Behavioral excess and disruptive conduct: A historical and taxonomic approach to the origin of the ‘impulse control disorders’ diagnostic construct

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Abstract:

Background and Aims: Impulse Control Disorders (ICDs) are iatrogenic and idiopathic conditions with psychosocial and economic consequences for the affected individuals and their families (e.g., bankruptcy and divorce). However, the definition of ICDs has changed over time and ICDs are not consistently included within existing taxonomies. We discuss the origins of the ICD diagnostic construct and its unsolved tensions.
Methods: To contextualize the ICD diagnostic construct we provided an overview of its origins in past centuries and followed its development across multiple editions of the Diagnostic and Statistical Manual and the International Classification of Diseases, as well as its definition within emerging ontologies.
Results: Two independent roots of the ICD construct emerged: a) the interest in behavioral excess as expressed in encyclopedic compilations (XVIII century); b) the juridical debate on disruptive conduct and responsibility (XIX-XX century). These roots underlie the repeated taxonomical remodeling observed across the XX and XXI centuries and three critical issues persisting in both clinical practice and research. First, the number of ICDs keeps increasing across the spectrum of human behaviors, disregarding common pathogenetic and phenomenological grounds. Second, ICDs substantially overlap with other mental conditions. Impulsivity is often neglected as minor inconvenience or side effect when co-occurring with major diagnoses (e.g., depression), and therefore inadequately managed. Finally, ICDs definitions display an unsolved tension between being conceived as hobby, moral fault, or pathological drive, which may be responsible for stigma and delayed intervention.
Conclusion: The reasons that made ICDs difficult to define from their first conceptualization are the same ones that now complicate taxonomic efforts and diagnosis. Tracing back ICDs' roots and criticalities can help define a common and less ambiguous theoretical framework, which may also result in the demise of the ICD construct and a move towards better defined and more useful ontologies.

BACKGROUND

Impulse Control Disorders (ICDs), often referred to as behavioral addictions(1), are characterized by "the failure to resist an impulse, drive or temptation to perform an act that is harmful to the person or to others"(2). ICDs encompass both reward-driven impulsive behaviors and stress-avoiding compulsive behaviors, which traditionally include pathological gambling, shopping, sexuality, and eating, but also computer use, hoarding, kleptomania, hobbyism, overwork and physical exercise(3). ICDs and addictions extensively overlap in their definition, phenomenology, pathogenesis, and affected behaviors. Indeed, both ICDs and addictions are chronic conditions affecting one or few specific behaviors, characterized by impaired control of rewarding behaviors, craving, negligence of health and social activities, engagement in risky behaviors, tolerance, withdrawal, and the progression from impulsive to compulsive traits(4,5). Even if ICDs and behavioral addictions are often defined as distinct diagnostic constructs –the former often reported as adverse drug reactions(6), the latter as polyfactorial conditions(7)–, their understanding would benefit from increased communication between their respective research fields(8–11). For example, because ICDs commonly occur as severe adverse drug reactions to dopamine agonists (for Parkinson's Disease, prolactinoma, and restless leg syndrome(12)) and with certain antipsychotics (primarily aripiprazole(13,14)), and because we know the molecular targets of these drugs, we can study these reactions to get a better insight in the pathogenesis and potential treatment of both ICDs and addictions(14).
Nonetheless, the ICDs diagnostic construct is still ambiguous and highly problematic. It is affected by underdiagnosis(15) and overdiagnosis(7), taxonomical instability(11,16), and theoretical pleiotropy resulting in the multiplication of nosological entities, with extensively overlapping features (e.g., the intertwining of impulsivity, compulsivity and addiction)(17). It

is also possible that many cases of ICDs remain unrecognized or misdiagnosed, since clinicians might prefer to consider impulsivity as part of more frequently used diagnostic categories like bipolar and personality disorders.
To gather insights into the unsolved issues to be addressed by future policies, clinical management and nosological investigation, in this article we discuss the historical and taxonomical development of the ICD diagnostic construct. In doing so, we argue that many critical issues stemming from the historical trajectory of the notion of ICDs are still hampering current clinical management and research. Finally, we discuss how acknowledging these issues may improve future theory, policy, and practice.

HISTORICAL AND TAXONOMICAL ANALYSIS

The conceptual genesis of impulse control disorders

In his "History of Madness", Michel Foucault describes a fundamental change that occurred in the Western world in the XVII-XIX centuries. Before that, madness was considered a magical or holy condition, both punishment from God and redemption of sort. During the XVII-XIX centuries, however, madness is reconceptualized as an expression of human depravity and "mad people" are institutionalized within workhouses. People with mental disorders are locked down with people diagnosed with syphilis, homosexuals, and so-called dissolute individuals. Madness, thus, is increasingly framed as a deviation from societal norms, for which the individual is responsible(18). According to the bourgeois moral of the time, madness is now moral corruption, and institutionalization is the only solution to restore social order. At the same time, by separating reason and unreason, order and disorder, Western societies end up defining a boundary for what is human. People with mental disorders are conceived of as scandalous raging lunatics and are displayed as wild animals. Thus, again, madness expresses itself as a double-faced Janus: at the same time moral fault and feral innocence(18).
The French revolution reconceptualizes madness as even further away from the sacred, through the objectivizing logic of medicine. The asylum is established as a care facility, and nosological treatises on mental conditions (e.g., by Linnaeus, Boissier de Sauvauges, and Pinel) attempt to bring the light of reason to madness, classifying and articulating its varieties. These developments build the foundations of modern Western psychiatry(18). By analyzing this process, we can identify two independent roots of the ICDs construct: behavioral excess and disruptive conduct.

Taxonomical focus on behavioral excess

The encyclopedic culture of the XVIII century dedicates a massive effort directed to the categorization of behavioral excess, and accordingly gives birth to many taxonomies of mental disorders (**Table 1** for examples). Depraved and amplified appetites – for example, *cynorexia* (bulimia), *polydipsia*, *satyriasis*, and *nymphomania* – are variably categorized as "*Pathetici"* (irregular desires) within Linnaeus' *Genera Morborum* (1759), "*hyperaesthises"* (abnormal sensitivities) within Vogel's *Definitiones Generum Morborum* (1764), "*dysorexiae"* (anomalous appetites) within Cullen's *Nosology* (1769), and "*morositates*" (strange habits) within Boissier de Sauvages' *Nosologie Méthodique* (1772)(19). Even if aimed at objectivizing mental disorders, these taxonomies bear a strong resemblance to medieval bestiaries and to the parade of vices in Erasmus' *Stultitiae Laus*: they select specific traits or behaviors and make them into grotesque figures to be displayed and made examples of. This multiplication of families and species can be congenial to an exploratory purpose as psychiatry starts taking its

shape, but it hampers the development of care-centered psychiatry. Thus, when Pinel and Esquirol put treatment at the center of psychiatric reflection, a simplified nosology emerges(20), and the moral focus on behavioral excess is at least temporarily shifted to a legal focus on those excesses that constitute criminal activity.

Juridical focus on disruptive conduct

The XIX century sees a newborn preoccupation with the tension between free will and instinct, which is declined in the discourse on madness as the tension between vice and folly. Individuals are not necessarily responsible for all their acts, especially if they are considered mad. Accordingly, the new asylums still institutionalize and confine people with mental disorders, but they aim to cure and not to punish. This sensibility also deeply impacts the courts of law with the notion of moral insanity, initially coined by Prichard in 1837(21) and repeatedly and controversially used throughout the XX century(22).

The notion of moral insanity is anticipated by Pinel, who introduces the *manie sans délire* as a '*sanguinary fury, with a blind propensity to acts of violence*'(23) , in which illicit and criminal acts are not the consequence of a free choice and therefore the individual committing them cannot bear the full responsibility for them. This new nosological entity is further developed by Pinel's disciple, Esquirol: *"Acting abnormally, the patient is led to actions dictated by neither reason nor sentiment, that his conscience says is wrong but that his willpower no longer has the force to suppress. The actions are involuntary, instinctive and irresistible. It is monomania without madness (monomanie sans délire), or instinctual monomania"(24).*

As this shift in nosological definitions takes place, the focus of taxonomies also changes. Behavioral excesses were centered on depraved and amplified appetites. Moral insanity is centered on criminal behaviors, such as kleptomania, pyromania, alcohol use disorder, and homicidal impulse, all defined as incoercible pathological conditions(22,25).

XX-XXI century international taxonomies

In the XX century new taxonomies bring together the previously separate foci on behavioral excesses and criminal behaviors. Kraepelin's 'impulsive insanity' (1904), Bleuler's 'morbid impulses' (1924), and Fenichel's "impulse neurosis" (1945)(26) cover both illicit violent tendencies and licit behavioral excesses, such as oniomania (buying excess) in women, and unrestrained gambling in men(27). These "impulses" indicate an ego-syntonic disorder, that is, a disorder in which the behavior is coherent with the individual's will and intention: pursuing the alluring urge results in short-term gratification. Crucially, ego-syntonic impulsivity strongly overlaps with ego-dystonic or compulsive disorders, that is, disorders in which the behaviors are aimed at suppressing intrusive and unwanted thoughts or urges, to avoid the related anxiety: e.g., "the urge to cry out swear words, scurrilities, blasphemic expressions, or push stones off a wall"(28,29). This overlap between impulsive and compulsive conditions contributed to the categorical inconsistencies we can observe across successive editions of international taxonomies of mental disorders (**Fig. 1**).

In 1952, the American Psychiatric Association (APA) published the first edition of the Diagnostic Statistical Manual of mental disorders (DSM-I). Neither behavioral excess nor disruptive conduct were included as general conditions. Kleptomania and pyromania only were suggested as supplementary terms in DSM-I and promptly disappeared again in DSM-II (APA, 1968). Analogously, the International Classification of Diseases included the category of Conduct Disorders (kleptomania and intermittent explosive disorder) only from its ninth

edition (ICD-9, WHO, 1978). Later, the heterogeneous category of Impulse Control Disorders not otherwise classified grouped these conditions alongside pyromania, behavioral excess (gambling), and compulsive conditions (trichotillomania) within the DSM-III Revised (APA, 1987). This arrangement was conserved in the Habit and Impulse Disorders category of the ICD-10 (WHO, 1994), which made explicit that this grouping was based on mere descriptive similarity (i.e., common symptoms and phenomenology).

In the DSM-5 (APA, 2013) the attempt to define better boundaries resulted in the category of Disruptive, Impulse-control and Conduct disorders, with trichotillomania moving to Obsessive-Compulsive and Related Disorders (OCRDs), alongside skin picking disorder, body dysmorphic disorder, and hoarding disorder. Gambling was moved to Substance-Related and Addictive Disorders, together with alcohol and other substances-related disorders, to emphasize their overlap in pathogenesis and phenomenology, while internet gaming was included as a condition to be furthers studied. DSM-5 TR (APA, 2022) confirmed all these choices.

ICD-11 (WHO, 2018 –version 02/2022–) took a U-turn, emphasizing once again phenomenological similarity across impulse control disorders. While specific excessive or illicit behaviors might now be categorized within a plurality of different disorders, the central category of impulse control disorders still mentions and discusses them: gambling and gaming (classified as addictive behaviors), secondary impulse control syndrome (a secondary mental or behavioral syndrome), compulsive sexual behavior and body-focused repetitive behavior disorders (OCRDs). ICD-11 also expanded the new group of OCRDs by including olfactory reference disorder and hypochondriasis. This new classification highlights the close relationship between impulsivity and compulsivity (now seen as a "continuum" rather than two different constructs), with OCRDs that could be placed at the compulsive/affective end of the spectrum (e.g., OCD and body dysmorphic disorder) or at the impulsive/habitual one (trichotillomania and skin picking disorder).

Two other categories are also close to the ICDs construct, even if their taxonomical trajectory has, up to now, always been independent. Polyphagia, included in the XVIII century taxonomies, was first reintroduced in medical classifications as a symptom not elsewhere classified by the ICD-10 and moved to Feeding and Eating Disorders in DSM-5 and ICD-11. Paraphilias, under the name of sexual deviations (i.e., situations that divert from normative arousal-activity patterns) were already present in DSM-I. They include behaviors often diagnosed together with hypersexuality, characterized by anomalous activity preference (e.g., voyeuristic, exhibitionistic, frotteuristic, masochistic and sadistic disorders) or anomalous target preference (e.g., pedophilic, fetishistic transvestic and zoophilic disorders). The name of this category changed across taxonomies, reflecting cultural and social developments. Homosexuality was excluded from this category in the DSM-III, where it was temporarily replaced by ego-dystonic homosexuality until this was removed by DSM-III R. In DSM-5 we find an explicit switch to the term "Paraphilic Disorders", which are pathologic degeneration of paraphilias resulting in functional impairment and psychologic distress. ICD-11, instead, puts the focus on the involvement of other individuals whose age or status renders them unwilling or unable to consent.

This history of ever-shifting taxonomies highlights the struggle to conceptualize ICDs. The same pathological behavior is at various times categorized within different categories, which indeed present phenomenological similarities. Ontologies have been developed to solve conceptual challenges in the study of addictions(30,31). By systematizing standardized and precisely defined terms, ontologies aim to facilitate the extraction and comparison of information across different studies within a common theoretical framework. Even if ontologies are highly promising tools, they are not immune from the issues discussed in this

work. Behavioral conditions are still spread across multiple categories, whose definitions overlap and show a clear influence of pre-existing and problematic conceptual histories (**Fig. 2**).
Taxonomies keep oscillating between unstable configurations, and ontologies are built on such unresolved theoretical ambiguities. The ICD concept still has not found its unity.

DISCUSSION

ICDs are associated with a heavy burden both to the individual and to society. Even if issues in their definition have long been known, uncertainty in their diagnostic criteria persist, as the constant taxonomic remodeling and discussion around these conditions testifies(7,11,32–34). In the following paragraphs we discuss the importance of these historical and taxonomical developments of the ICDs diagnostic construct for future theoretical shifts, policies, and clinical management of ICDs.

Responsible vice versus pathological drive

ICDs include behaviors that –even if not illicit, as is the case for kleptomania and pyromania– raise legal and social issues: e.g., gambling may result in bankruptcy, fraud, theft, divorce, loss of employment. Especially since secondary ICDs were shown to emerge from organic conditions, drugs (e.g., dopamine agonists), or illicit substances (e.g., amphetamines), the number of authors supporting the idea that individuals with ICDs are responsible for their actions and arguing against the legitimacy of ICDs as mental disorders(35) has strongly decreased.
If a behavioral drive and a persistent thought may be determined by a lesion or a substance, where is the boundary between moral fault and pathological innocence? This is a non-trivial problem which resulted in the definition of ICDs as a differential diagnosis: to diagnose an ICD the physician must exclude the existence of adequate motivations such as profit, political ideology, concealment of criminal activities, anger, revenge, attempts to improve living conditions. Nonetheless, such judgment is strongly subjective and related to the social and cultural context: for example, an offense may be sufficient to induce an anger burst and a fight in some sub-cultures but not in others. Further, ICDs often involve a progression from an active search for gratification to a compulsive act to avoid anxiety(5). This evolution from a willful and motivated choice to a dysfunctional coping habit is experienced as a progressive loss of control and induces increasing distress. This progression should not be neglected in clinical practice nor in law courts, particularly for individuals who take drugs accelerating the conversion. In clinical settings, a care-centered close monitoring should be pursued, delivering early help before the behaviors become chronic and resistant(5). Caution not to pathologize and stigmatize passions and coping strategies is also required(7). In law courts, tests of criminal responsibility are already used in the appraisal of mitigating and exempting circumstances, but with many unsettled criticalities(36). Further, legal guardians' appointment may be useful to avoid exploitation of patients diagnosed with ICDs, and may help them managing their money, health, and social relationships(37).

Overlapping phenomenology

When diagnosing ICDs, according to the DSM-5, practitioners should not only exclude motivations but also other psychiatric and organic conditions sufficient to explain the symptoms. This differential diagnosis is complicated by overlapping phenomenology: main

features of ICDs are shared by different diagnostic constructs. This may result in impulsivity being neglected as minor inconvenience when co-occurring with major diagnoses (e.g., bipolar disorder), or in the multiplication of diagnoses the patients receive to better characterize their conditions.

Like addictions, ICDs manifest with craving and constant worry for the behavior, followed by a high after the behavior is performed. Patients develop a tolerance, and perform the behavior more frequently –and, e.g., gambling more money– to obtain the same high, reporting multiple failed attempts at controlling the behavior. If they are somehow restricted from performing it, they may develop psychological abstinence and irritability. Furthermore, they may be heavily impaired in daily life: lying and negligence of daily activities compromise the patient's relationships and functionality at work; the patients may depend on others for money and steal to persist in their behavior, and often develop an attraction for illicit and risky acts and taboos infraction(16). Differently from addictions, these symptoms don't always result in high levels of functional impairment, have minor consequences on physical health, and can manifest in more appealing and socially acceptable activities(7).

Similarly, obsessive-compulsive disorders (OCDs) may be considered sufficient to explain some ICD-like behaviors. Nonetheless, obsessive-compulsive symptoms also frequently occur as a component of ICDs and are often considered a comorbidity. To acknowledge the ambiguous boundaries between ICDs and OCDs, the term impulsive-compulsivity(5,38) is used to describe a continuum between the compulsive (rituals aimed at reducing distress and avoiding risk) and the impulsive (acts aimed at maximizing pleasure and seeking risk) side of the ICDs spectrum(39), as well as the frequent transition from impulsivity to compulsivity through time(40). Compulsive features of ICDs are prevalent in older and female individuals (e.g., body-focused repetitive behaviors and slot machines), while impulsive traits in younger and male individuals (sport bets, cards, hypersexuality)(41). This separation is reminiscent of Cloninger's two types of alcohol use disorder: the first to avoid anxiety, more frequent in adults, the second to seek drunkenness, more typical of the young(17,42).

Finally, neuroanatomical and neurobiological correlates of ICDs are increasingly found(43), and it is increasingly acknowledged that multiple organic conditions – e.g., epilepsy, head trauma –, as well as autism and substance intoxication, can sometimes result in ICDs-like conditions(35). This is helping to shift the conception of ICDs towards them being organic and not implicitly moral conditions. The fact that a paraphysiological difference in neuronal pathways and neurotransmitters may impact on the susceptibility to ICDs further complicates differential diagnosis.

The overlapping phenomenology of these conditions emerging from distinct etiopathogenesis makes the definition of a symptoms-centered stable taxonomy particularly difficult and may have contributed to the inconsistent evolution of international taxonomies.

Emerging ontologies are also affected by this ambiguity. The current theoretical work can be used to develop more consistent ontologies, making them useful tools not only for unambiguous research, but also for better diagnosis and therapeutical approach. For example, an "addiction" disposition may underlie both ICDs and behavioral addictions and may further be characterized as a more impulsive (i.e., ego-syntonic) or compulsive (i.e., ego-dystonic) disposition. The behaviors involved in this addiction represent the processes, which can be as heterogeneous as the spectrum of human behaviors. Finally, linking this addiction to specific organic or functional impairments would drive towards the most promising therapeutical targets(7). In fact, the addiction may result from stronger impulses or weaker inhibition, not only due to drugs, organic lesions, or the pathological distortion of a habit, but also to the para-physiological effect of tiredness, stress, and alcohol. Identifying the primary cause of ICDs may drive towards a more successful management.

Multiplying impulse control disorders

We are still not free from the tendency to multiply the species of ICDs, which characterized the XVIII century taxonomies. There are important differences in the way ICDs express through distinct behaviors, and specific scales can be of high value to assess the severity of individual ICDs. Nonetheless, ICDs may manifest on the entire spectrum of the human behavior. Accordingly, attempts to develop a behavior-specific assessment and management are worthwhile, but should also be accompanied by a focus on the intrinsic unity of ICDs, as supported by the existence of common etiologies (e.g., dopamine agonists) and pathogenesis. This awareness is important to readily detect less frequent manifestations of ICDs (e.g., compulsive charity and stereotypical reading of the Quran(44)) and, as culture and habits change, ever new behaviors affected (e.g., internet dependence, compulsive gaming, excessive exercise). At the same time, it should avoid pathologizing interests and hobbies(7). For example, excessive use of the internet(45) – an umbrella term incorporating repetitive gaming, shopping, hypersexuality, and the use of social network through the internet – may be either "problematic" or "nonproblematic".

Recently, together with ontologies, latent phenotypes or endophenotypes have been the focus of psychiatric research. Impulsivity and compulsivity are psychopathological constructs, transcending from the specific behavior, that can be assessed by using objective neurocognitive tasks, rather than clinical questionnaires. These constructs may help to better acknowledge the singleness of ICDs. In this perspective, it is important to notice that there are different types of impulsivity, measured through specific neurocognitive tasks (e.g., motor impulsivity, which is mostly impaired in trichotillomania and skin picking disorder, and reward-based impulsivity, which is mostly impaired in addictive disorders(32)).

Conclusion

The same issues that hampered the first conceptualization of ICDs also affect current taxonomic efforts and diagnosis.

We identified three main unsolved issues. First, ICDs are extremely heterogeneous: the need for a comprehensive list of ICD manifestations, useful to the diagnostic process and to case retrieval from pharmacovigilance databases(3), involves the risk of over-pathologizing common behaviors. Second, ICD phenomenology strongly overlaps with that of other disorders, resulting in weak taxonomical and theoretical frameworks. Third, the conceptualization of ICDs relies on an uncertain threshold between willful behavior and uncontrolled drive. This results in uncertainty within the law courts, and in the perceived need to balance between stigmatizing common behaviors and delaying diagnosis and treatment in clinical practice. These issues are so pervasive that the usefulness of the concept of ICDs, as opposed to behavioral addictions, is in question. Tracing back Impulse Control Disorders' roots and criticalities can help us in the debate to further define a common and less ambiguous theoretical framework, and to build less ambiguous and more useful ontologies. Simplifying ontologies and linking them to the mechanisms underlying the dysfunction may be more useful for both the researcher and the clinician. Finally, improving social awareness about the impact and prevalence of these conditions may help simplify the administration of the intervention – whether psychological, social, pharmacological, or a combination of the three – before behavioral excess develops.

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Table 1. Behavioral excesses in XVIII century taxonomies.

	Linnaeus	**Vogel**	**Cullen**	**De Sauvages**
Unquenchable thirst	L-5-3 Polydipsia	V-7-295 Polydipsia	C-4-2-101 Polydispsia	S-8-2 Polydipsia
Voracious appetite	L-5-3 Bulimus	V-7-196 Vulimus V-7-297 Addephagia V-7-298 Cynorexia	C-4-2-100 Bulimia	S-8-2 Bulimia
Excessive sexual drive	L-5-3 Satyriasis L-5-3 Erotomania		C-4-2-103 Satyriasis C-4-2-104 Nymphomania	S-8-2 Satyriasis S-8-2 Nymphomania
Other	L-5-3 Tarantismus			S-8-2 Tarantismus

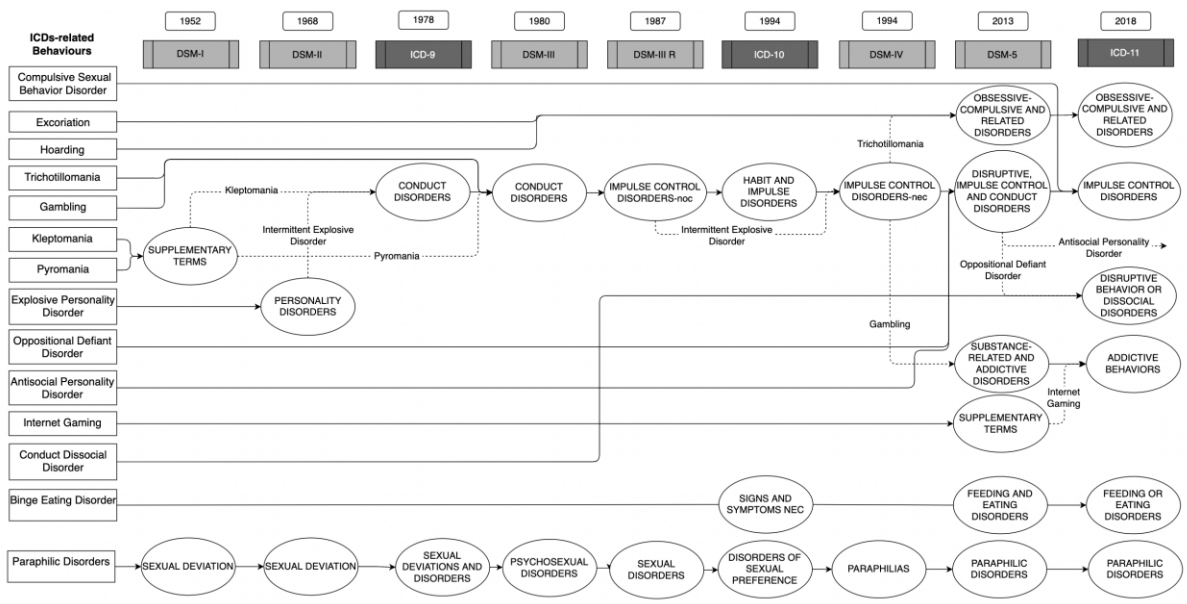

Figure 1. Taxonomical remodeling in XX-XXI century. Flowchart showing how different diagnostic entities (on the left) were relocated in time within different international taxonomies.

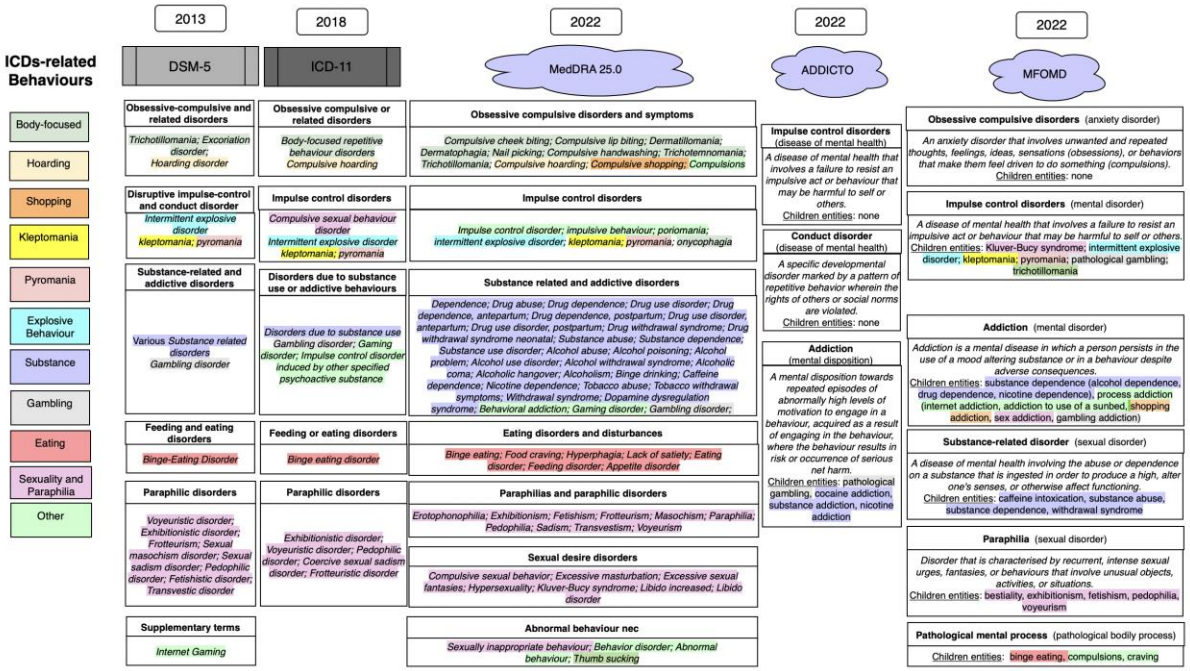

Figure 2. Impulse control disorders in ontologies. The updated versions of ICD (ICD-11) and DSM (DSM-5) were compared with ontologies used for regulatory activities (Medical Dictionary for Regulatory Activities, MedDRA 25.0) and for research activities (Addicto and Mental disease ontology –MFOMD–). Terms were color-coded to the specific behavior.