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Subjective assessments of research domain criteria constructs in addiction and compulsive disorders: a scoping review protocol

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ABSTRACT

Introduction Obsessive-compulsive and related disorders (OCRDs) and disorders due to addictive behaviours (DABs) are prevalent conditions that share behavioural and neurobiological characteristics. The Research Domain Criteria lists a series of constructs whose dysfunctions may be present in both groups of disorders. The present study will describe the research protocol of a scoping review of the literature on self-report scales and questionnaires that tap dysfunctional constructs that underlie OCRDs and DABs.

Methods and analysis This protocol outlines a scoping review on self-report tools and questionnaires that assess OCRDs and DABs-related constructs. The scoping review will select sources in MEDLINE, EMBASE, PsychINFO and Web of Science databases. Inclusion and exclusion criteria will be designed according to the *Population, Concept, Context, Types of source* framework. Two reviewers will screen independently titles, abstracts and full texts to determine the eligibility of articles. A methodological framework including six stages steps ((1) identifying a research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; (5) collating, summarising and reporting the result) will be used, and the findings will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist. Information extracted will be collated, and quantitative results will be presented using descriptive statistics such as percentages, tables, charts and flow diagrams as appropriate.

Ethics and dissemination Ethical approval for conducting this scoping review is not required, as this study will involve secondary analysis of existing literature. The researchers will disseminate the study results via conference presentations and publication in a peer-reviewed journal.

Scoping review protocol registration DOI 10.17605/OSF.IO/UJ7G5.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The scoping review will follow a rigorous methodology and all findings will be reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist.
⇒ A detailed and comprehensive search in four databases will be conducted to obtain all relevant studies mentioning the instruments of interest.
⇒ This study will present a broad overview of currently available tools and a summary of their nature, similarities and differences.
⇒ The scoping review design will allow no empirical evaluation of the selected instruments.

INTRODUCTION

Psychiatric nosology is constantly evolving to best fit new research knowledge. Current diagnostic systems, such as the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD), define disorders according to symptoms and syndromes, in which a minimum number of criteria for a given disorder must be met or general features must be identified before diagnoses are made. This approach offers some advantages, as treatment decisions are binary, and clinicians need functional categories for guiding clinical practice. The last edition of the DSM (5th Edition)[1] and ICD-11[2] (https://icd.who.int/en) attempted to absorb and translate to clinical practice recent advances in neuropsychiatric research. For instance, the creation of an 'obsessive-compulsive and related disorders' (OCRD) group and the inclusion of behavioural addictions into a 'substance and behaviour addictions' group—or 'disorders due to substance use or addictive behaviours' (DABs) section in the ICD-11—reflected new concepts in both compulsive and addiction research. However, there is increasing evidence that diagnostic categories do not fully capture the natural organisation of psychopathology symptoms.[3–6] The excessive

co-occurrence and similarities between different disorders and the biological heterogeneity within the diagnostic groups hamper the identification of aetiology and pathophysiological mechanisms, thus impeding the identification of underlying neurobiological substrates.[7]

To address this problem, dimensional definitions of transdiagnostic mental health problems have been suggested. The US National Institute of Mental Health Strategic Plan proposed new ways of classifying psychopathology based on dimensions of observable behaviour and neurobiological measures. The Research Domain Criteria (RDoC; www.nimh.nih.gov) defines basic constructs to be studied across multiple units of analysis, from genes to neural circuits to behaviours. The ultimate intention is to translate primary neurobiological and behavioural research results to the clinical domains, thus optimally matching treatments for mental disorders. Contrary to the traditional diagnostic classification system, the goal of this model is to use a data-driven approach to determine constructs that aid in the understanding and classification of mental disorders.[8] It is theorised that such constructs may serve as endophenotypes (intermediate phenotypes): objective, heritable, quantitative traits hypothesised to represent a genetic risk for polygenic disorders at more biologically tractable levels than distal behavioural and clinical phenotypes. Endophenotype models of disease have the potential to help clarify the diagnostic classification and aetiological understanding of complex brain disorders, bridging psychological and neural substrates more naturally and improving targeted treatment interventions.[9] They can also help understand treatment response or resistance across conditions. Previous work has shown that intermediate phenotypes track variation in clinical symptoms across multiple disorders[6] and can be mapped onto underlying brain structure and function.[5 10] This transdiagnostic approach is more sensitive to detecting neural correlates in psychiatric patients than conventional case–control comparisons,[5] revealing new insights into psychopathology.[11–13]

Two endophenotypes of relevance not just in clinical but also at a population level are the tendencies towards impulsive and compulsive behaviours, given their high prevalence in the general population.[14 15] Normal human behaviour relies on a flexible balance between initiation and inhibition, and abnormalities within these pathways contribute to various maladaptive acts. In this sense, impulsivity and compulsivity have been identified as significant motivating factors for disinhibited and repetitive behaviours. For long conceptualised as representing opposing ends along a spectrum,[16] more recently, however, impulsivity and compulsivity are being seen as orthogonal and overlapping constructs in that they both imply underlying problems with top-down inhibitory control.[17 18]

On a phenomenological level, compulsivity refers to rigid, repetitive and functionally impairing behaviours characterised by the feeling that one has to perform while being aware that these acts are not in line with one's overall goal.[19] It is the hallmark of the disorders among the OCRDs group, which includes obsessive-compulsive disorder (OCD), body dysmorphic disorder (BDD), hoarding disorder, hair-pulling disorder (trichotillomania) and excoriation disorder (compulsive skin-picking). These conditions tend to share repetitive, unwanted thoughts, urges or images and a range of compulsive behaviours, like washing, checking, counting, asking/confessing and ordering, in OCD; mirror checking in BDD; and repetitive hair-pulling or skin-picking in trichotillomania and excoriation disorder, respectively.[20] The decision to group these disorders was based on evidence showing broad similarities in symptom presentation (eg, compulsive/repetitive behaviours[21]) and other clinical validators (eg, shared family history[22]). However, no consensus exists about the scope or the nature of the 'OC spectrum',[23] and the OCRD chapter in DSM-5 has been controversial.[24–26]

In its turn, impulsivity is a multifaceted construct with many aspects that can be seen in healthy individuals. However, when accentuated, it confers an increased propensity to many disorders. It has been defined as a trait leading to 'actions that are poorly conceived, prematurely expressed, overly risky or inappropriate to the situation and often result in undesirable consequences'.[27] While it is considered the pivotal element in so-called 'impulse control disorders' (compulsive sexual behaviour, pyromania, kleptomania and intermittent explosive disorder; https://icd.who.int/en), it has been consistently associated with the development of 'DABs'.[28–32] DABs comprehend behaviours that produce short-term rewards and persist despite their adverse consequences. People with DABs report an urge or craving and anxiety before using the drug of choice (or performing the disturbing behaviour, like gambling), feelings that decrease after the behaviour, following a positive mood state or 'high'. In contrast to OCRDs, DABs have an ego-syntonic nature, even though they may become ego-dystonic over time.[33 34]

Despite these differences, keeping those conditions in distinct groups has become a challenge. Advances in research in both compulsive (OCRDs) and impulsive, addictive disorders (DABs) describe several commonalities between them.[26 35–47] The repetitive engagement in self-defeating behaviours suggest individuals OCRDs and DABs may exhibit impaired reward and/or punishment processing[42 47] whereas the diminished ability to stop or divert unwanted ideas and actions indicates the presence of cognitive and behavioural inflexibility.[48] Another aspect is habitual responding and diminished goal-directed control, both suggesting excessive habit-learning.[49 50] Studies have shown that compulsive behaviours in OCRDs (especially in OCD) may start with anxiety and harm avoidance, but gradually evolve into more habitual or impulsive responses with progression and chronicity.[51–53] Similarly, it is now recognised that initial (impulsive) drug use may turn into chronic (compulsive) drug-taking[33 34] that characterised DAB. This progression may be a result of the change from initial action-outcome (reward-based)

learning to stimulus-response (habitual) learning,[54 55] which is possibly related to imbalances between ventral and dorsal frontostriatal recruitment.[5 56] Another theory emphasises the transition from positively reinforced drug-taking (impulsive stage) to negatively reinforced (removal of aversive state) compulsive drug-use (compulsive stage).[57] Also, both DABs[58–61] and OCRDs subjects exhibit reward dysfunction.[26 41 44 62–64] The involvement of areas of the pre-frontal cortex—especially anterior cingulate cortex, ventromedial prefrontal cortex, dorsolateral prefrontal cortex and orbitofrontal cortex—, thalamus and striatum in functional and neuroimaging studies[65–68] also reinforce the relevance of top-down cognitive control in both groups.

Thus, although there is evidence that differences exist between OCRDs and DABs, especially in treatment responsiveness,[33 69] there seems to be enough support for shared vulnerability between those groups, leading some investigators to argue that OCD could be viewed as a form of behavioural addiction.[36 37 46 47] Therefore, a transdiagnostic approach that learns patterns from data in the absence of these group labels (eg, disorder groups) is a promising method for better understanding the conditions among the impulsive-compulsive spectrum.

Recently, experts examined the existing literature to form a unifying consensus framework of biologically validated initiators of DABs and OCRDs.[70 71] Using a transdiagnostic approach, these recent Delphi reviews endorsed six constructs as essential to understanding addiction: reward valuation, reward prediction error (or expectancy), action selection, reward learning, habit and response inhibition (and selection). As essential or very important to the pathophysiology of OCRDs, three constructs from the RDoC matrix (response selection and inhibition/suppression, performance monitoring and habit) emerged. Compulsivity, not initially listed in the RDoC matrix, was also identified as essential to understanding both categories. Those Delphi reviews reinforce the agreement that there is a strong consensus in the field that crucial processes across the addiction-to-OCRD (as so the impulsive-compulsive) spectrum are shared, especially those involving reward.[72]

Rationale

As with other RDoC constructs, those domains are frequently evaluated with neuropsychological tests (table 1). Although commonly used in lab research, decision-making tasks have significant limitations. They are impractical in a clinical setting—a comprehensive assessment battery of existing laboratory paradigms for addiction or OCRDs may take several hours. Subjective assessments, like self-reports and questionnaires, are faster to administer, can be undertaken with or without supervision, and provide richer phenomenological data (rather than a single outcome measure) with information on experimentally unobserved behaviours.[73] Additionally, those subjective measures are more strongly related to disordered behaviour than cognitive tests.[74] However, most available instruments focus on characterising symptoms (vs mechanisms)—guided by a descriptive phenomenological approach (DSM-5 criteria)—rather than transdiagnostic constructs. While there has been some work on assessment tools in OCD,[75] there has been no synthesis of the available evidence on appropriate instruments usable in transdiagnostic samples. To address this gap in the literature, a scoping review to examine and map the range of subjective assessment tools in use for addiction and OCRDs is proposed.

OBJECTIVES

This paper aims to present the protocol of a scoping review of the literature about self-report scales that address high consensus constructs underlying DABs and OCRDs, as described by Yücel *et al*.[72] Consistent with the RDoC framework, clinical evaluation of the diagnostic and prognostic value of the constructs identified here is of value for developing transdiagnostic treatment approaches. For instance, studying different aspects of compulsivity and their neural correlations in addiction and OCRDs may help define shared brain networks that can help identify appropriate prevention and treatment targets. A better knowledge of the available instruments will help develop an assessment battery sensitive to the core domains of OCRDs and DABs and will inform future research in the field.

METHODS AND ANALYSIS

Among many possible methods for conducting an evidence synthesis study, a scoping review is an appropriate methodology to address measurement tools in the context of transdiagnostic constructs in both DABs and OCRDs. Unlike systematic reviews—which summarise all existing evidence on a specific and similar topic—scoping reviews are broader and more exploratory. It can be used to clarify concepts and definitions within the literature, to identify knowledge gaps and characteristics of a particular theory or concept,[76] especially when a research area is complex or has yet to be comprehensively reviewed.[77 78]

The present scoping review will use the Arksey and O'Malley framework for conducting scoping reviews,[77] and further refined by the Joanna Briggs Institute,[78] including the six-stage steps: (1) identifying a research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; (5) collating, summarising and reporting the results. The objective of this particular scoping review does not require the sixth step, a consultation stage (optional). We will inform our findings according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist (PRISMA-ScR) (online supplemental file 1).[79]

The aim of the scoping review protocol should be to give a broad overview of currently available tools and present a summary of their nature, similarities and differences.

Table 1 RDoC high consensus constructs in addiction and OCRDs according to Yücel *et al*[72]

Constructs	Definition	Behaviour paradigms
Habit	Sequential, repetitive, motor behaviours or cognitive processes elicited by external or internal triggers that, once initiated, can go to completion without continuous effortful oversight. Habits are implicit and efficient, requiring few cognitive resources, but can also be maladaptive under novel circumstances. Some habit-related behaviours could be pathological expressions of processes that under other circumstances subserve adaptive goals. Habits are based on previous positively or negatively reinforced learning and commonly occur after extended learning. Both habit formation and expression are typically operationalised within motor control systems. When habit formation is motivated by reward learning, it overlaps with the habit construct within the positive valence domain	Devaluation task Habit learning task Habit task
Compulsivity	Additional construct to the RDoC that received endorsement as a primary construct by experts in both Delphi reviews. Compulsivity was delineated as distinct from habit in that it can also be repetitive, or automatic behaviour. However, it is distinct from habit in that it can also be associated with negative outcome expectancy that contributes to the experience of being 'forced' or 'compelled' to act despite negative consequences, which further distinguishes it from impulsivity (the experience of being 'driven' and associated with positive outcome expectancies)	Information sampling task Balloon analogue risk task Reversal learning Intra-dimensional/extra-dimensional Fruit task Probabilistic reversal learning task set Shifting task Wisconsin card sorting task
Response Inhibition	A sub-construct of the cognitive control system that is responsible for operation of cognitive and emotional systems, in the service of goal-directed behaviour. This function is required when prepotent responses (those automatically elicited) are not adequate to meet the demands of the current context or need to be suppressed. Response inhibition has been presented in the literature as a facet of response selection, an executive process where one consciously withholds a response in the service of goal-directed behaviour	Flanker, Simon, Stroop Antisaccade Conflicting/contralateral motor response task Countermanding Go/NoGo Motor persistence paradigms Stimulus–response incompatibility Stop-signal reaction time
Performance monitoring	A sub-construct of the cognitive control system, responsible for modulating other cognitive and emotional systems, in the service of goal-directed behaviour, when prepotent modes of responding are not adequate to meet the demands of the current context. Additionally, control processes are engaged in the case of novel contexts, where appropriate responses need to be selected from among competing alternatives and allows feedback learning where behaviour can be adjusted in order to optimise goal-directed behaviour	Flanker, Simon, Stroop task
Reward	Reward valuation: processes by which the probability and benefits of a prospective outcome are computed by reference to external information, social context (eg, group input) and/or prior experience. This computation is influenced by pre-existing biases, learning, memory, stimulus characteristics and deprivation states. Reward valuation may involve the assignment of incentive salience to stimuli. Reward learning: a type of reinforcement learning by which organisms acquire information about stimuli, actions and contexts that predict positive outcomes, and by which behaviour is modified when a novel reward occurs, or outcomes are better than expected	► Reward valuation: Delay discounting probability choice task Willingness to pay task ► Expectancy reward prediction error: Drifting double bandit Rutledge passive lottery task Monetary incentive delay task ► Reward learning: Drifting double bandit Pavlovian conditioning Cambridge/Iowa gambling task Probabilistic reward task Probabilistic stimulus selection task Value-modulated attentional capture task
Action selection preference based decision-making	Processes whereby an individual engages a plan for spatial and temporal components of possible purposeful movements, which match internal and external constraints to achieve a goal. It involves an evaluation of costs/benefits and occurs in the context of multiple potential choices available for decision-making	Balloon analogue risk task

Definitions of constructs and their related behaviour paradigms can be found at www.nimh.nih.gov.
OCRDs, obsessive-compulsive and related disorders; RDoC, Research Domain Criteria.

In keeping with this aim, no empirical evaluation will be conducted. However, the final review's data extraction and discussion sections will highlight variations in the target groups of different tools and the scales used.

Methodological framework

Stage 1: identifying the research question

This scoping review will focus on two aspects of the DABs and OCRDs. First, behaviour paradigms widely used to investigate repetitive behaviours in laboratory research have limited use in the clinical setting. Second, self-report questionnaires available for subjective assessment of such behaviours focus mainly on DSM-5 symptoms but rarely assess transdiagnostic constructs. To address these problems, an initial research question has been proposed:

> What instruments are currently available for assessing important RDoC constructs in DABs and OCRDs?

The term 'currently available' for this scoping review refers to questionnaires published in peer-reviewed journals at any time. As appropriate for this methodology, this research question may be adequate to the literature found by the authors during the research process.

Stage 2: identifying relevant studies

A detailed and comprehensive search will be done to obtain all relevant studies that mention the instruments of interest. We will search for evidence in MEDLINE, EMBASE, PsychINFO and Web of Science databases, including original and review papers and grey literature (conference proceedings, dissertations and theses). An additional hand search in reference lists of selected papers will also be conducted to identify possible additional studies. The detailed inclusion criteria and search strategy were guided using the Population, Concept, Context, and Types of Sources of Evidence strategy described by the JBI Reviewer's Manual[80] (table 2).

To identify the relevant studies, we adopted the three-step search strategy recommended by the JBI manual in this stage. The first and second steps included a limited search in MEDLINE (via PubMed) to retrieve relevant articles. The title and abstract of selected papers from this initial broad search were scanned for keywords and index terms to describe the articles. In the second step, the keywords and index terms identified in the first step were used to develop the search strategies (search strings) for the final search in all databases (table 3). The third and final step will include the 'hand-searching' of the reference list of identified reports and articles for additional sources. The first step of the search was conducted on 1 December 2021, and the selection for full-text reading was concluded on 31 March 2022, due to the high number of papers retrieved. The planned end date for completing the review is 30 September 2022.

All relevant studies recovered from the comprehensive search, irrespective of study design or date of publication, will be selected. A large range of languages will be allowed (including English, Spanish, Portuguese, French, Italian and German), as the purpose of a scoping review is to be as comprehensive as possible.

Only studies reporting transdiagnostic instruments that address RDoC relevant constructs for DABs and OCRDs—as defined previously in both Delphi reviews—will be included in the review. Validation of selected tools in other languages will also be included during the selection stage. Instruments designed to map or assess the severity of specific DSM or ICD defined disorders or that focus on just one symptom or behaviour but are not applicable in a transdiagnostic sample or population—such as Y-BOCS for OCD—are beyond the scope of this review and will not be included. Studies mentioning instruments not validated or without information about validating procedures undertaken, studies that do not have any

Table 3 Search strategy proposed for MEDLINE (PubMed)

Search items	
#1	"Response inhibition" OR Habit* OR Compulsive* OR reward OR "action selection" OR "Performance monitoring"
#2	"self-report" OR questionnaire OR psychometric OR scale OR "measurement tools" OR interview* OR index OR instrument
#3	valid* OR reliabe*
#4	#1 AND #2 AND #3

The entire set of search strategy is available in online supplemental file 2.

Table 2 Population, Concept, Context and Types of sources of evidence (JBI Reviewer's Manual)

Main concept	Inclusion criteria
Population	NA
Concept	► Instruments/self-reports/tools ► Format (eg, paper or web-based) ► Validity and reliability (ie, if and how they have been psychometrically tested) ► RDoC constructs: contents (ie, assessment domains) of the included instruments
Context	Open (sources of evidence from any contextual setting would be eligible for inclusion)
Types of sources of evidence	Peer-reviewed publications and grey literature

RDoC, Research Domain Criteria.

measurement tool, studies describing protocols only and duplicates will be excluded.

Stage 3: study selection

After the search, the titles and abstracts of identified records will be imported into a reference manager (Endnote 20, 2022 Clarivate) for deduplication. The selection of studies will involve two stages of screening. Stage 1 will involve the screening of titles and abstracts by two authors independently to determine their eligibility for full-text review based on the a priori inclusion and exclusion criteria. In stage 2, authors will independently assess full-text articles for whether they meet the inclusion or exclusion criteria. If any disagreement occurs in relation to inclusion, both authors will review full-text articles again. In the event of no agreement, a senior expert of the research team (LFF) will discuss the differing opinions until a consensus is reached. The number of studies excluded after screening titles, abstracts and full texts will be recorded, as well as the reasons for exclusion. On study selection, an adapted version of the PRISMA flow diagram will be completed to report final numbers, detailing reasons for exclusion as recommended in the PRISMA-ScR checklist.[79]

The study selection will be guided by the eligibility criteria specified under the inclusion/exclusion criteria above to ensure that relevant studies are selected.

Stage 4: charting the data

A data charting form that will provide a logical summary of information extracted from each full-text article and instrument included in the study will be developed before the scoping review and updated as necessary as the study progresses (table 4). The data charting form will be designed to extract information relevant to the review question and objectives and will include, but may not be limited to, title, publication type, the purpose of the study and methodology, target population, instrument of interest, constructs assessed, number of items, mode of administration, validity and reliability information (box 1). Data charting will be carried out independently by two authors. A senior expert of the research team (LFF) will resolve differing opinions and provide supervisory oversight to the final version of the data extracted.

Box 1 Inclusion and exclusion criteria

Inclusion criteria

⇒ Articles related to DABs and/or OCRDs.
⇒ Articles related to any subconstructs of interest, such as habit, reward, etc.
⇒ Articles presenting any kind of assessment of such constructs.
⇒ Original and review studies, quantitative, qualitative and mixed methods study designs.
⇒ Articles published in English, Spanish, Portuguese, French, Italian and German.
⇒ Papers published at any time.

Exclusion criteria

⇒ Articles not related to the main subject.
⇒ Articles related to the subject but only reporting behavioural tasks as measures of the constructs.
⇒ Studies that focus exclusively on neuroimaging.
⇒ Studies mentioning assessments that are specific to one single disorder, that is, not transdiagnostic measures.
⇒ Studies in other languages, such as Turkish or Chinese, for feasibility reasons only.

DABs, disorders due to addictive behaviours; OCRDs, obsessive-compulsive and related disorders.

Table 4 Data extraction template

Study characteristics	Extracted data
General information	Reference
	Publication type (eg, journal article, grey literature, reports, government document)
	Purpose of study (eg, validation study, comparison study, intervention study)
	Methodology
	Target population or setting (eg, school/community/clinic)
Measurement tools	Instrument of interest
	Constructs assessed
	Number of items
	Mode of administration
	Measurement properties (validity and reliability)

Stage 5: collating, summarising and reporting the results

Data extracted from included studies will be collated, and quantitative results will be presented using descriptive statistics such as percentages and tables, charts and flow diagrams. This will be followed by an informed discussion based on careful consideration of the results in keeping with the purpose and objective of the review. No meta-analysis is planned for the review, and neither will the quality of evidence of included studies be assessed, as the purpose of the scoping review is to give a descriptive overview of currently available measuring tools in the literature and present a summary of the nature, similarities and differences of the instruments found.

Patient and public involvement

No patient involved.

AMENDMENTS

Any amendments to this protocol will be documented and reported, with details of amendments and rationale for why they occurred.

Ethics approval is not a requirement for the present review. All data will be obtained from publicly available documents, and no primary data will be generated. The

results of the study will be disseminated through publication in a peer-reviewed journal and presented at relevant conferences.

Contributors APR was responsible for the conception and design of the study, the collection, analysis, and interpretation of data, and the preparation of the manuscript. LFF was responsible for the conception and design of the study, the analysis and interpretation of data, and the preparation of the manuscript. MP-P was involved in the collection, analysis, and interpretation of data and the preparation of the manuscript. CF-d-S, JFEM and JBd-S-A were involved in the collection, analysis and interpretation of data. All authors revised and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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