlapping symptoms between diagnoses mean that studying one diagnosis at a time results in lost opportunities to identify mechanisms associated with symptoms or syndromes that cut across multiple disorders (e.g., Barlow, Sauer-Zavala, Carl, Bullis, & Ellard, 2014). Describing these patterns of overlap in the symptom-level structure of the *DSM-5*—and understanding how pervasive they are—could thus provide new insights into symptoms that have high or low specificity for differentiating syndromes and associated mechanisms.

Several studies have examined the descriptive symptom-level structure of traditional diagnostic systems, with a particular focus on understanding comorbidity among diagnoses. For example, Borsboom et al. (2011) generated a network of symptom-level overlap in *DSM-IV-TR*, examining the 'small world of psychopathology' whereby shared symptoms resulted in observed connections among the majority of diagnoses. Tio et al. (2016) subsequently used the same approach to examine a network of the symptom-level overlap in the *ICD-10*. Most recently, Forbes (2023) examined whether the repetition of symptoms among a subset of *DSM-5* disorders is likely to be inflating the surface similarity of diagnoses in a way that artificially reinforces dimensions based on patterns of disorder covariation or comorbidity (i.e., in the Hierarchical Taxonomy of Psychopathology; Kotov et al., 2017). Each of these studies focused on disorder-level overlap and comorbidity based on the idea that considerable overlap of

symptoms among major depressive disorder and generalized anxiety disorder, for example, makes it more likely an individual will meet criteria for both diagnoses at the same time.

By contrast, the present study takes a descriptive approach to untangling the elements of psychopathology, to address five research questions: (1) How many distinct symptoms comprise the hundreds of diagnoses defined in *DSM-5*? (2) What proportion of these symptoms repeat across multiple diagnoses and/or chapters? (3) What patterns are evident in the symptom overlap among diagnoses within and between different chapters? (4) Are some chapters of psychopathology more prone to symptom repetition than others? (5) And, finally, which symptoms show the greatest non-specificity as indicators of varied manifestations of psychopathology? Laying bare these patterns represents an essential step towards characterising the heterogeneity and homogeneity in the constructs our field has been studying for decades.

Method

The first stage of coding aimed to distil the constituent symptoms[1] of the diagnoses in chapters 1-19 of Section II of the *DSM-5*. Similar to the approaches described in Borsboom et al. (2011) and Tio et al. (2016), the diagnostic criteria for all diagnoses and specifiers were reduced to their core symptoms. In this process, disjunctive criteria were split into separate symptoms (e.g., "insomnia or hypersomnia nearly every day" was split into *insomnia* and *hypersomnia*). Only symptoms relevant to adult psychopathology were included (e.g., child-only symptoms, such as "Is often truant from school" for conduct disorder, were not included). Symptoms were separated from their causes and consequences—including associated distress and impairment—as well as from descriptive information about symptom onset, duration, frequency, and severity. Further, symptoms were only listed once per diagnosis to avoid

[1] A symptom is defined in the DSM-5 as a "subjective manifestation of a pathological condition. Symptoms are reported by the affected individual rather than observed by the examiner." (APA, 2013, p.830). Signs requiring medical or specialised testing (e.g., IQ testing or polysomnography) were not included.

artificially introducing repetition (e.g., psychomotor agitation is listed twice in the criteria for bipolar I disorder, but only listed once in the constituent symptoms for the diagnosis).

Primary disorders with any symptoms described in their diagnostic criteria were included at the outset, as well as specifiers that listed any additional symptoms for the corresponding disorder or chapter. Specifiers were treated akin to discrete diagnoses, rather than collapsed into the criteria for the relevant disorders, and were only listed once for each chapter (e.g., the specifiers for depressive disorders—such as 'with anxious distress' and 'with melancholic features'—can be appended to all of the diagnoses listed in the *Depressive Disorders* chapter, but were listed only once each for the chapter). Specifiers were not included if they only specified a cause, context, pattern of comorbidity with other conditions or disorders, subset/mixing of symptoms already listed in the primary disorder, onset, illness course, frequency, severity, duration, episodicity, or familial patterns. Other specified and unspecified disorders were typically excluded for these same reasons, but were included if new symptoms were introduced or a novel syndrome was described (e.g., night eating syndrome was included, as described under other specified feeding or eating disorder). Table S1 lists the 85 primary disorders that were not directly represented in the current analyses, 82 of which included no additional symptoms.

There were several cases with ambiguity regarding the symptoms comprising a diagnosis. For example, *Neurocognitive Disorders* list criteria like "evidence of significant cognitive decline"; for these disorders, the symptom examples listed under each of the neurocognitive domains were used (American Psychiatric Association, 2013, p. 593-595), guided by the specific indicators or domains listed in the diagnostic criteria. Other very broad symptoms were either mapped onto subsets of closely related symptoms, or onto the examples of symptoms listed in the text. For example, in adjustment disorders, "disturbance of conduct" was coded to comprise the corresponding symptoms of conduct disorder, and "emotional

symptoms" was coded to comprise the specific examples of these symptoms listed in the specifiers.

The resulting list of symptoms was then coded for content overlap using both qualitative content coding and natural language processing (NLP). Initially, identical symptoms were identified and coded as such. Following this, conceptual redundancy was coded by four members of the research team in a three-step process. Symptoms were first assigned to classes of affective, behavioural, cognitive, and/or somatic symptoms, and then to subcategories (e.g., affective symptoms were coded into low mood, elevated mood, fluctuating mood, anxious mood, angry mood, and restricted affect). Symptoms within each subcategory were then coded for redundancy using the heuristic of whether the same self-report item could capture multiple symptoms (i.e., that the symptoms represent the same subjective experience, such as *depressed mood* versus *low mood*). This process was repeated and refined throughout multiple stages (i.e., we estimate the full list of symptoms was manually screened for repetition more than 90 times in total).

We also used NLP to screen for semantic matches that the manual coding may have missed. To do so, we built a computational model with the goal to identify when two symptoms described in the *DSM-5* had the same meaning based on their position in a high-dimensional representation of semantic similarity. After filtering out the pairs of symptoms that had been identified as completely identical, the model scored the 566,580 remaining possible pairs of symptoms from 0 (very dissimilar) to 1 (semantically identical) using a pre-trained model that was fine-tuned on 1,067 pairs of non-identical symptoms manually coded as "definitely the same" and "definitely different." A five-fold cross-validation framework was then used to assess how well the model performed, with mean precision and recall across the folds of 0.772, an F1 score of 0.766, and area under the curve (AUC) of .859—indicating that the model was quite good at identifying semantically identical descriptions and ranking pairs of symptoms by semantic similarity for further manual checking. The top 1000 pairs with the

highest semantic similarity scores were manually checked for additional matches by two researchers, identifying 26 new matching symptom pairs. See the supplementary materials for more information on this process. At the end of both stages of coding for content overlap, there were 3,096 matching symptom pairs.

Results

All told, 202 diagnoses[2] are directly represented here, including 135 primary disorders and 76[3] specifiers or other specified disorders with additional symptoms. We identified a total of 1,419 constituent symptoms, and our qualitative and computational content overlap analyses identified 628 distinct symptoms in this list. The full dataset showing all symptoms and redundancy coding is available in the supplementary materials.

Figure 1 shows the patterns of symptom repetition among the 202 diagnoses. While repetition appears to be pervasive, the majority (n = 397, 63.2%) of the 628 distinct symptoms are unique to a single diagnosis. The other, non-unique symptoms (n = 231, 36.8%) occur an average of 4.4 times (standard deviation = 3.4, median = 3, range = 2–22), a total of 1022 times, and together make up 72.0% of the symptoms listed in all of the diagnostic criteria. Of these 231 symptoms that overlap between diagnoses, 163 (70.6%) repeat within the same chapter, 155 (67.1%) repeat between multiple chapters, and 87 (37.7%) repeat both within and between chapters.

[2] 307 *ICD-10* diagnoses covered by 269 distinct *ICD-10* diagnostic codes are listed under these diagnoses.
[3] These do not add up to 202 because seven primary disorders were only represented through specifiers.

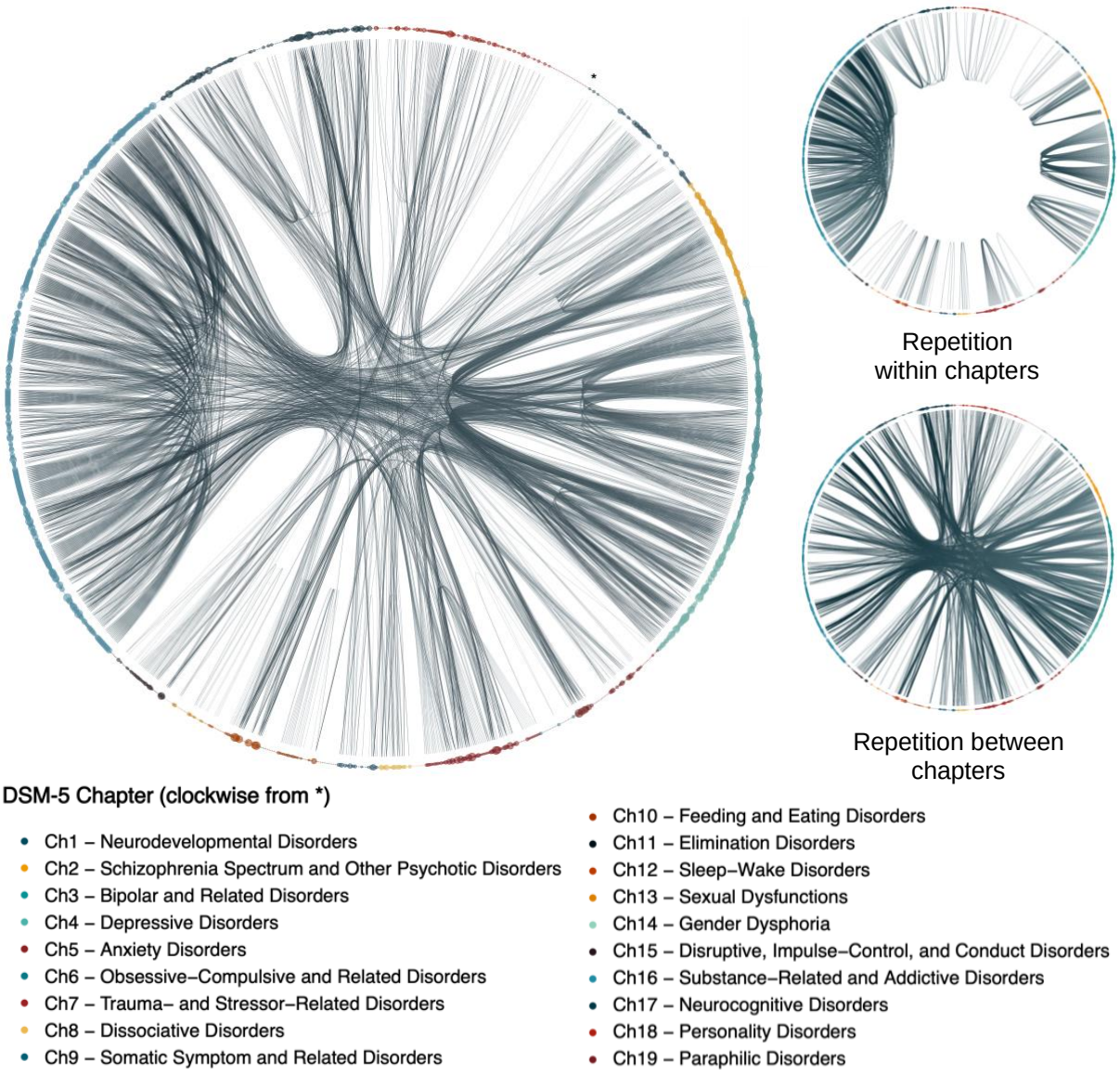


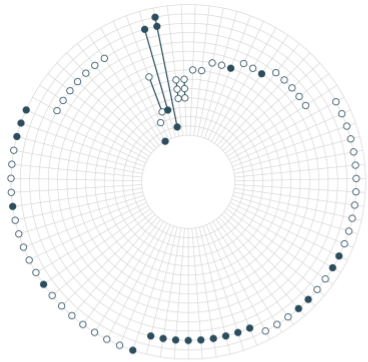
Figure 1. Mapping repetition among all symptoms in the *DSM-5*. 202 primary disorders and specifiers are represented, and diagnostic criteria have been split into a list of 1,419 constituent symptoms. Each dot on the circumference is a symptom; its size represents symptom frequency. Lines linking symptoms map the repetition among diagnoses within and between chapters.

Figure 2 explicates these patterns of within- and between-chapter symptom overlap (see Figures S1-S19 for individual panels for each chapter, with symptom and diagnosis labels). Table 1 describes some patterns of repetition at both the diagnosis and symptom level within each chapter. Overall, of the 202 diagnoses represented, 140 (69.3%) have at least one symptom that repeats in another diagnosis—118 (58.4%) in a diagnosis in another chapter. Further, 75 diagnoses (37.1%) have every symptom repeating in at least one other diagnosis—47 (23.3%) have every symptom repeating in other chapters. Finally, 62 diagnoses (30.7%)

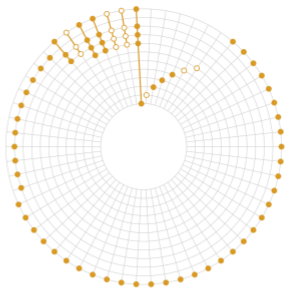
have no symptom overlap (i.e., the corresponding symptoms are listed only once in the *DSM-5*); notably, 35 of these diagnoses include only a single symptom.

Table 1. Summary of symptom repetition in each chapter of the *DSM-5*

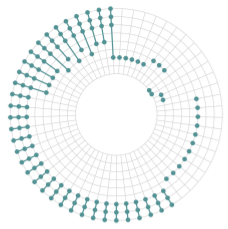
	Diagnoses				Symptoms			
DSM-5 Chapter	# of diagnoses represented	% diagnoses made up entirely of repeating symptoms	% diagnoses with any repetition	% diagnoses with zero repetition	# distinct symptoms	% symptoms unique to a single diagnosis	% symptoms repeated within chapter	% symptoms repeated in other chapters
Ch1 - Neurodevelopmental	15	46.7%	80.0%	20.0%	79	65.8%	6.3%	30.4%
Ch2 - Schizophrenia Spectrum and other Psychotic	12	75.0%	75.0%	25.0%	58	5.2%	12.1%	89.7%
Ch3 - Bipolar and Related	9	100%	100%	0.0%	57	0.0%	59.6%	100%
Ch4 - Depressive	10	70.0%	90.0%	10.0%	60	13.1%	33.3%	85.0%
Ch5 - Anxiety	7	0.0%	57.1%	42.9%	63	57.1%	0.0%	42.9%
Ch6 - Obsessive-Compulsive Related	12	0.0%	25.0%	75.0%	24	91.7%	4.2%	8.3%
Ch7 - Trauma-/Stressor-Related	4	50.0%	100%	0.0%	51	15.7%	37.3%	64.7%
Ch8 - Dissociative	6	50.0%	100%	0.0%	25	56.0%	16.0%	44.0%
Ch9 - Somatic Symptom	14	35.7%	57.1%	42.9%	30	53.3%	6.7%	43.3%
Ch10 - Feeding and Eating	9	33.3%	66.7%	33.3%	28	71.4%	25.0%	3.6%
Ch11 - Elimination	3	0.0%	0.0%	100%	5	100%	0.0%	0.0%
Ch12 - Sleep-Wake	15	46.7%	66.7%	33.3%	30	60.0%	16.7%	36.7%
Ch13 - Sexual Dysfunctions	7	28.6%	57.1%	42.9%	18	77.8%	22.2%	5.6%
Ch14 - Gender Dysphoria	2	0.0%	0.0%	100%	6	100%	0.0%	0.0%
Ch15 – Disruptive, Impulse-Control and Conduct	6	33.3%	83.3%	16.7%	41	43.9%	4.9%	56.1%
Ch16 - Substance-Related and Addictive	32	43.8%	96.9%	3.1%	135	38.5%	45.2%	42.2%
Ch17 - Neurocognitive	9	55.6%	100%	0.0%	97	28.9%	33.0%	53.6%
Ch18 - Personality	11	0.0%	100%	0.0%	104	51.0%	7.7%	45.2%
Ch19 - Paraphilic	19	0.0%	0.0%	100%	24	100%	0.0%	0.0%
All chapters	202	37.1%	69.3%	30.7%	628	63.2%	30.0%	24.7%



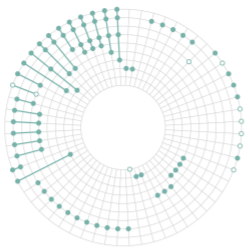
Neurodevelopmental Disorders



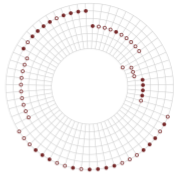
Schizophrenia Spectrum and Other Psychotic Disorders



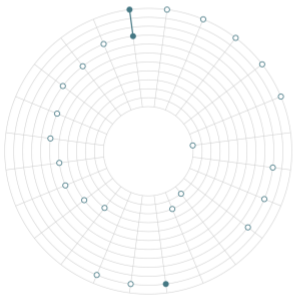
Bipolar and Related Disorders



Depressive Disorders



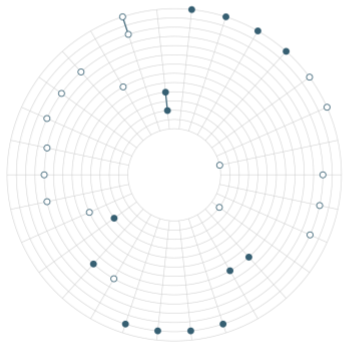
Anxiety Disorders



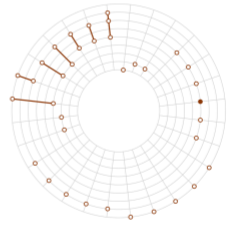
Obsessive–Compulsive and Related Disorders

Trauma– and Stressor–Related Disorders

Dissociative Disorders

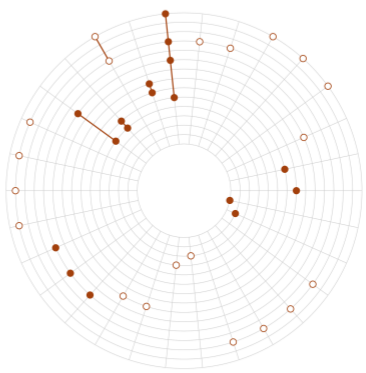


Somatic Symptom and Related Disorders

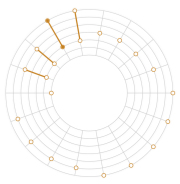


Feeding and Eating Disorders

Elimination Disorders

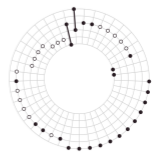


Sleep–Wake Disorders

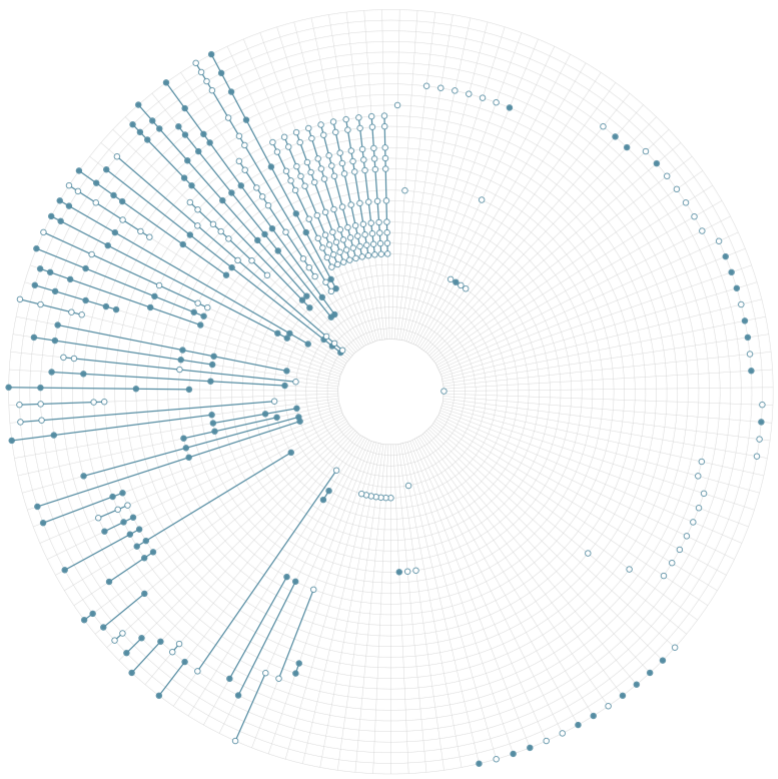


Sexual Dysfunctions

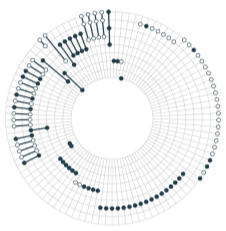
Gender Dysphoria



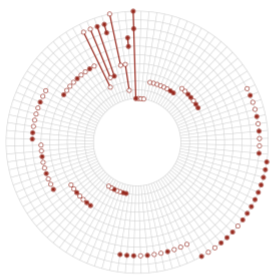
Disruptive, Impulse–Control, and Conduct Disorders



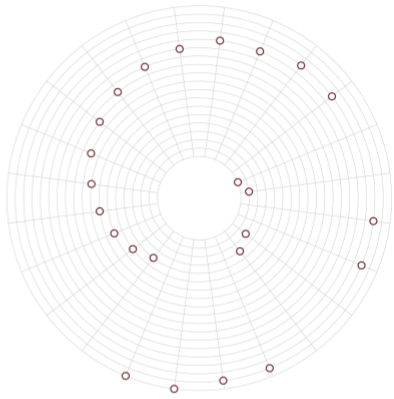
Substance–Related and Addictive Disorders



Neurocognitive Disorders



Personality Disorders



Paraphilic Disorders

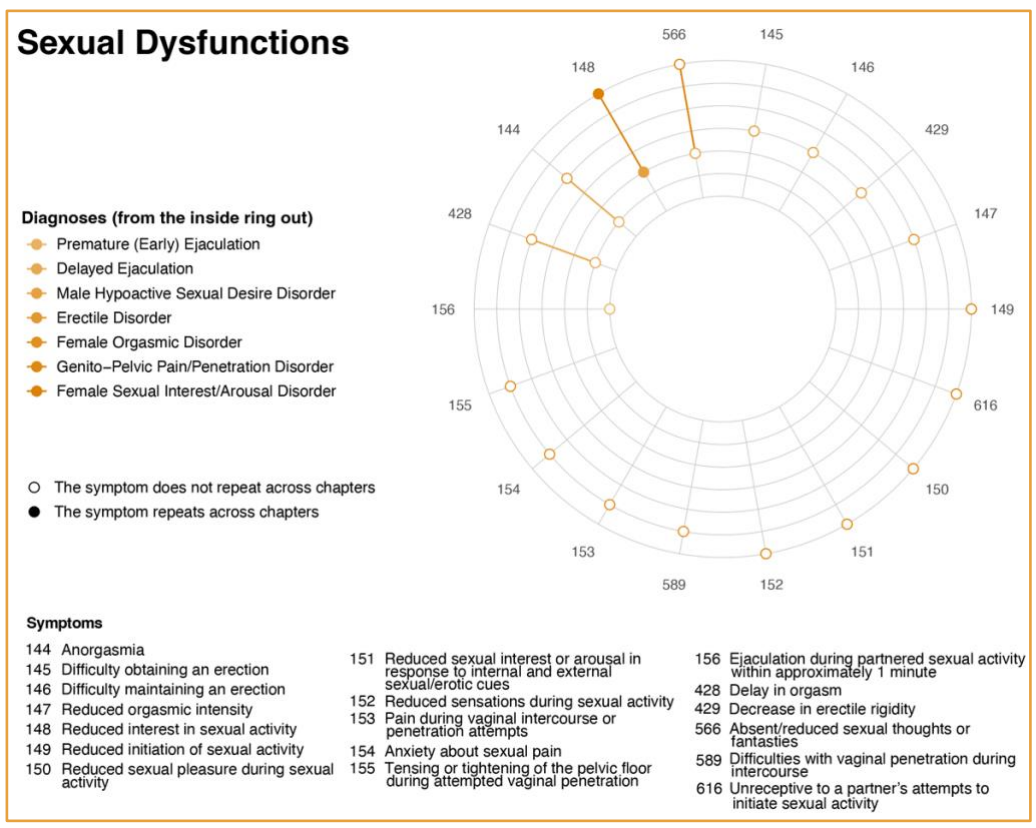


Figure 2. Symptom repetition within each chapter. Each circular plot represents a chapter, the rings within each circle correspond to diagnoses or specifiers, and each dot is a symptom. Joined dots falling along the same radius represent a symptom repeating within the chapter. Filled dots repeat in other chapters; empty dots only occur in one chapter. Copies of all plots are available with much more detail in the supplementary materials (Figures S1–S19), and the inset panel shows an example of such a detailed plot for sexual dysfunctions.

Some domains are more prone to symptom repetition than others (see Figure 2 and Table 1). For example, none of the diagnoses described in the *Elimination Disorders*, *Gender Dysphoria*, or *Paraphilic Disorders* chapters have any symptoms that repeat in other diagnoses, whereas all diagnoses in the *Bipolar and Related Disorders*, *Trauma- and Stressor-Related Disorders*, *Dissociative Disorders*, *Neurocognitive Disorders*, and *Personality Disorders* chapters have at least one symptom that repeats in another diagnosis.

While twelve (63.2%) of the chapters have more than half of their distinct symptoms unique to a single diagnosis, six chapters (31.6%) have more than half of their symptoms repeating in other chapters: *Bipolar and Related Disorders*, *Schizophrenia Spectrum and Other Psychotic Disorders*, *Depressive Disorders*, *Trauma- and Stressor-Related Disorders*, *Neurocognitive Disorders*, and *Disruptive, Impulse Control, and Conduct Disorders*. By contrast, some chapters have very few (<10%) of their symptoms repeating in other chapters: *Elimination Disorders*, *Gender Dysphoria*, *Paraphilic Disorders*, *Feeding and Eating Disorders*, *Sexual Dysfunctions*, and *Obsessive-Compulsive Related Disorders* (OCRDs).

Focusing on repetition within chapters, only *Bipolar and Related Disorders* has most of the symptoms in the chapter repeating in multiple diagnoses. Repetition within chapters is also relatively common for *Substance-Related and Addictive Disorders* (45.3% of symptoms repeating in the chapter), *Trauma- and Stressor-Related Disorders* (37.3%), *Depressive Disorders* (33.3%), and *Neurocognitive Disorders* (33.0%). Interestingly, there are several chapters with substantial symptom repetition *between* chapters, but little-to-no repetition *within* the chapter: *Neurodevelopmental Disorders*, *Anxiety Disorders*, *Somatic Symptom and Related Disorders*, *Personality Disorders*, and *Disruptive, Impulse-Control, and Conduct Disorders* all have only 5-8% of symptoms repeating within their chapter, versus 30-56% of symptoms repeating between chapters.

Finally, we answer the question of which symptoms show the greatest non-specificity by examining symptom repetition among all diagnoses and across chapters (Table 2 and Figure 3).

A noteworthy finding is that the symptoms in the *DSM-5* that repeat most frequently, and that repeat across most chapters, are dominated by symptoms of major depressive disorder (MDD). Specifically, 10 of the top 15 most non-specific symptoms in the *DSM-5* appear in the diagnostic criteria for MDD (see Table 2).

Table 2. Top 15 most non-specific symptoms based on highest frequency and repetition across multiple classes of psychopathology

Symptom	Number of diagnoses	Number of chapters
*Insomnia	22	8
*Difficulty concentrating	17	7
*Hypersomnia/sleepiness	17	6
Irritable mood	16	8
*Psychomotor agitation	16	5
*Depressed mood	15	6
*Psychomotor retardation	14	5
Hallucinations	14	5
*Fatigue	12	6
*Increased appetite	12	5
Anxiety	12	4
Restlessness	10	6
*Weight loss	10	5
Euphoria	10	4
*Decreased appetite	10	4

Note. Sorted by the number of diagnoses in which the symptom occurs.
* Denotes symptoms that are part of the diagnostic criteria for major depressive disorder. Table S2 expands on this list to include all symptoms that repeat across chapters.

Further examination of MDD symptoms showed that all 20 disaggregated symptoms repeat in other chapters, ranging from 5–22 total occurrences each. Even when excluding the five occurrences of a major depressive episode in the diagnostic criteria for various diagnoses (i.e., MDD, schizoaffective disorder, bipolar I, bipolar II, and cyclothymic disorder), and excluding all *Depressive Disorders* as well as all specifiers for *Bipolar and Related Disorders* and *Depressive Disorders*, 14 of the 20 symptoms for MDD still repeat in 34 other diagnoses across 8 chapters.

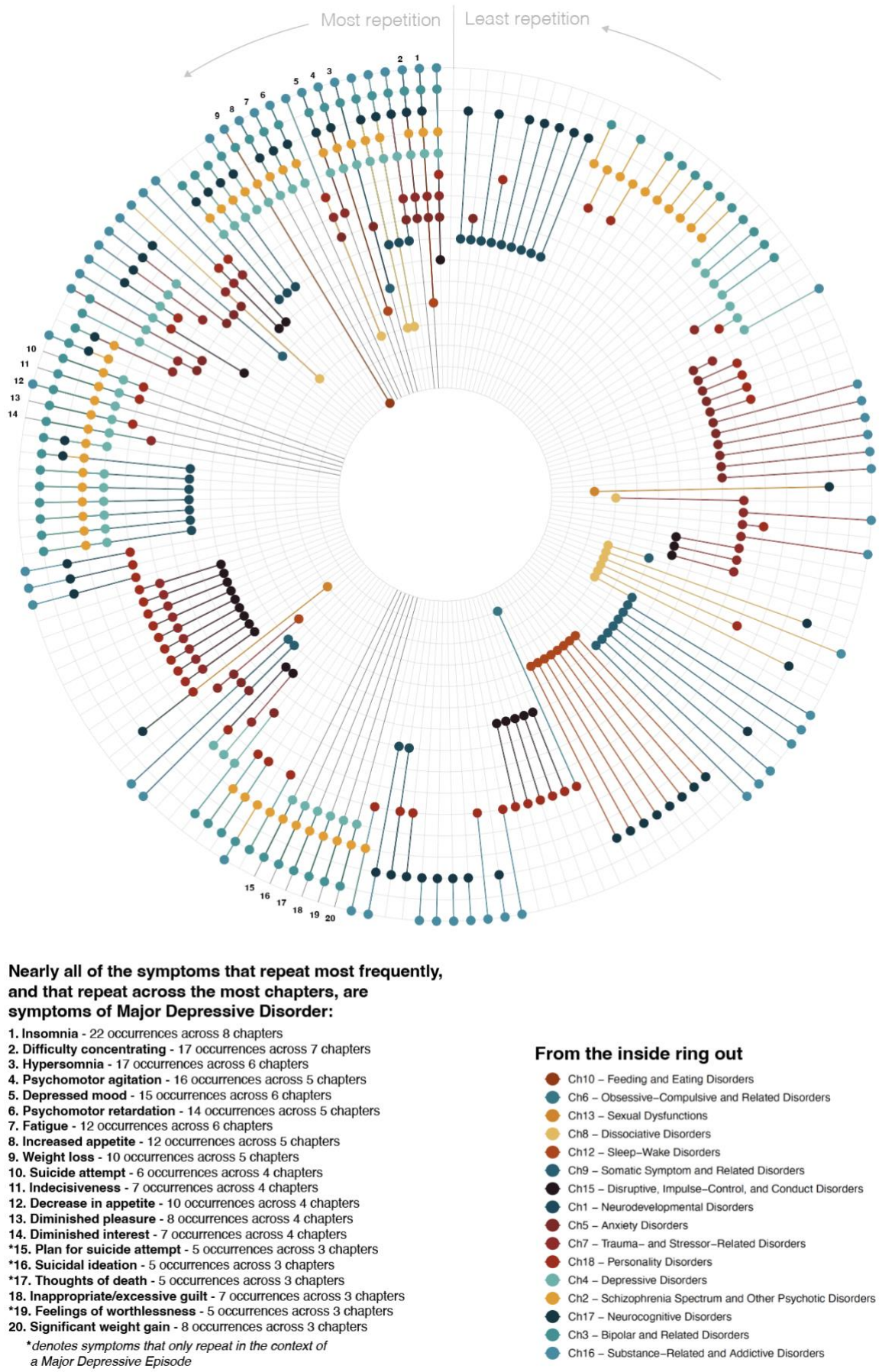


Figure 3. Map of symptoms that repeat across chapters, sorted by number of chapters in which the symptom occurs. Each ring represents a chapter, and the dots on the ring are distinct symptoms in that chapter that repeat in other chapters. Joined dots falling along the same radius denote a symptom repeating between chapters. Symptoms in the diagnostic criteria for major depressive disorder are marked with numbers to highlight the considerable overlap depression symptoms show. A detailed version of this plot with symptom labels is presented in Figure S20; another version that includes all 628 symptoms—regardless of whether they repeat across chapters—is presented in Figure S21.

Discussion

Before interpreting these results, it is important to reiterate that these findings are based on a purely descriptive analysis of the diagnostic criteria laid out in the *DSM-5*. Therefore, an important caveat is that we made subjective decisions in deciding whether symptoms overlap or not. Although we aimed to mitigate this limitation by using NLP, others may have made different decisions. To facilitate alternative interpretations of the patterns we have described, the data are publicly available (https://osf.io/r5vqk/).

Symptom repetition is perhaps not as pervasive as it first appears in Figure 1: Nearly two-thirds of the distinct symptoms are unique to a single diagnosis, and 30% of the diagnoses analysed were uncontaminated by repetition—including the entirety of three (albeit small) chapters of *Paraphilic Disorders*, *Elimination Disorders*, and *Gender Dysphoria*. *Feeding and Eating Disorders*, *Sexual Dysfunctions*, and *OCRDs* were also relatively self-contained. However, the 231 symptoms that do repeat—spanning 140 diagnoses and 16 chapters—have interesting stories to tell.

The repetition within chapters often appears to be by design: *Bipolar Related Disorders* all consist of hypo/manic and depressive episodes; acute stress disorder and posttraumatic stress disorder describe largely overlapping responses to traumatic experiences; substance use disorders reflect the same core criteria regardless of the substance being used; and *Neurocognitive Disorders* are all comprised of deficits in the cognitive domains of complex attention, executive function, learning and memory, language, perceptual-motor skills, and social cognition. The repetition in *Depressive Disorders* is less aligned to these features of other chapters with substantial within-chapter repetition, and also differs from *Anxiety Disorders*, which share a common affective core like *Depressive Disorders* but have no overlapping symptoms.

Outside of these examples, most chapters have more repetition with other classes of psychopathology than among their constituent diagnoses—often markedly so. For example,

symptoms of *Neurodevelopmental Disorders*, *Anxiety Disorders*, *Somatic Symptom and Related Disorders*, *Personality Disorders*, and *Disruptive, Impulse-Control, and Conduct Disorders* all had substantial repetition in other chapters (30–56%) but relatively little repetition among diagnoses within the chapter (5–8%). This may reflect efforts by the committees overseeing each chapter to ensure the diagnoses are clearly distinguishable—a process that is not, to our knowledge, implemented across chapters.

By contrast, the symptom repetition between chapters appears to be less purposeful. In total, 155 symptoms repeated between chapters, listed 742 times across 118 diagnoses in 16 chapters, corresponding to marked non-specificity for many of these symptoms. The criteria for one diagnosis in particular stood out: The symptoms that occur most frequently and across the most chapters are overwhelmingly those of MDD. Even after excluding all closely related diagnoses (i.e., the five diagnoses with a major depressive episode in their criteria as well as the two depressive disorders and six specifiers for bipolar and depressive disorders with overlapping symptoms), MDD symptoms still repeat in 35 diagnoses spanning *Anxiety Disorders*, *Trauma- and Stressor-Related Disorders*, *Somatic Symptom and Related Disorders*, *Feeding and Eating Disorders*, *Sleep-Wake Disorders*, *Substance-Related and Addictive Disorders*, *Neurocognitive Disorders*, and *Personality Disorders*. This level of non-specificity in the diagnostic criteria raises the question of how meaningful it is to study MDD as a unitary construct, adding to the literature illustrating the heterogeneity and low predictive validity of MDD diagnoses (e.g., Fried & Nesses, 2015b; McGlinchey, Zimmerman, Young, & Chelminski, 2006; Winter et al., 2022; Zimmerman, Chelminski, McGlinchey, & Young, 2006a; Zimmerman, McGlinchey, Young, & Chelminski, 2006b).

Speculating about potential mechanisms that account for the non-specificity, perhaps MDD symptoms are psychological responses to stress, similar to how fever—a symptom that also cuts across numerous diagnostic categories—reflects an inflammatory response to cell damage or stress (OpenStax, 2019). In a similar vein, MDD symptoms like sleep problems,

difficulty concentrating, and low mood may recapitulate the distress and impairment associated with most *DSM-5* diagnoses, rather than identifying a coherent syndrome that corresponds to specific causes, mechanisms, or treatment needs (Parker, 2005). Regardless of the underlying mechanisms, the pervasiveness of MDD symptoms throughout the *DSM-5* likely hampers diagnostic accuracy in at least two ways. First, it may do so due to misattribution of symptoms in other diagnoses to MDD—or vice versa (Horvath & Todd, 2023; Zimmerman et al., 2006a). Second, it may inflate rates of comorbidity due to symptom overlap with other diagnoses, which makes it easier to receive multiple diagnoses with only a limited set of presenting symptoms, particularly for diagnoses that share many symptoms like generalised anxiety disorder (e.g., Zbozinek et al., 2012). This could account for the higher comorbidity rates of MDD observed with diagnoses that share symptoms, compared to those that do not (e.g., Hasin et al., 2018). These same types of bias will also apply to the repetition of other symptoms throughout the *DSM-5*.

Empirical work analysing how symptoms form coherent syndromes will be an essential next step to determine whether the patterns of symptom covariation reflect the patterns of (non)specificity observed here. To the extent that diagnoses are unintentionally repackaging the same information, symptom repetition represents an insidious confound for research and practice. The heterogeneity within and homogeneity between diagnoses suggests there may be cross-cutting symptoms or symptom clusters that could offer a better framework of phenotypes for research on biomarkers and mechanisms (e.g., Insel et al., 2010); active ingredients and specific processes in psychotherapy (e.g., Hofmann & Hayes, 2019; Wolpert, Pote, & Sebastian, 2021); and reconceptualisation of the diagnosis and classification of psychopathology (e.g., Kotov et al., 2017). Ultimately, more empirical work on fine-grained clinical phenomena promises to improve on the reliability and validity of the *DSM-5* constructs that frame much of our research and practice.

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