

## Frequently Asked Questions about the Cybernetic Dysfunction Theory

Supplement to “A cybernetic perspective on the nature of psychopathology: Transcending conceptions of mental illness as statistical deviance and brain disease.” *Journal of Abnormal Psychology*.

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1. Why do you distinguish between “mental disorder” and “psychopathology”? Aren’t those really just two terms for the same thing?
2. Your use of the word “goal” is confusing. Isn’t a goal a well-specified future state that people consciously value and make some degree of commitment to work toward through their actions?
3. Why are your definitions of psychopathology and mental disorder better than \_\_\_\_\_’s definition? (Including DSM-5, Wakefield, Boorse/Kendell, Bergner, Widiger, and Borsboom)
4. How does your theory deal with disorder X? (Including psychopathy, schizoid personality disorder, and addiction.)
5. Which goals need to be disrupted in order to identify disorder X?
6. Doesn’t addiction have to be considered a brain disease because of the way drug use affects the brain over time?
7. You state that extremity on any major trait or dimension of psychopathology is insufficient to identify psychopathology. (a) Isn’t that internally contradictory, given that you are talking about “dimensions of psychopathology.” And (b) isn’t the tendency to experience distress or negative emotion that is an aspect of Neuroticism or Negative Affect or Internalizing inherently indicative of psychopathology, if it is sufficiently extreme?
8. Doesn’t your approach render everyone psychopathological? Is there anyone who can achieve all of their goals?
9. Many people have difficulty pursuing their goals because they are impoverished, imprisoned, or discriminated against. Should they be considered psychopathological?
10. Didn’t cybernetics go out of style long ago? Doesn’t it refer to primitive serial models of computation that rely only on negative feedback and set points and have little to do with the kinds of massively parallel processing that go on in brains?
11. If your approach is cybernetic, why doesn’t it have a computational model associated with it?

**1.** *Why do you distinguish between “mental disorder” and “psychopathology”? Aren’t those really just two terms for the same thing?*

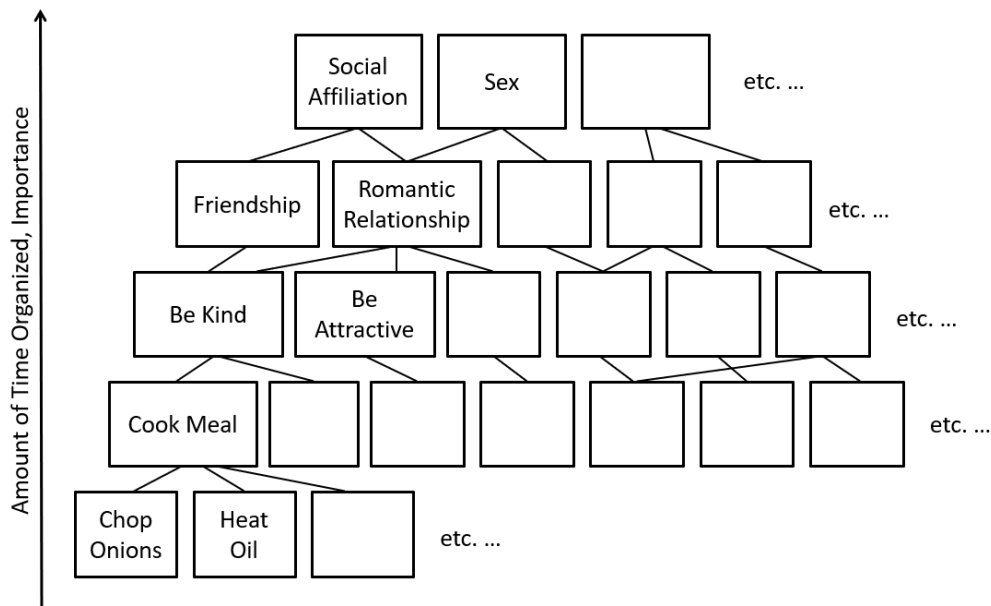
We find it useful to reserve one term, “mental disorder,” to refer to official diagnostic entities that are used in medicine and another, “psychopathology,” to refer to entities that meet scientifically justifiable criteria for a condition of mental illness (i.e., psychological disease/dysfunction) regardless of whether that condition warrants a diagnosis by official standards. The choice of these terms is somewhat arbitrary, but it is based primarily on the fact that “mental disorder” is the standard term used in medicine today for its official diagnostic entities—for example, in *The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; APA, 2013)*. (Note that this does not mean we endorse either the *DSM-5*’s definition of “mental disorder” or its diagnoses, as we discuss in [Question 3](#); rather, we use the term *mental disorders* to refer primarily to the kind of official diagnoses that would replace the *DSM-5* system if medicine were to embrace our theory.) There is nothing inherently or conventionally distinct about the meanings of “mental disorder” and “psychopathology” and much of the field uses them interchangeably. We do not, and we hope you’ll humor us in order to understand what we’re talking about. The distinction is important because our theory argues that psychopathology is a matter of objective fact, but we do not believe that deciding who should be diagnosed and treated will ever be purely a matter of objective fact. There will probably always be people with psychopathology mild enough that society deems them unsuitable for a diagnosis of “mental disorder,” and that is not necessarily a flaw in the system.

**2.** *Your use of the word “goal” is confusing. Isn’t a goal a well-specified future state that people consciously value and make some degree of commitment to work toward through their actions?*

That is probably the most common meaning of the word “goal” in psychology. However, we are using a broader definition of goal. In part, this is because cybernetics uses a much broader definition of “goal,” in which the goal is simply any target state of a cybernetic system. A cybernetic system is one that has at least three separate components: (1) a controlled variable physically represented in the system, with a value or range of values toward which the system attempts to move (the goal); (2) a feedback process that allows comparison of the current state of the controlled variable with the goal state; (3) an operator or set of operators that are engaged when the current state does not match the goal and that have the effect of shifting the value of the controlled variable toward the goal.

On the cybernetic definition, the human organism contains many goals, not all of which are psychological (such as those involved in basic aspects of physiological homeostasis and control). Therefore, we limit the goals relevant to our theory to psychological goals, but even so we still use a broader definition of “goal” than psychologists typically do. We allow psychological goals to be unconscious and therefore not accessible for accurate self-report (note that we believe people can report reasonably accurately on many of their goals; we simply allow the possibility that some cannot be accurately reported because they are unconscious). We also allow them to be vague rather than well-specified, and we allow the existence of goals to which people have no current commitment to action. As long as the latter remain in memory, the function as desired states of the world that the person is not actively trying to bring about, which can nonetheless be consequential for the person’s ongoing interpretation of experience. On our definition, many related psychological constructs are goals, including desires, motives, motivations, needs, and basic needs. Basic needs generally correspond to goals at very high levels of the goal hierarchy.

Goals are arranged in a hierarchy in two ways. First, long-term or complex goals are typically accomplished through various subgoals, which in turn have their own subgoals, etc., down to the level of individual motor actions or cognitive operations. Goals that organize larger amounts of time, because they are higher up in this hierarchy of dependent goals, are more important than the lower-level subgoals they subsume and, therefore, more powerful in their capacity to induce emotional disturbance and psychopathology when they are disrupted. One complication to this assertion is due to the fact that certain goals can be subgoals for more than one higher-level goal, and so, if one of the higher-level goals is more important than the other, the shared subgoal could be more important than the less important of the two higher-level goals. We have illustrated human goal hierarchies schematically with the following figure (reprinted with permission from DeYoung & Krueger, 2018a.):



This shows a hierarchical structure of goals for a hypothetical individual. Lines between levels indicate dependence of goals on subgoals and indicate (a) that goals often require multiple subgoals and (b) that goals sometimes advance multiple superordinate (higher-level) goals.

The second way in which goals are organized hierarchically has to do with their relative importance at a similar level of abstraction or generality (within a single row in the figure, for example). Even at the same or similar levels of the depicted hierarchy, different goals will often be assigned different priorities. This aspect of priority in the goal hierarchy is not shown in the figure, but again the relative importance of goals that are disrupted is what determines the severity of psychopathology. Psychopathology increases with the number and importance of the goals that are disrupted.

Our theory asserts that there is a fact of the matter about the contents and organization of people's goal hierarchies, at any given time, even though that structure may not be entirely clear to the person or to the clinician evaluating them. The best that can be done in assessing psychopathology is to try to identify the person's important goals as accurately as possible based on information available from self-reports, interviews, or other sources. For additional treatment of the nature of goals in our theory see DeYoung, 2015; DeYoung & Krueger, 2018a, 2018b; DeYoung & Weisberg, 2019.

### 3. Why are your definitions of psychopathology and mental disorder better than \_\_\_\_\_'s definition?

Our definition is that psychopathology is *persistent failure to move toward one's goals, due to failure to generate effective new goals, interpretations, or strategies when existing ones prove unsuccessful*. Our definition of mental disorder is *psychopathology severe enough to be deemed consistently appropriate for treatment by the medical establishment*. We will review a few prominent or otherwise interesting alternative definitions. These do not distinguish between “mental disorder” and “psychopathology,” but we will generally discuss which of these they resemble in our definitions.

**DSM-5.** “A mental disorder is a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning. Mental disorders are usually associated with significant distress or disability in social, occupational, or other important activities. An expectable or culturally approved response to a common stressor or loss, such as the death of a loved one, is not a mental disorder. Socially deviant behavior (e.g., political, religious, or sexual) and conflicts that are primarily between the individual and society are not mental disorders unless the deviance or conflict results from a dysfunction in the individual, as described above” (APA, 2013, p. 20).

The DSM-5's definition is obviously proposed in the context of deciding when diagnosis should occur and hence corresponds more closely to our definition of *mental disorder* rather than *psychopathology*. This is perhaps most evident in its use of the phrase “clinically significant,” which is never clearly defined but allows for the extra-scientific decisions that we take to be the hallmark of identifying mental disorder as opposed to just psychopathology. In other words, on the DSM-5 definition, it is possible to have a “dysfunction” that is deemed not to be clinically significant and therefore is not a mental disorder. Thus, “dysfunction” in the DSM-5 definition might correspond to our definition of “psychopathology”; however, it is impossible to tell because DSM-5 never defines “dysfunction.” This is problematic because, as we have noted, there are several distinct viable definitions of “dysfunction” (DeYoung & Krueger, 2018a; Wouters, 2003). Nor does the DSM-5 define “disability” or “impairment,” two other constructs that seem at least superficially relevant to our definition of psychopathology. Note also that, because the DSM-5 definition says merely that mental disorders are “usually” associated with disability, disability is, therefore, not technically part of the general definition of mental disorder because one can have mental disorder in some cases without disability. In short, the DSM-5 definition is so vague about many of its key terms that it is obviously a poor definition from a scientific or philosophical perspective.

Another important point of comparison is in relation to the exceptions specified in the DSM definition for responses to common stressors or losses and for socially deviant behavior. On our theory, stress or loss can cause psychopathology when it disrupts people's goal pursuit and they are unable to adapt afterward in order to resume goal pursuit. One way to adapt would be for the person to accept that they may be unable or uninterested in pursuing their important goals temporarily, while they recuperate or grieve. This involves a temporary deprioritization of certain goals in favor of other goals, thereby changing the person's goal hierarchy. After the person has recovered to a sufficient degree, they may shift their priorities back to focusing on their other goals, thereby increasing their importance again. Typically, stress or loss causes psychopathology when people's reactions to the precipitating event go on longer than

they expect and they are not able to reprioritize their goals effectively or to develop other strategies for coping effectively with their reactions.

Socially deviant behavior does not constitute psychopathology, according to our theory, but it can cause psychopathology if it prevents the person from pursuing their important goals (some of which may themselves be socially deviant). If it does prevent them, nonetheless it is not the fact that the behavior is socially deviant, per se, that makes the person psychopathological. Society may punish the person for socially deviant behavior or thwart that behavior, and this can cause psychopathology if the person is not able to change their goals or to find a way to work around society's interference. It is easy, and probably appropriate, to blame society in cases where behavior that does not harm others is stigmatized or criminalized (as has sometimes occurred historically with homosexuality, for example; note that this is not to say that homosexuality is psychopathology, but rather that society may cause psychopathology in homosexual people, often resulting in depressive or anxious features). In cases where others are likely to be harmed, however, societal interference may be appropriate, which means that it is sometimes acceptable for society to risk causing psychopathology in order to prevent harm to others. One would hope, in such cases, that society would also be willing to offer mental health care when necessary.

In sum, we do not see a need to include any exceptions to our definition of psychopathology, which we take to be a strength of the definition in and of itself.

**Wakefield (1992, 2007).** Mental disorder is “harmful dysfunction.” “A condition is a disorder if it is negatively valued (‘harmful’) and it is in fact due to a failure of some internal mechanism to perform a function for which it was biologically designed (i.e., naturally selected).” Wakefield (2007, p. 149) further defines “harmful” as “judged negative by sociocultural standards,” which is an unusual definition of “harm.” On Wakefield’s account, “dysfunction” is closer to our notion of psychopathology, whereas the addition of the socially adjudicated “harm” criterion renders the whole definition closer to our notion of mental disorder. We discussed the problems with this theory extensively in a previous publication (DeYoung & Krueger, 2018a). In short, the main problem is that Wakefield relies on an evolutionary definition of “dysfunction,” whereas we rely on a cybernetic definition of “dysfunction” that we believe provides a definition of psychopathology that is more coherent, more scientifically tractable, and more in line with medical, academic, and lay understandings of psychopathology.

**Boorse (1977, 2014).** “A pathological condition is a state of statistically species-subnormal biological part-function, relative to sex and age” (Boorse, 2014, p. 684). We critique Boorse’s definition in the article to which this is a supplement. In a previous article, we discussed some additional concerns about his definition of “function” as referring to the manner in which the part in question facilitates current survival and reproduction (DeYoung & Krueger, 2018a). Boorse’s definition is nearly identical to that of the psychiatrist **Kendell (1975)**, who used the term “biological disadvantage” to refer to reductions in survival and fertility, but Boorse’s definition is more thoroughly elaborated. Although Boorse claims to have developed an objective definition of disease that would be parallel to our notion of psychopathology, in fact he acknowledges that the decision about how far from the norm function must be to indicate pathology is “arbitrary” or “conventional,” such that, in reality, the full definition is closer to our notion of mental disorder.

**Bergner (1997).** Psychopathology is “significant restriction in the ability of an individual to engage in deliberate action and, equivalently, to participate in available social practices” (Bergner, 1997, p. 246). (We thank an anonymous reviewer for pointing us toward this definition and the next one.) This definition has superficial similarities to our definition of psychopathology, especially in its first half. “Deliberate action” suggests voluntary, goal-directed action, and our definition involves failure in that domain. However, Bergner (1997, p. 238) defines a disability in deliberate action as “being unable in some significant measure (a) to know what one is doing and/or (b) to control (initiate or restrain) one’s behavior.” These are indeed likely causes of psychopathology, from our perspective, as they may prevent people from pursuing their goals effectively, but they are not necessary and sufficient for psychopathology. In the article to which this is the supplement, we discuss the example of healthy psychics whose regular auditory hallucinations lead them to believe that they are communicating with spirits from other realms (Power et al., 2017). In an important sense, these people do not know what they are doing (as they appear to be mistaken about the nature of the world and their actions), but they are nonetheless not psychopathological. Regarding part (b), we do not think the mere fact that people are able to control their own behavior is any guarantee that they will avoid psychopathology. A person with normal levels of behavioral control (similar to Conscientiousness and Stability, in trait terms; DeYoung & Rueter, 2016) may nonetheless find themselves unable to figure out how to act in such a way as to pursue their important goals effectively. It is easy to imagine someone who is severely depressed, not in the manner of feeling unable to motivate themselves to initiate any behavior, but rather in the manner of not having any clear sense of what to do and hence feeling completely hopeless. On the whole, therefore, Bergner’s view of deliberate action does not provide a viable alternative to our view of cybernetic function.

Additionally, we do not think that inability to participate whole-heartedly in social practices that are demographically normative (as Bergner describes the second half of his definition) is necessarily indicative of psychopathology unless the person *wants* to participate in social practices or *needs* to participate in social practices in order to pursue some of their important goals. Obviously, most people want to participate in social practices, so for most people this ability is crucial for their mental health. However, we do not find it necessary to make this definitional for psychopathology, and we acknowledge the rare exception, like the “schizoid” hermit mentioned in our response to [Question 4](#). Our theory avoids these problems by specifying persistent failure of goal pursuit (for whatever reason), rather than social participation, to be the criterion for psychopathology.

**Widiger & Sankis (2000); Widiger & Trull (1991).** Mental disorders are “dyscontrolled [or “involuntary”] organismic impairments in psychological functioning” or “dyscontrolled maladaptivity” (Widiger & Sankis, 2000, p. 383). “Persons who are hindered in their ability to adapt flexibly to stress, to make optimal life decisions, to fulfill desired potentials, or to sustain meaningful or satisfying relationships as a result of an impairment in cognitive, affective, and/or behavioral functioning over which they have insufficient control, have a mental disorder.” (Widiger & Trull, 1991, p. 112). Widiger and colleagues draw approvingly on Bergner’s (1997) claims about deliberate action, but they make a broader claim about the range of abilities that are involved in psychopathology. These include “fulfill[ing] desired potentials,” which sounds a lot like pursuing important goals successfully. Still, there is a lot of vagueness: “Optimal” life decisions by what criterion? What does adapting “flexibly” entail? What constitutes an “impairment”? What determines whether control is “insufficient” given that voluntary control over human function is never complete? What does it mean for an impairment to be

“organismic”—what other kinds of impairment are there? Although “maladaptivity” is not explicitly defined, it seems closer to our cybernetic usage of “adaptive,” referring to that which allows effective goal pursuit, rather than to the evolutionary sense of “adaptive.” If “maladaptivity” is inability to pursue goals (including basic needs) effectively, and “dyscontrolled” indicates that the person is not able voluntarily to develop new goals or strategies or interpretations (including emotional reactions) in order to resume effective goal pursuit, then this definition is very close in spirit to ours. However, we think it would become more coherent if it acknowledged explicitly that *persistent disruption of the pursuit of important personal goals* forms the core of its criteria for psychopathology. Widiger and Sankis (2000, p. 383) wrote, “People seek professional intervention in large part to obtain the insights, techniques, skills, or other tools (e.g. medications) that increase their ability to better control their mood, thoughts, or behavior”—to which we would add, *in order to pursue their important goals effectively*, because that is inherently implied by the word “control” from our cybernetic perspective. Any cybernetic control system has at least one goal.

**Borsboom (2017).** Network theory defines mental disorder as “the (alternative) stable state of a strongly connected network,” where the nodes in the network are “the problems that have been codified as symptoms in the past century and appear as such in current diagnostic manuals,” and the edges (connections) of the network are “direct causal connections between symptoms” (Borsboom, 2017, pp. 7 & 9). In contrast, when symptoms are weakly causally connected, the network can be in a stable state of good mental health. One weakness of Borsboom’s definition is that it offers no scientific or rational criterion for what is considered a symptom, instead relying only on accumulated medical wisdom. Additionally, it offers no explanation of what it is about the stable state of a strongly connected network of symptoms that makes it definitionally pathological, beyond referring vaguely to the kinds of “problems in living” with which people present to mental health professionals. The idea that mental disorder is what people complain about to mental health professionals plus what those professionals officially agree are symptoms does not provide much of a foundation to build on scientifically or philosophically. (Some have argued that this sort of definition is “almost worse than no definition at all”; Kendell, 1975.)

Further, it seems likely that one could identify a set of “symptoms” that were strongly interrelated in the individual over extended periods of time (anxious arousal, difficulty concentrating, and rumination, for example), such that they generally tended to co-occur, but where the person did not feel sufficiently debilitated by these problems, even when under stress, to go seek professional health care. For that matter, this same person might well not show any obvious psychopathology under our definition or under any of the other definitions we discuss here. In fact, one likely problem for the network theory is that many clusters of symptoms are likely to be highly correlated within people whether or not they are suffering from psychopathology according to other definitions, simply because the symptoms in the cluster share some underlying mechanism, and thus they will tend to co-occur consistently, even if they occur only rarely. For example, the neural mechanisms of anxiety have been studied extensively and can explain the co-occurrence of anxious arousal, difficulty concentrating, and rumination (Gray & McNaughton, 2000). This highlights a serious problem with the network theory that we have discussed before, namely that it insists that such correlations among symptoms must be due to direct causal connections and denies the existence of any broad common causes that influence multiple symptoms (DeYoung & Krueger, 2018b). Such broad common causes, assuming they are unmeasured, can be appropriately represented as latent variables in a network model. (Indeed, many latent-variable and network models are fungible, further undermining the claim that “direct causal connections” exhaust the universe of explanations for observed

correlations among symptoms; Bringman & Eronen, 2018.) If a network model of the type endorsed by Borsboom includes a group of nodes that share an unmeasured cause and does not include a corresponding latent variable, it will be distorted and hence inaccurate. Unfortunately for the network theory, in many cases mechanisms that function as common causes for multiple symptoms are known or hypothesized based on preliminary evidence, even if the manner of their functioning that causes psychopathology is not entirely understood (DeYoung & Krueger, 2018a, 2018b). Our theory explicitly acknowledges the existence both of causal interactions between relatively specific symptoms and of more broadly acting forces that cause groups of symptoms to covary.

#### 4. *How does your theory deal with disorder X?*

This is a common way to test theories of psychopathology conceptually: start with something that the questioner thinks everyone agrees is an example of psychopathology and see whether the theory comes to the same conclusion. One issue here is that the disorders invoked are often categorical diagnoses from *DSM-5*, and we stress that our theory follows the evidence that these diagnoses are scientifically invalid. It does not appear that any common mental disorder identified by the *DSM-5* is in reality a discrete, categorical entity (Carragher et al., 2014; Haslam et al., 2020; Markon & Krueger, 2005; Walton et al., 2011; Widiger & Samuel, 2005; Wright et al., 2013). The traditional diagnoses, like schizophrenia, major depressive disorder, borderline personality disorder, etc., are heterogeneous collections of symptoms that do not reflect the way symptoms co-occur in reality, with arbitrary cutoffs for exactly how severe various symptoms must be to infer presence of disorder (Kotov et al., 2017). There is no need for a scientific theory of psychopathology to explain diagnoses that are themselves invalid and describe nonexistent categories. With that being said, we want to be very clear that we are not denying the reality of mental illness or the reality of the problems of people who receive these diagnoses. For the purposes of answering the question, “How does your theory deal with disorder X?” we are willing to consider the various symptoms that are subsumed by that disorder (e.g., delusions, hopelessness, dysregulated affect).

**Psychopathy.** The problem we get asked about most frequently is not an official *DSM-5* diagnosis in Section II (diagnostic criteria and codes), but it is widely studied and also recognized as a diagnostic concept in the Alternative *DSM-5* Model of Personality Disorders (AMPD), as a specifier for antisocial personality disorder. Because our criterion for psychopathology refers exclusively to the inability of people to pursue their own goals, people worry that we will not be able to identify, as psychopathological, disorders in which people exploit or hurt other people while pursuing their own goals effectively. To some extent, their concerns are warranted. We do not think that causing other people to suffer (interfering with others’ goals or physical well-being) is itself a good criterion for mental illness. However, it is frequently a *cause* of mental illness because pursuing one’s own goals very often requires getting along with others. People with the extremely callous and antisocial traits labeled as “psychopathy” often end up in jail repeatedly, despite the fact that they presumably value their freedom (i.e., have a goal of not being jailed), so it is clear that their callous, antisocial behavior often causes psychopathology, on our theory. However, the rare psychopaths who somehow manage to exploit or hurt others while still effectively pursuing all of their other goals are not mentally ill on our account – but they are likely to be criminal. They must be stopped or controlled by their acquaintances or by the justice system, not by the mental health system. This does not mean that mental health care should not be given to people considered “successful psychopaths,” if there is evidence that such treatment will reduce the risk that they hurt others and sabotage themselves. High levels of callousness and antisocial behavior are inherently a risk for



psychopathology, even though they are not direct criteria for psychopathology in our theory, because they increase the likelihood that the person will not be able to pursue their goals effectively. We believe that interventions for individuals at high risk for psychopathology can contribute to the greater good of society as well as the good of the individuals themselves (e.g., prevention efforts directed at children with a tendency to be unusually callous; Waller et al., 2013).

**Schizoid Personality Disorder.** We interpret the problems that get labeled as “schizoid” in terms of extreme levels of *detachment*, a construct from empirically derived, dimensional models of psychopathology (e.g., Kotov et al., 2017). These problems might seem to pose a challenge to our theory if they entail that the person simply has no goals for close relationships. However, our theory would not consider a severely detached person to have psychopathology unless they were unable to pursue their own goals effectively. In this regard, our theory is not so different from the diagnostic criteria in DSM, in which schizoid traits would not be considered to indicate a personality disorder unless they led to “clinically significant distress or impairment in social, occupational, or other important areas of functioning.” The main difference is that, using our model, the assessment would need to consider whether the person truly had an absence of any desire for relationships or whether they had some such desire (potentially that they were not fully or clearly aware of) that they were unable to fulfill because of their extreme detachment. (In the article for which this is the supplement, we wrote, “people who believe they have little need for social affiliation may be mistaken.”) However, if the person truly had no desire for relatedness and was content with a lack of relationships, they would not have psychopathology from our perspective, unless their detachment were interfering with other goals that they did have (which often happens, of course, given that many goals depend on social relationships of one kind or another for their fulfillment). The “schizoid” hermit who is content living alone in the woods off the grid and never desires to interact with people is not psychopathological according to our theory.

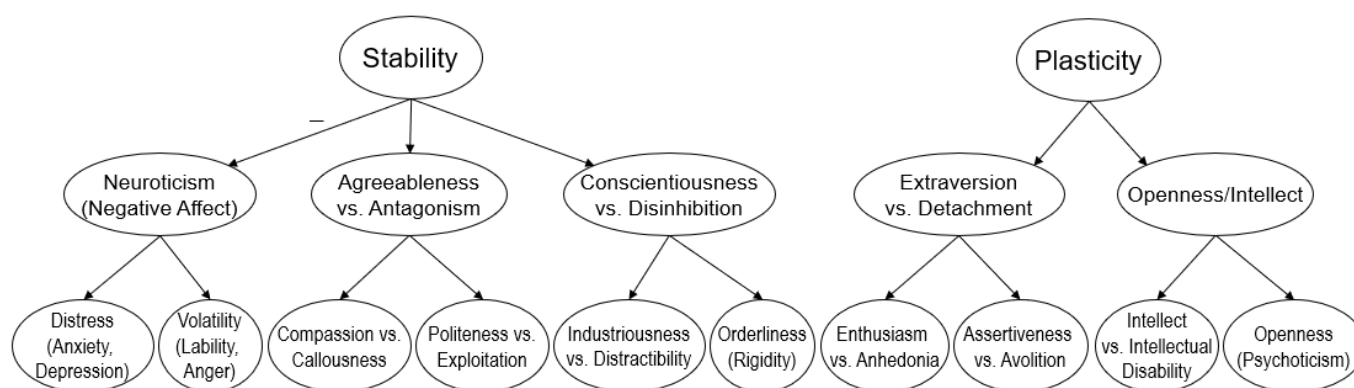
The example of “schizoid” traits is sometimes brought up as a prelude to what is hypothetically an even more severe case, in which someone claims to have no goals at all (not just an absence of goals in one particular domain of functioning like close relationships). How does our theory handle the case in which the person has no goals, if psychopathology requires failing to pursue goals effectively? In short, we do not think such a case can exist. People are cybernetic systems and cybernetic systems are fundamentally goal directed. Even a severely depressed person who says they value nothing at all and has insufficient motivation to get out of bed is typically not pleased to be depressed and would rather be able to get out of bed. Those constitute goals on our definition. It is difficult to extinguish people’s very basic goals to feel pleasure and avoid displeasure, even when their pursuit is rendered extremely difficult by depression. Even if certain unusual people consciously truly believe they have no goals, we strongly suspect that they are mistaken and that, unconsciously, psychological goals persist.

**Addiction.** In a previous article, we answered the question of how our theory would deal with an alcoholic whose goal was to stay drunk and who was successful in doing so (DeYoung & Krueger, 2018b). Would this person not have psychopathology because of their success in pursuing this goal? The answer is clearly *no* because this person’s drinking would probably be interfering with other important goals they are likely to have, such as staying healthy and maintaining good relationships. In order to determine the presence or absence of psychopathology, from our perspective, one must consider all of the person’s goals at once. In [Question 6](#) we discuss why we don’t think addiction should be considered a “brain disease.”

### 5. Which goals need to be disrupted in order to identify disorder X?

This question is a variant of the previous question but reveals a serious misunderstanding of our theory. First, as noted, our theory generally does not endorse the existence of “disorder X” when that refers to a traditional categorical diagnosis. Second, our theory identifies the presence of psychopathology only in terms of the person’s inability to pursue their own important goals effectively, regardless of what goals those are.

Identifying psychopathology therefore entails getting an understanding of people’s characteristic adaptations: their goals, the strategies they use to pursue their goals, and the ways they interpret themselves and the world. As a second step in clinical evaluation, we recommend characterizing people in terms of common features of psychopathology using a dimensional model, like the one illustrated below (adapted from DeYoung & Krueger, 2018a; see also DeYoung et al., 2016; Allen et al., 2019) or the more detailed model supplied by the Hierarchical Taxonomy of Psychopathology (Kotov et al., 2017), but this step has nothing to do with determining whether psychopathology is present. If psychopathology is present, one might think of this second step as asking whether the person is manifesting any of the common features of psychopathology, most of which happen to correspond to personality trait dimensions.



In our theory, there are broad (high-level) goals associated with these dimensions (e.g., *remaining focused* as a goal associated with Consciousness, or *acquiring new information* as a goal associated with Openness/Intellect), but there are also many goals that are defined in relation to the person’s specific cultural or unique circumstances, which are characteristic adaptations rather than traits (DeYoung, 2015). All of the person’s goals, whether traits or characteristic adaptations, are relevant to identifying the presence of psychopathology, but the broad goals associated with traits will always have to be accomplished through subgoals that are characteristic adaptations—where the rubber meets the road, so to speak. Hence characteristic adaptations are always disrupted in psychopathology. The presence of extremity on any particular trait dimension does not inherently indicate psychopathology because the person may be able to compensate for their extreme trait through their characteristic adaptations. For example, someone who is very high in Detachment may find a job that requires minimal interaction with people and a romantic partner who does not require a lot of expressive affiliation.

Nonetheless, having extreme trait levels does tend to carry a risk for psychopathology and is often a contributing cause, helping to explain why the person has not been able to pursue their goals effectively. Returning to the question we began with, the nature of the goals disrupted in psychopathology does not necessarily indicate the causes of the person's psychopathology. In [Question 4](#), for example, we mentioned that someone might have a problem with addiction, even though they were successful in pursuing their goal of remaining consistently intoxicated, because goals in unrelated domains were disrupted.

*6. Doesn't addiction have to be considered a brain disease because of the way drug use affects the brain over time?*

In the article to which this is a supplement, we critique the popular idea that psychopathology is “brain disease.” Someone might be sympathetic to our argument in general but still believe that addiction is an exception and could reasonably be considered brain disease. However, we do not think that addiction should be considered a “chronic, relapsing brain disease” (NIDA, 2018), despite the fact that it involves the brain and that, like many other psychopathologies, it involves risk for relapse following recovery. On our theory, someone who previously suffered from drug addiction but no longer uses drugs in a manner that undermines the pursuit of their important goals (even if they occasionally still use the drug to which they were addicted) no longer has psychopathology. Addiction is a chronic disease only to the extent that a person has chronic cybernetic dysfunction. The brains of addicts change in ways that reflect both habituation to the drugs to which they are addicted and the potentially rewarding properties of those drugs, but they also often change back to more normal configurations once addiction has ended (Lewis, 2017). Many of the changes in the brain that accompany addiction (whether the addiction is to a drug or to a behavior like gambling) are not in themselves pathological. It is only when the habit that they govern interferes with the person's other important goals in life that psychopathology is present. As with other forms of psychopathology, some direct biological interventions may be effective for treating addiction, but behavioral interventions can also be effective (and many addicts recover without treatment; Heyman, 2013). It has been argued that the fact “[t]hat addiction is tied to changes in brain structure and function is what makes it, fundamentally, a brain disease” (Leshner 1997, p. 46).” In reality, however, these changes do not differentiate addiction from any other form of learning- and experience-dependent changes in brain function. It is true that psychotropic drug exposure is unusual in that it acts directly on the brain, but nonetheless many of the changes that it causes are not qualitatively distinct from those caused by other impactful experiences (which is why it makes sense to consider behavioral addictions true addictions). There may be other brain changes that are specific to the drug in question, so the drug may have a pathogenic effect on the brain, but that is not what makes drug addiction a *psychopathology*, so it does not make psychopathology associated with drug addiction a brain disease. Rather this sort of effect of a specific drug on the brain would suggest that there are neurological problems that may accompany some forms of drug use.

*7. You state that extremity on any major trait or dimension of psychopathology is insufficient to identify psychopathology. (a) Isn't that internally contradictory, given that you're talking about “dimensions of psychopathology.” And (b) isn't the tendency to experience distress or negative emotion that is an aspect of Neuroticism or Negative Affect or Internalizing inherently indicative of psychopathology, if it is sufficiently extreme?*

(a) The phrase “dimensions of psychopathology” is admittedly somewhat misleading, given that we specify that extremity on those dimensions does not inherently constitute psychopathology. Really, the dimensions in question represent variation in psychological features that carry risk for psychopathology and that often accompany psychopathology. But “dimensions of psychopathology” is a common way to describe them in the field of quantitative psychopathology, and we sometimes use it as shorthand.

(b) It is true that many people who have very high levels of Negative Affect will have some degree of psychopathology because one of most people’s important goals is not to experience too much negative emotion. The more extreme one gets on any dimension of risk for psychopathology, the more likely it is that one will have psychopathology, and that is probably especially true for Negative Affect. We discussed this in a previous article (DeYoung & Krueger, 2018a). The reason this does not contradict our theory is that the rare person who has gotten over their desire not to experience negative affect will not have psychopathology, on our definition, even if they experience a lot of negative affect. In the extreme, such as with panic attacks, this might be hard to imagine, but one can probably more easily imagine highly neurotic people who have gotten so used to experiencing a lot of anxiety that they simply develop strategies to compensate and to keep their anxiety to a manageable level, while accepting that they are simply going to experience fairly intense anxiety frequently. We would argue that if these people are able to pursue their important goals and generally accept their anxiety levels, they are not mentally ill. At any rate, it is not the presence of distress that indicates psychopathology, in our definition, but the inability to pursue goals; it happens that avoiding high levels of distress is an important goal for most people, so our definition does not contradict most people’s sense that distress is typically central to psychopathology.

**8. *Doesn’t your theory render everyone psychopathological? Is there anyone who can achieve all of their goals?***

Many or even most people will experience psychopathology at some point during their lives. This is already true using the existing official criteria for mental disorder. We expect that virtually all people will suffer from physical illness at some point during their lives, so why should we not expect that most people will suffer from psychopathology too? At the same time, our theory certainly does not render everyone psychopathological all the time; not even close. Undoubtedly, few if any people will ever be able to achieve all of their goals in life, and most will not even be able to achieve all of their *important* goals, but this is not enough to indicate psychopathology. This is why the second half of our definition is so important. If pursuit of an important goal is disrupted, that does not by itself constitute psychopathology. Only if one is unable to adapt, following the disruption, by changing goals or strategies or interpretations such that one again becomes able to make progress toward one’s important goals, does psychopathology appear. Further, it is often not the final achievement of a goal that is at issue in psychopathology (at least for longer-term goals) but rather successful versus unsuccessful movement toward the goal in question, which entails achieving subgoals.

We do not know whether more or fewer people would be considered psychopathological under our definition than under other definitions. On the one hand, because we acknowledge the existence of psychopathology that might not reach whatever severity would be granted a diagnosis of mental disorder, our system might allow some people to be recognized as having problems that could benefit from treatment even if they would not previously have been eligible for a diagnosis. On the other hand, some people might be considered merely unusual (but capable of pursuing their important goals) under our

definition, where previously they might have been diagnosed. We do think that our definition would help to reduce the degree to which mental illness is something that adheres to one's identity forever, as so often happens with diagnoses in the current system. As soon as one regains the ability to pursue one's important goals, one ceases to have psychopathology from our perspective. This feature of our definition should help to destigmatize mental illness. Psychopathology reflects a state that one can be in, rather than anything inherent in one's traits or characteristics or features, no matter how unusual or challenging those may be.

**9.** *Many people have difficulty pursuing their goals because they are impoverished, imprisoned, or discriminated against. Should they be considered psychopathological?*

It is well known that poverty, incarceration, and discrimination are risk factors for psychopathology. Our theory is fully consistent with that. External as well as internal factors can trigger psychopathology, in our theory, just as in more traditional approaches. Importantly, our theory requires not only that people's goal pursuit is interrupted but also that they then fail to adapt to the interruption. Many people who are impoverished, imprisoned, or discriminated against are able to adapt in various ways so that they can continue to pursue their important goals. This adaptation may entail changing their goals or at least adjusting their expectations about the level at which those goals are going to be met. It may also involve changing strategies for pursuing existing goals. As an extreme example, someone imprisoned will need to radically change their goals and strategies at least temporarily, but if they can do so, they may remain mentally healthy until they are released and can then re-prioritize some of the goals that they had previously (while perhaps abandoning or adjusting any goals that may have contributed to their imprisonment in the first place).

**10.** *Didn't cybernetics go out of style long ago? Doesn't it refer to primitive serial models of computation that rely only on negative feedback and set points and have little to do with the kinds of massively parallel processing that go on in brains?*

Following Gray (2004) and Seth (2015), we are using the term *cybernetics* synonymously with *control theory* to refer to the field that developed out of the original cybernetic approaches (Ashby, 1956; Miller et al., 1960; Powers, 1973; Wiener, 1948), which studies the principles governing goal-directed systems that self-regulate via feedback. As applied to human information processing, the modern version of cybernetics recognizes that much processing takes place in parallel and that brains employ positive feedback and feedforward, as well as negative feedback, in their control processes (DeYoung & Krueger, 2018b). Further, modern cybernetic approaches do not consider "set points" to be the only form of goal. Set points are single values of a controlled variable that do not change (or change only infrequently in response to dramatic events). In complex cybernetic systems, goals may shift dynamically and continuously based on the internal state and external environment of the system, and they may interact with each other through mechanisms of suppression and facilitation. Further, goals need not be single values but can be target ranges of values of a controlled variable. They could even be an open-ended range, such that more is always better or that any value is tolerated by the system if it is not above or below a certain value.

**11.** *If your theory is cybernetic, why doesn't it have a computational model associated with it?*

We have written about this before (DeYoung & Krueger, 2018b). The short answer is that computational models are not likely to provide insight into human functioning if they are not highly faithful to the system that they are modeling. Our theory is about the entire operation of the human being, and we are nowhere near a sufficient understanding of the brain to create a model of a human being that would be able to test our theory usefully. Instead, our theory provides more specific testable hypotheses about the mechanisms associated with dimensions of risk for psychopathology and the ways in which they might be associated with success and failure of people's characteristic adaptations (DeYoung & Krueger, 2018a). We rely on the principles of cybernetics but not the mathematical formalisms (so far).

### Supplemental References

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