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Anhedonia: A Concept Analysis

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Abstract

Anhedonia presents itself in a myriad of disease processes. To further develop our understanding of anhedonia and effective ways to manage it, the concept requires clear boundaries. This paper critically examined the current scientific literature and conducted a concept analysis of anhedonia to provide a more accurate and lucid understanding the concept. As part of the concept analysis, this paper also provides model, borderline, related, and contrary examples of anhedonia.

Keywords

anhedonia; depression; concept analysis

Introduction

Anhedonia, the diminished capacity to experience pleasure, is a symptom associated with a myriad of disease processes. Specifically, according to the Diagnostic and Statistical Manual, 4th Edition, Text Revision (DSMIV-TR), it is a major symptom of depression and a negative symptom of schizophrenia (American Psychiatric Association, 2000). In this concept analysis, approximately 45% of the studies that measured anhedonia did not define the concept. Of the studies that defined anhedonia, it is most commonly defined as either an inability or reduced ability to experience pleasure (see Table 1). Although “inability” and “reduced ability” are similar, they are not the same. Inability to experience pleasure suggests that a person with anhedonia does not experience pleasure at all (Calabro, Italiano, Militi, & Bramanti, 2012; Cohen, Couture, & Blanchard, 2012; Komulainen et al., 2011), while reduced ability to experience pleasure suggests that people with anhedonia can experience some degree of pleasure, but either not as much as usual or possibly not as much as other people (Lee et al., 2011; Steer, 2011). Several studies incorporated both definitions for anhedonia, “diminished or absent ability to experience pleasure” (Gradin et al., 2011, p. 1752). These minor inconsistencies in the language used to describe anhedonia produces ambiguity and confusion. It leaves readers with questions such as “Can anhedonia occur on a continuum?” or “Does anhedonia exist only as an all-or-none experience?”

Several problems exist in the study of anhedonia. According to Berrios and Olivares (1995), difficulty in understanding the concept originates from the fact that when one uses the term,

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it does not describe an emotion, but rather, the lack of one. Since anhedonia is negatively defined as a lack of and/or decreased capacity to experience pleasure, it is thus dependent on the concept of pleasure itself (Berrios & Olivares, 1995). Further, the experience of pleasure also occurs in several phases: anticipated, experienced, and remembered (Strauss & Gold, 2012). While remembered pleasure is typically not measured, the level of anticipated pleasure often does not equal level of experienced pleasure (Cohen & Minor, 2010; Ritsner, Arbitman, & Lisker, 2011; Smoski et al., 2009; Strauss & Gold, 2012). This makes measurement of anhedonia difficult and dependent on the component of pleasure that the question assesses. Since the definition of anhedonia depends on the experience of pleasure, which includes different categories of pleasure, this generates many different categories of anhedonia. We will discuss these categories in further detail in the section titled “empirical referents.”

Although relevant to multiple illnesses, the concept of anhedonia is complex and even obscure. This poses major challenges for both clinicians and scientists. Without a clear understanding of what anhedonia is and what it is not, people will likely misuse and overuse the term. Clinicians will inevitably encounter difficulty in conducting accurate assessments and diagnoses of patients, while scientific investigators run the risk of studying a related phenomenon rather than the phenomenon of interest. The purpose of this paper is to apply a formal process of concept analysis to gain a clear understanding of the concept of anhedonia.

Method

A concept analysis method described by Walker and Avant (2010) was chosen for its ability to provide a conceptual framework for research and practice. It aids in the clarification of concepts through a set of eight demarcated steps (see Table 2). Consistent with this method, case examples (model, borderline, related, and contrary) will be presented and compared to highlight the fundamental features of the concept. For the purposes of clarity, the authors will present the case examples last, after thoroughly exploring and explaining the other steps in the concept analysis process.

Literature Search

The authors conducted a search of the key term “anhedonia” in PubMed and CINAHL databases. Search limits included: human studies published in the English language. When the search was restricted to the last ten years, there were over one thousand hits. Thus, the authors decided to focus on the most recent articles, published in 2011–2012, for this concept analysis. A total of 96 articles, with the term “anhedonia” in the title and/or abstract, were used to analyze the concept of anhedonia. Frequently cited and noteworthy papers were included as well.

Concept Analysis Results

Select Concept and Determine the Purpose of Analysis

Concept selection or isolating the concept is the first step in the concept analysis process. The authors chose to analyze anhedonia because of its relevance to depression. Depressed patients with anhedonia typically do not respond to first-line medication therapies for major depressive disorder (McMakin et al., 2012; Tran et al., 2012; Treadway & Zald, 2011). Additionally, compared to other depressive symptoms, anhedonia is usually the last to resolve (Rubin, 2012). Although not impossible (Bobo, Woodward, Sim, Jayathilake, & Meltzer, 2011), anhedonia in schizophrenia is also difficult to treat (Couture, Blanchard, & Bennett, 2011; Grant, Huh, Perivoliotis, Stolar, & Beck, 2012). Hence, further

understanding of anhedonia may help improve depression remission rates. To ensure that scientists study anhedonia and not a related concept, a clear understanding of anhedonia is warranted.

Identify Uses of the Concept

This next step identifies all the known uses of the concept. Théodule Armand Ribot, a famous French philosopher and psychologist, introduced the term anhedonia to the psychoanalytic literature in 1896. However, English psychiatry did not incorporate the term until the 1980 American Psychological Association publication of the Diagnostic and Statistical Manual, 3rd edition (Berrios & Olivares, 1995). The current Diagnostic and Statistical Manual, 4th Edition, Text Revision (DSMIV-TR), designates anhedonia as a major symptom of depression and a negative symptom of schizophrenia (American Psychiatric Association, 2000). Anhedonia describes the feeling of decreased capacity to experience pleasure, where activities that an individual once found pleasurable is no longer as pleasurable as before (Agrawal et al., 2012; Rubin, 2012; Shomaker et al., 2012). One study found significant levels of anhedonia in 37% of people with depression and 45% of people with schizophrenia (Pelizza & Ferrari, 2009). Other conditions linked to anhedonia include substance dependence (Martinotti et al., 2011; Rose et al., 2012), anxiety (Dinovo & Vasey, 2011), suicide related events (Kuba et al., 2011), post-traumatic stress disorder (Pittman, Goldsmith, Lemmer, Kilmer, & Baker, 2012; Wechsler-Zimring & Kearney, 2011), autism (Chevallier, Grezes, Molesworth, Berthoz, & Happe, 2012), Parkinson's disease (Fujiwara et al., 2011; Miura et al., 2012), stroke (Sibon, Lassalle-Lagadec, Renou, & Swendsen, 2012), and some chronic medical conditions (de Cock, Emons, Nefs, Pop, & Pouwer, 2011; Nefs, Pouwer, Pop, & Denollet, 2012; Pelle et al., 2011; P. J. Tully & Baker, 2012). Notably, these conditions sometimes present with comorbid depression, which, in some cases, may account for the presence of anhedonic symptoms.

Determine the Defining Attributes

This next section will describe the characteristics most commonly associated with anhedonia. These defining attributes are also summarized in Table 2. Derived from the Greek words an- and hédoné, anhedonia translates to “without pleasure” (D’Haenen, 1996). Despite the denotation of its roots, anhedonia more appropriately means a decrease in the capacity to experience pleasure from previously pleasurable activities (Compton & Frank, 2011; Lee et al., 2011). Also, anhedonia is more complex than present versus absent or high versus low. Instead, it occurs on a continuum of hedonic tone, or perceived intensity of pleasantness (Gabbay et al., 2012; Germine, Garrido, Bruce, & Hooker, 2011; Ritsner et al., 2011). The use of scales can determine the degree of hedonic tone or severity of anhedonia (Chapman, Grimshaw, & Nicholls, 2011; Kirkpatrick et al., 2011; Miettunen et al., 2011; Winterstein et al., 2011). Even people with severe symptoms of anhedonia can attain pleasure from a few sources (Meehl, 1990), and “normal” individuals also have varying degrees of hedonic tone (Grillo, 2012). The tipping point for when anhedonia becomes a pathological symptom is not clearly defined, but likely depends on duration, severity, and whether or not it interferes with activities of daily living.

Clinicians and researchers must rely on self-report to measure the affective, or experiential, component of anhedonia. An external observer cannot conclude how pleasurable a stimulus is for another individual. A person can enjoy an activity but not show overt signs of enjoyment. Even though people with anhedonia often display limited emotional expressivity, limited emotional expressivity does not always equate to anhedonia (Rassovsky, Horan, Lee, Sergi, & Green, 2011). Thus, clinicians and researchers must rely on self-report as the primary way to assess for the affective component of anhedonia.

Moreover, people with anhedonia may have a reduced capacity to experience pleasure but can retain the ability to experience pain, general stimulation, and negative emotions like sadness (Aguera-Ortiz, Failde, Mico, Cervilla, & Lopez-Ibor, 2011; Compton & Frank, 2011; de Cock et al., 2011; Hitsman et al., 2011). This continued ability to experience pain and negative emotions makes anhedonia different from analgesia, a decrease or absence of pain, and alexithymia, a state in which an individual cannot process, understand, or describe emotions (Lee et al., 2011). Imaging studies corroborate a physiological basis for a reduced capacity to experience pleasure but not pain or distress. People with anhedonia showed changes in cerebral blood flow in response to rewarding stimuli. However, they displayed similar blood flow patterns as controls when presented with aversive stimuli (Keedwell, Andrew, Williams, Brammer, & Phillips, 2005).

Furthermore, anhedonia can exist with or without feelings of sadness. Those with high negative affect, like depression or sadness, do not always have anhedonia. Even though both anhedonia and sadness make up Major Depressive Disorder, studies of people with sadness confirm that they can still experience pleasure despite having severe feelings of sadness (Compton & Frank, 2011; de Cock et al., 2011; Hitsman et al., 2011). People with anhedonia, on the other hand, specifically have a diminished ability to experience pleasure, regardless of their sadness status.

Define Empirical Referents

Empirical referents refer to the ways in which the concept manifests in reality. For abstract concepts, like emotions, empirical referents help illustrate the concept and provide a means to identify the concept. The presence of observable referents signifies that the concept exists. Empirical referents can be measured, but they are not measurement tools for the concept. At times, empirical referents and defining attributes are identical (Walker & Avant, 2010).

First and foremost, the subjective report of feeling decreased pleasure provides evidence that the concept of anhedonia exists. In fact, most human studies in this concept analysis relied on self-report to measure this affective, experiential component of anhedonia. As described in the “Introduction,” anhedonia is dependent on the concept of pleasure, which includes many different categories and types of pleasure. Thus, similar to the concept of pleasure, anhedonia can manifest in several ways. These manifestations will be described in categories: physical versus social and appetitive versus consummative.

Physical anhedonia refers to decreases in ability to experience pleasure from physical activities like eating, touching, and sex. Thus, an individual with anhedonia, specifically physical anhedonia, may not enjoy eating as much as they used to (Rodrigo et al., 2011; Soliman et al., 2011). In contrast, social anhedonia refers to decreases in ability to experience pleasure from interactions with other living beings like talking and connecting with friends and family (Blanchard, Collins, Aghevli, Leung, & Cohen, 2011; Reise, Horan, & Blanchard, 2011). An individual with social anhedonia may prefer to be alone rather than with people, even though they previously enjoyed the company of others (Becerril & Barch, 2011; Strauss & Herbener, 2011).

Since the experience of pleasure occurs in phases (i.e. anticipated, experienced, and remembered) (Strauss & Gold, 2012), anhedonia can also refer to a deficit in the experience of pleasure during any of the phases. This type of anhedonia, regarding the chronology of the experience of pleasure, is most commonly described as deficits in either appetitive or consummative pleasure. Appetitive pleasure refers to whether or not an individual *anticipates* “Activity X” will be gratifying. Divergently, consummative pleasure refers to whether or not an individual’s *actual participation* in “Activity X” is gratifying (Ritsner et al., 2011). Some individuals experience pleasure at levels comparable to healthy controls

while participating in pleasurable activities, yet consistently report decreased pleasure when asked about noncurrent feelings (Cohen & Minor, 2010; Kring & Moran, 2008). Essentially, these individuals believe they experience less pleasure than they actually do. They have deficits in appetitive pleasure but intact consummative pleasure (Cohen & Minor, 2010; Ritsner et al., 2011; Strauss & Gold, 2012). The reverse is also possible, people with anhedonia can have intact anticipatory pleasure with deficits in consummatory pleasure (Ossewaarde et al., 2011; Strauss, Wilbur, Warren, August, & Gold, 2011), as well as deficits in both types of pleasure (Martin, Becker, Cicero, Docherty, & Kerns, 2011). However, most studies indicate that anhedonia in the depressed and schizophrenic populations tend to have deficits in anticipatory but not consummative pleasure (Barch & Dowd, 2010; Der-Avakian & Markou, 2012; Dichter, 2010; Smoski et al., 2009).

Identify Antecedents and Consequences

Antecedents refer to events, items, or things that precede the materialization of the concept. Consequences, on the other hand, refer to events, items, or things that happen due to the concept. Antecedents are concept precursors, while consequences are concept outcomes.

antecedents—In order for an individual to have anhedonia, they must have previously experienced pleasure and now have a decrease in their ability to experience pleasure (Agrawal et al., 2012; Rubin, 2012; Shomaker et al., 2012). Often times, anhedonia assessment tools do not incorporate this antecedent. Assessment tools usually determine anhedonia based on whether or not an individual enjoys certain activities (Chapman et al., 2011). These tools assume that certain activities (i.e. being around people, looking at stars at night, playing with puppies and kittens) should be pleasurable. Activities, such as being around people, assume that humans are inherently social creatures and thus should derive pleasure from social activities (Germine et al., 2011). Although this may be the case for most people, some people may not enjoy the activities described by the assessment tool. If an individual currently does not enjoy those particular activities and never enjoyed them in the past, they do not have anhedonia.

consequences—For the purposes of this paper, motivational anhedonia will be discussed as a consequence of anhedonia. Motivational anhedonia refers to a decrease in motivation to participate in pleasurable activities (Der-Avakian & Markou, 2012). As a result, people may engage in pleasurable activities less frequently (Pizzagalli, Jahn, & O'Shea, 2005), a measure that is already included in some measurement scales for anhedonia (Horan, Kring, Gur, Reise, & Blanchard, 2011). Theoretically, deficits in any of the described categories of pleasure could potentially contribute to decreased motivation to participate in pleasurable activities. However, Sherdell, Waguh, & Gotlib (2012) suggest that a severe deficit in anticipatory pleasure leads to decreased motivation to obtain a reward. Deficits in motivation to obtain a reward were determined objectively by the administration of an effort-reward task and subsequent documentation of behavior. Measurement of motivational anhedonia differs from measurement of other categories of anhedonia, which are primarily measured through self-report. In the effort-reward task, participants first rate the pleasurable of different stimuli and then expend varying levels of effort to obtain the stimuli (Sherdell, Waugh, & Gotlib, 2012).

Investigators involved in preclinical research have been measuring motivational anhedonia for decades through similar types of behavioral tests. In order to obtain a reward, animals will engage in objective and easily quantifiable behaviors, like lever pressing (Carlezon & Chartoff, 2007; Ho, Balu, Hilario, Blendy, & Lucki, 2012). If the reward is no longer pleasurable or not pleasurable enough, the animal has decreased motivation to obtain the reward and will no longer engage in the behavior (i.e. lever pressing) necessary to obtain the

reward. A decrease in the number of lever presses reflects decreased motivation to obtain the reward, or motivational anhedonia.

Identify a Model Case

The method of concept analysis described by Walker and Avant (2010) uses case examples to elucidate the constitutive elements of the concept under study. All elements of the concept are present in the model case described in this section.

A 78-year-old female client, accompanied by her son, presents to a primary care clinic for an annual wellness check up. She has no physical complaints and her physical examination is unremarkable. However, her son is concerned because his mother is “not herself” lately. The son explained that his mother appeared disinterested when he told her the exciting news of having another grandchild. He also explained that she no longer gardens or socializes with friends like she used to. Upon further questioning, the mother gets frustrated and angrily says, “I just don’t enjoy those things anymore.” These symptoms have been present for one month, along with other symptoms of depression, such as decreased appetite and difficulty sleeping, but without evidence of sadness or suicidal ideation.

This model case exhibits all four defining attributes of anhedonia. 1) The client has a decrease in capacity to experience pleasure from previously pleasurable activities like gardening and socializing with friends. 2) She has a subjective complaint of no longer enjoying activities that she once enjoyed based on her statement, “I just don’t enjoy those things anymore.” 3) She is not completely numb to emotions as evidenced by her frustration and angry response to the practitioner. 4) Anhedonia can exist with or without feelings of sadness. In this case, the client is not sad and does not show signs of hopelessness or demoralization, yet she has a global decrease in hedonic tone. In this model case, the client has anhedonia.

Identify Borderline, Related, Contrary Cases

Identifying other types of cases, borderline, related, and contrary, further clarifies the concept at hand. The borderline case possesses most, but not all, of the defining attributes of the concept. The related case also does not have all the defining attributes of the concept, but is connected to the concept in some way. Lastly, the contrary case is a clear demonstration of what the concept is not. The contrary case does not exhibit any of the defining attributes of the concept (Walker & Avant, 2010).

borderline—Two weeks ago, a 32-year-old male with schizophrenia was admitted to an inpatient mental health facility. He ran out of medication about a month ago. His neighbor brought him in because he was experiencing persecutory delusions and actively hallucinating. Currently, the client is stabilized on his medications. He participates during group therapy but outside of therapy interacts minimally with other residents. For about two hours each day, he watches movie comedies with other hospital residents in the common room. Although he appears to be paying attention, he does not laugh or smile when everyone else does. It is clear that he experiences other emotions, however, as he shared his sadness over not being able to see his dog while he is at this inpatient facility.

Borderline cases possess some, but not all, of the defining attributes of the concept (Walker & Avant, 2010). In this borderline case, the client may or may not be experiencing pleasure during the comedy. He displays signs of emotional blunting or flat affect, but without subjective information gathered from the client, anhedonia cannot be assessed. Although blunted emotional expression correlates with the presence of a subjective decrease in pleasure, this may not be a reliable indicator of anhedonia (Falkenberg, Kohn, Schoepker, &

Habel, 2012; Rassovsky et al., 2011; Strauss & Herbener, 2011). He continues to participate in a seemingly pleasurable activity and, thus, it is possible that he enjoys the activity. However, this borderline case does not satisfy the second defining attribute of anhedonia, which requires a subjective self-report of anhedonia.

related—A 30-year-old female with no significant medical or psychiatric history presents for psychotherapy. Her primary complaint is that she lacks purpose in life and wants to explore her feelings of boredom, fatigue, and lack of motivation to do things. She thought about going to therapy for several months, but never took the initiative to find a therapist. Instead, one of her close friends set this appointment up for her. She also reports feeling lonely. She thinks it is because she recently ended a long-term relationship and currently does not have a significant other. Moreover, she reports frustration with her current job but lacks the motivation to apply for a new one. She denies feeling sad, enjoys recreational activities, but finds it burdensome to initiate anything. Often times, she does not feel like attending social events and it takes great effort for her to go out. Although she enjoys running, shopping, and dining out, she also finds it difficult to engage in these activities. However, when she participates in these activities and when she actually makes it out to social events, she almost always enjoys it.

Related cases also have some, but not all, of the defining attributes. They demonstrate how the concept is related to other concepts (Walker & Avant, 2010). In this related case, the client does not have anhedonia because she reports enjoyment and pleasure with activities. Her lack of motivation and decreased self-initiated engagement in the world around her is consistent with avolition. Avolition is a global decrease in motivation and can include amotivation, anhedonia, and/or asociality (Messinger et al., 2011). Similar to motivational anhedonia, deficits in anticipatory pleasure is likely responsible for avolition (Foussias & Remington, 2010). Motivational anhedonia refers to decreased motivation to participate in pleasurable activities, but avolition is more global (Strauss et al., 2011). Here the client appears to have decreased motivation to participate in nearly all activities, including finding a therapist and applying for new jobs. The client has avolition and it is likely secondary to her feelings of boredom and not having a purpose in life (Goldberg, Eastwood, Laguardia, & Danckert, 2011).

contrary—A 9th grade high school student complains that he does not like his English class. He hated reading as a child and has never enjoyed it. Since he does not enjoy reading, he decides not to complete the reading assignments and plays football with friends instead. He reports that he likes high school but is unable to successfully complete his schoolwork. He denies difficulty with concentrating and feels that he is in good health. He can experience a full range of emotions including happiness, pleasure, sadness, and pain.

Contrary cases do not possess any of the defining attributes. In this contrary case, the student has a long-standing subjective complaint of not enjoying reading, but he does not have a global decrease in his ability to experience pleasure; he enjoys playing football and likes high school. Although his dislike of reading interferes with his ability to complete his schoolwork, this is not medically pathological. Reading is pleasurable for some people, but not for him. Thus, he does not have anhedonia; he simply does not like to read. This example demonstrates how choice of pleasurable stimulus used to measure anhedonia could generate measurement problems. What is pleasurable to one person may not be pleasurable to another person and assessment tools need to take this into consideration.

Discussion

Prior to delving into the discussion, it should be noted that concept analyses results are always tentative. The understanding of anhedonia will likely evolve over time as additional knowledge about the concept is generated through rigorous scientific inquiry. Additionally, different people will likely generate different results for the same concept. Even when the same analyst revisits a concept, s/he will likely produce different results. As the analyst changes over time, the understanding of the concept will also change as well (Walker & Avant, 2010).

The results of our concept analysis suggest that anhedonia is a complex and nuanced symptom related to a number of mental health conditions. When translated verbatim, anhedonia means “without pleasure.” In our concept analysis, we found a much more nuanced explanation. The symptom of anhedonia is associated with feelings of decreased capacity to experience pleasure, particularly when compared to similar experiences that were perceived as pleasurable in the past. Anhedonia is a graduated symptom; individuals, regardless of their mental health, have varying degrees of hedonic tone that can be described and quantified.

The nature of anhedonia may vary depending on the context of the disease. Although anhedonia presents itself in many different illnesses and disease processes, the majority of research literature on anhedonia takes place within the context of either major depression or schizophrenia (see Table 3). Few studies compare depression-related anhedonia to schizophrenia-related anhedonia. However, it is these studies that suggest that anhedonia may vary depending upon disease. For instance, one study demonstrated that people with depression-related anhedonia and people with schizophrenia-related anhedonia both have changes in brain activity. However, the location of these changes differed between the two groups, suggesting that different parts of the brain participate in depression-related anhedonia compared to schizophrenia-related anhedonia (Gradin et al., 2011). Thus, from a neurobiological standpoint, depression-related anhedonia likely differs in nature from schizophrenia-related anhedonia. Future research should determine how the nature of anhedonia differs, or does not differ, from one disease context to the next.

Recommendations for Theoretical and Concept Development

Anhedonia contains domains such as physical versus social and anticipatory versus consummative. Differentiating these domains adds to the theoretical development of the concept, helps explain behavior, and may be used to formulate theoretically derived interventions to manage anhedonia. A temporal component of anhedonia also exists with phases such as contemplated, experienced, and remembered. The temporal component also provides much promise theoretically as the concept evolves with future work.

Perhaps the most interesting theoretical advancement is that complex physiological processes accompany anhedonia. For instance, Keedwell et al. (2005) demonstrated that people with anhedonia displayed similar cerebral blood flow patterns as controls in response to aversive stimuli but differed from controls in response to rewarding stimuli. Studies like these add to the theoretical development of anhedonia, supporting the notion that anhedonia refers to a specific deficit in the capacity to experience pleasure and does not necessarily affect one's capacity to experience pain or sadness. With advances in technology that allow scientists to measure anhedonia through biological and physiological means, conceptualization of anhedonia may evolve to incorporate both physiology and behavior. Such a shift occurred with the concept of stress, which now includes a neuroendocrine component (Koolhaas et al., 2011). Similar to anhedonia, many people apply the term “stress” loosely. From a physiologic perspective, not everything that people label as “stress”

is actually stress (Koolhaas et al., 2011). As the understanding of the physiologic underpinnings of anhedonia continue to evolve, a similar shift in conceptualization may emerge. Understanding the physiology of anhedonia and incorporating this into the conceptualization of anhedonia will decrease the incidence of misusing the term. Until then, anhedonia is primarily determined based on self-report, but future studies may assist in the discovery of biological markers or imaging techniques that can serve as additional defining attributes for anhedonia.

Recommendations for Future Research

advancing measurement strategies—Many human studies assess the affective component of anhedonia through self-report and subjective scales. Self-reported tools are often inclined to biases and the field may benefit from incorporating physiological and behavioral measures to corroborate with self-reports of anhedonia (Dichter, 2010; Forbes & Dahl, 2012; Martin et al., 2011). Use of imaging technology and other biological measures may provide additional insight into the pathophysiology of anhedonia in humans. Examples of these measures include facial electromyography, functional brain imaging, and positron emission tomography activity (Dichter, 2010; Dowd & Barch, 2012; Robinson, Cools, Carlisi, Sahakian, & Drevets, 2012). Additionally, development of behavioral tests that can easily detect anhedonia will also advance the field (Ahnallen et al., 2012; Forbes & Dahl, 2012; Pizzagalli et al., 2005).

considering domains of anhedonia—Although most studies aggregate different categories of anhedonia into one broad category, it may be beneficial to study the different categories of anhedonia separately. Placing people under an umbrella category of anhedonia creates heterogeneity in clinical samples, which can make it difficult for researchers to study the concept, determine underlying pathophysiology, and draw conclusive results. For instance, individuals with deficits in anticipatory but intact consummatory pleasure may benefit the most from cognitive behavioral therapy. Deficits in anticipatory pleasure may prevent these individuals from participating in pleasurable activities since they do not anticipate gaining pleasure from those activities. In essence, the decision making process of whether or not to participate in pleasurable activities is impaired (Der-Avakian & Markou, 2012; Strauss & Gold, 2012). By withdrawing participation in pleasurable activities, they may reinforce the idea that they have anhedonia, a decrease in capacity to experience pleasure, when in reality they have fewer opportunities to experience pleasure.

considering motivational anhedonia—Human studies need to further explore the idea of motivational anhedonia. Some individuals diagnosed with anhedonia actually have normal capacity to experience pleasure and, instead, have deficits in motivation to participate in pleasurable activities (Cohen, Najolia, Brown, & Minor, 2011). This occurs in populations with depression-related anhedonia (Dichter, 2010; Smoski et al., 2009) as well as schizophrenia-related anhedonia (Barch & Dowd, 2010; Der-Avakian & Markou, 2012; Strauss & Gold, 2012). Some scholars propose that only consummatory anhedonia, decreases in the experience of pleasure, should be classified as anhedonia (Der-Avakian & Markou, 2012). Others advocate that anhedonia should include not only deficits in the experience of pleasure but also deficits in beliefs about the experience of pleasure, like anticipatory and motivational anhedonia (Strauss & Gold, 2012). A possible solution to this dissonance involves using adjectives, like consummative, anticipatory, motivational, etc. to clearly describe the different types of anhedonia rather than using the general term “anhedonia” alone.

The presence of anticipatory anhedonia leads to decreased motivation to participate in pleasurable activities (Sherdell et al., 2012). However, this may not always be the case (Yan,

Liu, Cao, & Chan, 2011). More research is needed to determine whether or not motivational anhedonia is truly a consequence of anhedonia or a different category within the anhedonia concept. The preclinical literature depicts the relationship between consummatory and motivational anhedonia as “liking” versus “wanting” respectively. The preclinical literature also suggests that these different aspects of pleasure involve different neurobiological pathways. Consummatory anhedonia, which refers to deficits in “liking,” presumably involves changes in opioid function. Motivational anhedonia, on the other hand, which refers to “wanting,” likely involves changes in dopamine function (Treadway & Zald, 2011). Inclusion of motivational anhedonia in future human research may be an important next step in translating findings from animal studies to application in humans. Measuring the motivational component, reward-oriented behavior, in humans can also potentially serve as an objective correlate to the subjective self-report of anhedonia (Bogdan, Santesso, Fagerness, Perlis, & Pizzagalli, 2011).

Clinical Application of the Concept Analysis

This concept analysis informs clinical practice in a number of ways, including what to look for when diagnosing anhedonia and things to consider when formulating treatment plans. Assessment of anhedonia is based on subjective report. Clinicians need to remember that blunted emotional expression is not a reliable indicator of anhedonia (Falkenberg et al., 2012; Rasseovsky et al., 2011; Strauss & Herbener, 2011). In order to diagnose anhedonia, two criteria must be satisfied: 1) the person reports decreased pleasure with activities and 2) the person previously experienced pleasure, or greater pleasure than currently, with these activities (Agrawal et al., 2012; Rubin, 2012; Shomaker et al., 2012). After the clinician determines the patient has anhedonia, they should assess whether it is anticipatory or consummatory anhedonia. This difference between anticipatory and consummatory anhedonia will be important when formulating a treatment plan, as discussed in the next paragraph. Future research can search for screening questions that are both sensitive and specific to identifying anhedonia.

Development of these questions will help clinicians efficiently diagnose anhedonia in the clinical setting. Developing and testing clinical interventions to provide symptom management is also a promising line of research. A possible intervention may be to target the cognitive distortion revolving around anticipatory anhedonia. If the clinician determines the presence of anticipatory anhedonia but not consummatory anhedonia, clinicians can encourage these individuals to participate in pleasurable activities even if the individual does not think the activity will be pleasurable. Perhaps over time and with enough reinforcement, the individual can identify anticipatory anhedonia as a cognitive distortion and reformulate their thinking accordingly (Der-Avakian & Markou, 2012; Strauss & Gold, 2012). This practice may be especially helpful since depressed patients with anhedonia typically do not respond to first-line medication therapies for major depressive disorder (McMakin et al., 2012; Tran et al., 2012; Treadway & Zald, 2011), and anhedonia in schizophrenia is also difficult to treat (Couture et al., 2011; Grant et al., 2012). Interestingly, most studies indicate that anhedonia in the depressed and schizophrenic populations tend to have deficits in anticipatory but not consummative pleasure (Barch & Dowd, 2010; Der-Avakian & Markou, 2012; Dichter, 2010; Smoski et al., 2009). If this is the case, this intervention that targets the cognitive distortion present in anticipatory anhedonia could potentially help a lot of people. However, additional research is needed to determine the efficacy of this possible intervention.

Conclusion

The result of this concept analysis summarizes the critical features of anhedonia as the subjective lowered ability to experience pleasure, especially when compared to similar

experiences that were perceived as pleasurable in the past (Agrawal et al., 2012; Rubin, 2012; Shomaker et al., 2012). As discussed, anhedonia occurs on a continuum and is closely related to the concept of pleasure (Gabbay, Mao et al., 2012; Horan et al., 2011; Kirkpatrick et al., 2011). This dependence on the complex concept of pleasure naturally generates many different categories or domains of anhedonia. Thus, whenever possible, one should include the appropriate descriptive term to specify which category of anhedonia is being discussed or studied. Anhedonia occurs independent to one's ability to experience general stimulation and negative emotions (Aguera-Ortiz et al., 2011). Additionally, it can occur with or without feelings of sadness (Compton & Frank, 2011; de Cock et al., 2011; Hitsman et al., 2011). The pathological symptom of anhedonia presents itself in various psychological and physical conditions and likely involves dysregulation of a number of neurochemical pathways in the brain (Der-Avakian & Markou, 2012). When other mental or physical symptoms are present, anhedonia can be conceptualized as a pathologic symptom of the primary condition, such as in depression or schizophrenia. From a neurobiological perspective, anhedonia due to depression likely differs from anhedonia due to schizophrenia (Gradin et al., 2011). Although anhedonia is primarily identified based on self-report right now, conceptualization of anhedonia and development of concomitant measurement strategies may evolve to incorporate both physiology and behavior.

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Table 1

Definition of Anhedonia as Described in Literature

Author	Year	Column A	Column B	Column C
Agrawal et al.	2012	X		
AhnAllen et al.	2012		X	
Bogdan et al.	2011	X		
Calabro et al.	2012	X		
Chevallier et al.	2012		X	
Cohen et al.	2011	X		
Cohen et al.	2012	X		
Compton & Frank	2011		X	
de Cock et al.	2011	X		
Dowd & Barch	2012		X	
Falkenberg et al.	2012		X	
Fujiwara et al.	2011			X
Gabbay et al.	2012		X	
Gabbay et al.	2012		X	
Germine et al.	2011		X	
Goldberg et al.	2011	X		
Gradin et al.	2011			X
Grillo	2012	X		
Komulainen et al.	2011	X		
Kuha et al.	2012		X	
Lee et al.	2011		X	
Light et al.	2011		X	
Martin et al.	2011		X	
Martinotti et al.	2011			X
Miettunen et al.	2011		X	
Miura et al.	2012		X	
Mora et al.	2012	X		
Nefs et al.	2012			X
Ossewaarde et al.	2011		X	
Pelle et al.	2011	X		
Ritsner et al.	2011	X		
Rodrigo et al.	2011	X		
Rubin	2012	X		
Sherdell et al.	2012	X		
Shomaker et al.	2012	X		
Steer	2011			X
Tully & Baker	2012		X	
Tully et al.	2012	X		
Ursu et al.	2011		X	

Author	Year	Column A	Column B	Column C
Velthorst & Meijer	2012	X		
Yan et al.	2011	X		

Note. Column A: Papers that described anhedonia with terms like “loss” and “inability” to describe a total lack of ability to experience pleasure. Column B: Papers that described anhedonia with terms like “reduction” and “diminished” to describe a partial lack of ability to experience pleasure. Column C: Papers that described anhedonia as both complete and partial lack of ability to experience pleasure.

Table 2**Steps for Concept Analysis**

1. Select a concept.	Anhedonia
2. Determine the aims or purposes of analysis.	Provide an accurate and lucid understanding of anhedonia based on current literature.
3. Identify all uses of the concept.	Used in psychoanalytic literature, associated with depression, schizophrenia, and a number of other mental and physical health conditions.
4. Determine the defining attributes	It is a decrease in the capacity to experience pleasure from previously pleasurable activities; Experiential component of anhedonia is measured by subjective self-report; Individuals with anhedonia retain the ability to experience pain, general stimulation, and negative emotions like sadness; Anhedonia can exist with or without feelings of sadness.
5. Identify a model case.	Please refer to text.
6. Identify borderline, related, contrary, invented, and illegitimate cases.	Please refer to text.
7. Identify antecedents and consequences.	Antecedents: previous experience of pleasure; Consequences: decrease in motivation to participate in pleasurable activities and thus decreased participation in pleasurable activities.
8. Define empirical referents.	Physical, social, anticipatory, consummatory anhedonia.

Table 3

Context for Anhedonia

Author	Year	Context
Agrawal et al.	2012	Depression
Aguera-Ortiz et al.	2011	Depression
AhnAllen et al.	2012	Schizophrenia
Becerril & Barch	2011	Schizophrenia
Beckman et al.	2011	Anxiety
Bencherif et al.	2012	Schizophrenia
Blanchard et al.	2011	Mood Disorders, Schizotypy
Bobo et al.	2011	Schizophrenia
Bogdan et al.	2011	Depression
Britton et al.	2011	Depression
Brown et al.	2011	Depression
Calabro et al.	2012	Use of Keppra in Epilepsy
Camardese et al.	2012	Depression
Chapman et al.	2011	Schizotypy
Chevallier et al.	2012	Autism
Cohen et al.	2011	Schizophrenia
Cohen et al.	2012	Schizophrenia
Compton & Frank	2011	Depression
de Cock et al.	2011	Depression
Dinovo & Vasey	2011	Depression
Dowd & Barch	2012	Schizophrenia
Falkenberg et al.	2012	Depression
Forbes & Dahl	2012	Depression
Fujiwara et al.	2011	Parkinson's Disease
Gabbay et al.	2012	Depression
Gabbay et al.	2012	Depression
Germine et al.	2011	Schizophrenia
Goldberg et al.	2011	Depression
Gooding & Pflum	2011	Schizotypy
Gradin et al.	2011	Depression, Schizophrenia
Grant et al.	2012	Schizophrenia
Grillo	2012	Depression, Schizophrenia
Gross et al.	2012	Schizophrenia
Hannestad et al.	2011	Endotoxin-Induced Fatigue
Hitsman et al.	2011	Depression
Horan et al.	2011	Schizophrenia
Hoshi et al.	2011	Schizotypy
Kazem & Alzubaidi	2011	Depression
King	2012	Depression

Author	Year	Context
Kirkpatrick et al.	2011	Schizophrenia
Kober & Ochsner	2011	Depression
Komulainen et al.	2011	Depression
Kuba et al.	2011	Suicide
Kuha et al.	2012	Schizotypy
Lee et al.	2011	Schizophrenia
Liemburg et al.	2011	Schizophrenia
Light et al.	2011	Depression
Martin et al.	2011	Schizotypy
Martinotti et al.	2011	Mood Disorders, Schizophrenia, Substance Abuse
McMakin et al.	2012	Depression
Miettunen et al.	2011	Schizophrenia
Miura et al.	2012	Parkinson's Disease
Mora et al.	2012	Depression
Nefs et al.	2012	Diabetes
Nefs et al.	2012	Diabetes
Nikolova	2012	Depression
Ossewaarde et al.	2011	Depression
Park et al.	2012	Schizophrenia
Parker	2011	Depression
Pelle et al.	2011	Coronary Artery Disease
Pittman et al.	2012	Depression, Post Traumatic Stress
Rassovsky et al.	2011	Schizophrenia
Reise et al.	2011	Schizophrenia
Ritsner et al.	2011	Depression, Schizophrenia, Substance Abuse
Robinson et al.	2012	Depression
Rodrigo et al.	2011	Neglectful Mothers
Rose et al.	2012	Substance Dependence
Rubin	2012	Depression
Sevy et al.	2011	Schizophrenia
Shankman et al.	2011	Depression
Sharma	2011	Depression
Sherdell et al.	2012	Depression
Shomaker et al.	2012	Depression
Sibon et al.	2012	Stroke
Singh et al.	2011	Depression
Soliman et al.	2011	Schizotypy
Souery et al.	2012	Depression
Steer	2011	Depression
Steffenhagen et al.	2011	Depression
Strauss et al.	2011	Schizophrenia
Strauss et al.	2011	Schizophrenia

Author	Year	Context
Strauss et al.	2011	Schizophrenia
Thompson et al.	2011	Depression
Tran et al.	2012	Depression
Tully & Baker	2012	Coronary Artery Disease
Tully et al.	2012	Schizophrenia
Ursu et al.	2011	Schizophrenia
Velthorst & Meijer	2012	Schizophrenia
Wechsler-Zimring & Kearney	2011	Post Traumatic Stress
Winterstein et al.	2011	Schizotypy
Yan et al.	2011	Schizotypy

Note. Schizotypy refers to schizophrenia spectrum personality disorders