Affordable ABA

Overview of Pica in Individuals Diagnosed with Developmental Disabilities

Introduction

Pica in individuals with developmental disabilities is known as the persistent consumption of non-food items, such as dirt, paint chips, hair, or rocks, which is not appropriate for the individual's developmental age and is not a culturally accepted behavior. Pica is a common comorbidity with intellectual disability (ID) and autism spectrum disorder (ASD), affecting 6-26% of individuals with ID. Pica can lead to serious health issues like lead poisoning, intestinal blockage, and infection. The management of this disorder often involves removing problematic items, addressing nutritional deficiencies, and working with a behavior analyst for specialized interventions.

In this course, participants will learn to (1) identify the etiology of pica, (2) identify risks associated with pica, and (3) discuss assessment and treatment methodologies for the exhibition of pica behavior.

Section 1: History of Pica

Throughout the course of history, humans have been known to eat strange things that have little to no nutritional content. Pregnant women have experienced food cravings and have satisfied those cravings by eating odd substances. Even in times where there was war or famine, humans ate tree bark, dirt, or other substances with little nutritional content and incorporated them into other foods such as bread to help fight off hunger. In some countries with poorer populations, there is a lack of available food sources and in an effort to avoid hunger and provide some nutritional content, dirt cakes are consumed.

There are also culture-specific religious practices that involve the consumption of minimally nutritious content. In some Catholic and other religious groups, consuming the earth is known to be imbued with healing properties. In these

groups, the earth is to be consumed in water, rubbed upon oneself, or taken back home. This particular practice has spread and included over 30,000 pilgrims consuming 25-30 tons of dirt within a year.

Furthermore, there can be culture-specific forms of pica that exist when certain fads are revealed, such as consuming large amounts of solid starch, ice, or even clay (Young, 2011). Some individuals that have pica for starch have used social media as their outlet, asking for assistance while consuming starch from boxes for anyone to see across the world. Some of these particular examples of pica are fascinating behavioral phenomena that necessitate both a description and an explanation.

There have also been individual cases of pica with individuals that have a comorbid psychiatric diagnosis such as dementia, obsessive-compulsive disorder, and schizophrenia. Often, these specific examples that have been noted by researchers are more extreme and contain even more dangerous forms of pica than have been previously mentioned.

Common Characteristics

There are four main components that are associated with clinical forms of pica that are also shared with other non-clinical forms of pica. One of these main components that are similar is that the individual often self-reports or appears that they are obsessed with eating a particular item while also excluding other substances from their typical list of things they consume. As a result, these pica items are highly valuable to the individual, and the individual's preferences are extremely specific and highly motivated. For example, some individuals that consume clay may only consume certain types of clay, refusing to eat dirt or types of clay that are not preferred. Other individuals that engage in pica with ice note that they seek out certain kinds of ice and will drive several miles so that they can

purchase a particular kind of ice or even a specific ice machine, even if other types of ice are readily available to them. These particular preferences that are strong are also similar to the strong and specific preferences that individuals diagnosed with ASD with pica have for particular items (Piazza et al., 1996). For example, an individual with ASD and pica may look for particular pieces of string and refuse any other item that is similar.

Another similarity is that there are specific physical or sensory properties of an item that are valuable to an individual with pica. Most of the pica items that are consumed by individuals have a bland or neutral flavor or even leave a metallic taste in one's mouth after it has been consumed. This is often experienced by individuals who consume baby powder, chalk, or clay. Furthermore, the physical texture of these particular pica items may also be particularly characteristic. They can be grainy or with specific crunchy textures or other mechanical properties. Individuals that engage in pica also engage in this behavior in a secretive manner and out of sight of other individuals. This suggests that pica is a nonsocial/sensory activity and is maintained by automatic positive reinforcement.

A third feature that shares similarity between pica in individuals within the general population and pica in individuals with ASD is that the pica items are positively reinforcing for various pica-related behavior. As a result, individuals with pica that are within the general population may spend significant amounts of money and time on behaviors that are associated with pica. These individuals may spend time thinking obsessively about a particular pica item, read about it, and even search for information regarding the pica item. Individuals that engage in pagophagy (i.e., ice pica) may spend a majority of their day thinking about ice, determining when they can purchase their next cup of ice, and even cause injury to oneself by wearing down their teeth as they consume ice. Individuals with ASD may often be "obsessed" with consuming threads off of their clothing and require one-on-one staffing to prevent injuries from occurring due to pica-related

behaviors. These interventions are successful at not allowing the individual to engage in pica; however, the individual's motivation to engage in pica significantly increases. Once the one-to-one staff member is not paying attention, the individual may be able to maneuver out of a mechanical restraint and take off to the nearest location where a pica item can be consumed. As a result, an individual that is diagnosed with ASD and pica may engage in pica behavior even though there can be some immediate unpleasant consequences.

Lastly, another similarity that is present among both groups that engage in pica behavior is that they do it for benefits that are viewed as being short-term rather than evaluating the harms that may occur in the long-term. For example, some pregnant women may consume dirt which can expose their fetus to parasites, and others will consume starch which may result in additional weight gain and be associated with long-term health costs. Other individuals may knowingly cause damage to their teeth by consuming ice. Furthermore, individuals diagnosed with ASD and engage in pica behavior may struggle with their staff to gain access to the pica item and cause injury to themselves as they attempt to gain access to this particular item and the long-term harm that may be associated.

Although there are things that are viewed as being similar across pica in both typically developing people and people diagnosed with ASD, there are differences that are still present. There are some forms of culture-specific practices (i.e., pica associated with religion, pregnancy related pica behaviors, social contagion) that are viewed as being different from pica that is found in individuals diagnosed with ASD. These particular forms of pica are often found to be more highly influenced by learning processes that are socially mediated (i.e., rule-governed behavior, modeling). Individuals with this form of pica may imitate pica behavior that is found in other people. For example, if these individuals see their family members and friends engaging in pica behaviors associated with their religion, then they may also be witness to receiving directions from these individuals to also engage

in the pica behavior. There may also be indirect forms of instruction that are provided to the individual. For example, “Eat this dirt that was brought back from Chimayo as it has been said to be powerful.” The individual may never come in contact with a direct contingency (i.e., consume dirt and feel better); however, the individual’s previous history of reinforcement that is associated with following directions and rules that are related to religious beliefs and practices may ultimately have an influence on a more general class of rule-governed behavior that is associated with one’s religion. As a result, the pica items and topography are different among these groups of individuals as well as the nature of the pica behavior. Therefore, it is important to understand that other people are key in the acquisition and maintenance of various forms of pica behavior in the general population. In individuals diagnosed with ASD, this may be less true in other forms of pica behavior.

Diagnostic Information

There have been several sets of diagnostic criteria that have been used to define pica. Most recently, the American Psychiatric Association (APA; 2013), defined pica utilizing four different criteria. The first point of criteria requires that there is persistent eating or consumption of a substance that is non-nutritive for a time period of at least one month. The next criteria point requires that the behavior is not appropriate for the individual’s level of development. Thirdly, the behavior is not viewed as being culturally normative or socially acceptable. Lastly, if this particular behavior is present simultaneously as another Diagnostic and Statistical Manual of Mental Disorders (DSM) diagnosis or other medical condition, then it must be sufficient to necessitate further attention. As a result, it is important to note that the APA’s defining criteria do not make a reference to a certain population (i.e., ASD, ID); however, it does distinguish that if it exists with another disorder, then it requires its own attention.

Few changes were noted when the APA made modifications that resulted in the DSM-5 (Hartmann et al., 2012). The APA (2013) noted that pica was a feeding and eating disorder. Further revisions noted that pica could also be diagnosed at any age and not just in childhood.

DSM-5 criteria require a reassessment of the diagnosis of pica to occur for a multitude of reasons. One reason is that this diagnosis can be present in both children and adults. Onset of pica can now occur not only during childhood, but also in adulthood. As a result, it is important to understand that there may be adults that have been undiagnosed who should now be diagnosed with pica.

On the other hand, it has been noted that the DSM diagnostic criteria has lacked in capturing a key feature of pica, particularly the intense cravings that an individual may have for a specific item (Young, 2010). This component is missing from the DSM as well as other definitions, but brings to light the somewhat obsessive aspect of pica in individuals.

It is key to make an accurate and quick diagnosis of pica as some forms of pica are extremely dangerous and can be lethal. Therefore, it is unethical to not provide evidence-based treatment or delay treatment to someone with a high risk of harm. A failure to make an accurate diagnosis can place individuals at a higher risk of harm as they may not receive any form of treatment for pica. As a result, this can place these individuals in harm's way by exposing them to risks that may be preventable. It would be considered a serious oversight to deliberately misdiagnose or fail to diagnose pica in an individual.

There may also be other disorders within the DSM-5 that have topographical and functional similarities to that of pica. Some of these disorders include hand mouthing and chronic mouthing of objects. Both of these behaviors are highly likely to be nonsocial behaviors that are automatically positively reinforced (Piazza et al., 1996). However, these disorders can be differentiated from pica through a

few key points: (1) there is a specific focus on a particular object instead of an individual's hands or mouth, and (2) the items are often consumed quickly instead of being repeatedly mouthed.

Culturally Typical Pica

There are some forms of pica that are viewed as being culturally typical behavior. These forms of pica include cultural practices that have occurred over a period of time and continued for several generations as well as social contagions where individuals engage in pica within a society. Certain populations within specific geographic regions have been found to engage in consumption of clay, ice, or other substances that are non-nutritive.

While there are earlier forms of pica that have been noted, it was not until the late nineteenth and early twentieth centuries that medical reports surfaced regarding pica in children. These accounts were often in relation to lead poisoning or other health risks. Furthermore, it has been found that starch, clay and earth from graveyards are commercially available for public consumption. Pica support groups can be found on the Internet and material related to pica can be found on YouTube.

Developmental Disabilities

Pica within this population often includes items such as grass, cigarette butts, leaves, threads, paper, and other small objects (i.e., buttons, paper clips). Pica has been known to be found more often in individuals with severe ID and are nonverbal (Ashworth et al., 2008). Furthermore, researchers have found that individuals with pica often do not exhibit externalizing behavior problems but instead are noted as being withdrawn and submissive (Tewari et al., 1995). Individuals with pica and individuals without pica have been compared using the

MESSIER which measures social skills. Results indicated that individuals with pica were noted as having fewer positive social skills than those individuals without pica; however, there were no differences that were able to be found regarding overall negative social behaviors between the two groups (Matson & Bamburg, 1999).

Studies that were conducted earlier regarding the prevalence of pica demonstrated that most of the participants had severe or profound ID (Griffin et al., 1986). This particular research was conducted on a statewide basis using a population of approximately 10,000 individuals that were diagnosed with ID and/ or ASD. Individuals that have been diagnosed with severe or profound ID often acquire skills at a slower pace than individuals that are diagnosed with moderate or mild ID. This may provide an explanation as to earlier research that demonstrated that lack of skills both generally and socially as being correlates of pica.

There have also been several factor analytic studies regarding different versions of the Behavior Problem Inventory (Rojahn et al., 2012) that have demonstrated an association among pica and various challenging behaviors. Some research has shown that pica loaded moderately onto self-injury when compared to that of stereotypy or aggression/destruction scales (Matson et al., 2012). As a result, pica has been associated with other self-injurious behaviors (i.e., self-scratching, head-hitting) instead of stereotypical behaviors (i.e., hand movements) or aggressive/ destructive behaviors (i.e., scratching others; Rojahn et al., 2012).

Severity of Pica

The severity of pica behaviors differs greatly from mild to problems that can become life-threatening. There are times when pica has been found to be low risk and able to be maintained with routine supervision and redirection, minimal

training, and behavior intervention plans. On the other hand, there are times when pica can be life-threatening and include intrusive as well as risky ways of management (i.e., one-to-one staffing, mechanical restraints) or even the use of behavior management interventions that are restrictive or utilize positive punishment.

There are some cases of pica that respond well to treatment even though they may necessitate continued and extended behavioral treatment. On the other hand, some cases may be resistant to treatment and only be responsive to programming that is restrictive or not responsive at all. Since the occurrence of pica is particularly low especially in cases that have severe pica, clinicians may also have experiences and skills that are rather limited which places these individuals at risk of restrictive management practices being continually utilized, as well as injury or death to the individual.

Risks Associated with Pica

The occurrence of pica within the general population is associated with risks which are typically viewed as being moderate. These types of risks include infections that could occur as a result of consuming clay and soil, damage to one's teeth from consuming ice, and some concerns related to digestion that may occur due to eating excessive amounts of starch or other substances.

Risks associated with pica may be more significant in some children such as those that may be present from consuming lead-based paints; however, the risks that are found within clinical populations may be much greater. Individuals that are diagnosed with developmental disabilities may have risks associated with infections, damage to their gastrointestinal system from consuming objects, occurrences of choking, and require surgeries to remove items that have been consumed that are causing intestinal blockage.

Pica is associated with the risk of heavy metal poisoning. The most common form of this is lead poisoning. This has been a risk that has been associated with earlier times that were noted in surveys of children that were from low-income families and exposed to paint flakes (Cooper, 1957) as well other forms of indigestible lead (i.e., mining waste of other lead-containing pollutants; Young, 2011). The risk of one acquiring lead poisoning can be found through the high rates of pica that occur among individuals with lead poisoning (Young, 2011). Pregnant mothers that have pica for lead items may also result in various medical problems that may become apparent in the pregnant mother (Trivedi et al., 2005) as well as lead toxicity in the baby when it is born (Estrine, 2013). Even though it has been recognized for a long period of time as a risk of pica, research has continued to be conducted to evaluate the effects of pica within contemporary populations that are at risk of pica. These populations consist of children that are in mining areas or even those that have been exposed to different lead sources. There have also been other forms of poisoning related to pica that have been documented. Documentation has revealed that a boy was taken to a hospital due to a seizure that occurred unexpectedly (Kupiec et al., 2004). The boy had consumed rock salt as a pica behavior that led to sodium toxicity.

Pica may also cause various medical problems such as gastrointestinal distress, constipation, and gastrointestinal injuries (Rashid et al., 2010). These types of medical problems are often difficult to diagnose for a multitude of reasons. Often, the individuals that consume pica items are nonverbal and the pica-related events occur at low-frequencies which make it difficult to recognize the medical problems. These medical problems may result in the individual requiring the pica items to be removed from the gut (Halleran et al., 2015) or even tube placement to occur so that feeding can still happen when intestinal blockage has occurred and the blockage is unable to be removed (Miyakawa et al., 2011).

Section 1 Personal Reflection

Within your professional experience, have you encountered an individual that exhibited pica behaviors? If so, what did those pica behaviors look like and what were the interventions that were used to limit access to the pica items or reduce the occur of pica behaviors?

Section 1 Key Words

Pica - known as the persistent consumption of non-food items, such as dirt, paint chips, hair, or rocks, which is not appropriate for the individual's developmental age and is not a culturally accepted behavior

Section 2: Etiology of Pica

When discussing the etiology of pica, behavioral or learning models of pica delineate that pica is a learned behavior. Various consequences of pica may involve the behavior of other individuals (i.e., social consequences) and the non-social consequences associated with pica that are immediate (i.e., texture, taste, physiological consequences). For example, the consumption of coffee grinds may involve a relief of deprivation of aversive internal states that are associated with caffeine deprivation. Antecedent stimuli that are relevant may include discriminative stimuli such as the presence of both pica and non-pica items as well as the stimuli that are associated with them, such as trash cans or people that are either present or absent. Another class of antecedent stimuli are those that are related to establishing operations. These may include the deprivation of reinforcers such as the deprivation of either pica or non-pica items. For example, if an individual has not consumed food for a long period of time, then pica may be more likely to occur. For individuals that consume coffee grinds, the time since

they last consumed coffee may be important to know. For other individuals, deprivation of other substances may be relevant, particularly if consumption of these items provides relief from gastrointestinal distress. Response effort is another variable that is important to consider as it influences operant behavior. For example, if consuming food that is appropriate is made easy and the consumption of pica items is effortful, then pica behaviors may be less likely to occur. Response effort often underlies different interventions that are implemented to abolish hunger such as having snacks readily available as well as noncontingent reinforcement. A concurrent schedule of reinforcement involves the availability of more than one schedule of reinforcement simultaneously. Often, it may be easier to focus on the schedule of reinforcement that is maintaining the targeted behavior instead of also focusing on the schedule of reinforcement that is maintaining other variables that may also be relevant. As a result, a complete functional analysis of pica should be conducted that includes an evaluation of the schedules of reinforcement that are maintaining an individual's pica behaviors and their healthy eating behaviors. Furthermore, another behavioral concept that is relevant is that of a behavioral chain. A behavioral chain is composed of an orderly sequence of response where each response acts as a discriminative stimulus for a subsequent response in the chain and also as a conditioned reinforcer for prior responses within the chain. This behavioral concept is important to understand as individuals with pica behavior often demonstrate predictable chains of behavior which have additional implications for treatment and may include other behavior that is challenging that necessitates intervention. For example, some individuals that demonstrate pica behavior may spend significant amounts of time looking and searching for pica items. As a result, these individuals may take off in an effort to grab a pica item so that they can consume the item. These response chains have important implications for treatment as it is probable that interventions that could be utilized to decrease the responses that occur early within the response chain may be more effective

than interventions that are utilized to only intervene on the terminal response within the chain. Additionally, there may be some situations where individuals that exhibit pica behavior also engage in aggressive behavior or property destruction in an attempt to access pica items. For example, an individual may push another individual or hit someone so they move out of the way so they can gain access to the source of pica items (i.e., trash can). This behavior may be best understood as being a part of a response chain. Therefore, a clinician may be best suited to manage the pica behavior instead of the aggressive behavior or property destruction behavior directly as this may be the treatment strategy that is the most effective.

Researchers have mentioned that pica is often characterized as a problem that is associated with stimulus control (McAdam et al., 2012). In this situation, individuals engage in consuming items that are inappropriate, fail to consume food items that are sufficient, consume items from places that are appropriate, and fail to eat items that are appropriate food items. Stimulus control of eating is broad as individuals with pica have not been able to learn to discriminate pica items from non-pica items and have also not been able to discriminate among which locations are appropriate to eat from. This idea is further supported by studies that have utilized discrimination training and the teaching of alternate behaviors with pica items and treatment methodologies for pica behavior.

Pica can also be characterized as a concern related to reinforcement (McAdam et al., 2012). Often, it is sensory properties of the pica items that are consumed that ultimately reinforce the pica behavior. Furthermore, the lack of reinforcing properties of various food related items might also be of importance to some people.

Stimulus control is acquired through discrimination training which consists of repeated pairings of reinforcement for one particular class of stimuli and then also

non-availability of reinforcement or punishment for an additional class of stimuli. If an individual is not able to acquire these specific discriminations, then this could result from a multitude of things. First, the failure to learn these discriminations could be due to a limited range of or lack of social reinforcers, lack of food items that have any reinforcing value, and the lack of punishment that is naturally occurring for pica behaviors. Furthermore, pica may be more likely to occur if consuming food that is appropriate is weak. This could be a result of a lack of feeding skills, a history of punishment for eating food possibly due to medical concerns that have made consuming food painful or biomedical concerns that have made consuming food difficult, eating skills that are weak or absent, or a high effort for consuming food appropriately.

Section 2 Personal Reflection

In your experience, what observations have you made that would support the idea that pica behaviors are learned behaviors?

Section 2 Key Words

Behavioral chain - composed of an orderly sequence of response where each response acts as a discriminative stimulus for a subsequent response in the chain and also as a conditioned reinforcer for prior responses within the chain

Concurrent schedule of reinforcement - involves the availability of more than one schedule of reinforcement simultaneously

Discrimination training - consists of repeated pairings of reinforcement for one particular class of stimuli and then also non-availability of reinforcement or punishment for an additional class of stimuli

Section 3: Assessment and Treatment

As behavioral assessment and treatment are considered, it is important for a clinician to make some preliminary distinctions. Behaviorism is concerned with the philosophical basis of different behavioral approaches in an attempt to understand and change behavior. Furthermore, methodological and radical behaviorism are both considered to be philosophies of science. Methodological behaviorism rejects the study of thoughts and feelings and attempts to objectify the field of psychology. Radical behaviorism, on the other hand, contains views that environmental control over behavior can also include that of covert, private behavior. Through the study of radical behaviors, two kinds of science were developed: basic and applied science.

Throughout the 1950s, the field of ABA continued to develop and the principles housed within experimental analysis of behavior were applied to problems concerning social significance. Experimental analysis of behavior and ABA differ in that experimental analysis of behavior researchers evaluate arbitrary responses, organisms, and environments to offer insight into research questions, whereas ABA researchers evaluate socially important responses with socially significant problems that are not able to be addressed through interventions in real-life situations.

With treatment, there are often found to be two general behavioral approaches: those that are not based on pretreatment behavioral assessment (i.e., behavior modification) and those that are based on pretreatment behavioral assessment (i.e., ABA). In the first type, interventions are typically based on the manipulation of some type of arbitrarily chosen reinforcer such as candy, an arbitrarily chosen punisher such as reprimands, or the selection of techniques such as utilizing a time-out room. Within behavior modification, these types of techniques are often selected without consideration of the impact that the environment has on the

targeted behavior. On the other hand, ABA-based interventions are based on the understanding and implication that the environment has on the targeted behavior and how that can be utilized to form the basis of treatment. For example, through pretreatment assessment, the consequence that is maintaining the targeted behavior as well as the delivery of that consequence during treatment might be able to be identified (Iwata et al., 1994). Pretreatment assessments include the use of functional assessments, functional analyses, preference assessments, and other various forms of assessment that identify punishers. The main focus of these types of assessments is to formulate hypotheses regarding various environmental variables that maintain pica behaviors and to determine the variables that are able to be manipulated as a component of a treatment package.

Ethical Considerations

In a similar manner to that of other severe challenging behavior, the treatment of pica behaviors raises different ethical concerns. These concerns include questions associated with the rights of the person that exhibits pica behaviors such as the right to freedom from various degrees of harm, the right to treatment that is effective, and the right to provide consent to different treatment interventions. Often, these rights result in contradictions that will require resolution. For example, a treatment intervention may require movement restriction through the use of restraints to prevent the engagement of pica behaviors. These types of interventions may prevent short-term harms through the prevention of pica behaviors but may ultimately produce long-term harms. However, the freedom from restraint may result in harmful outcomes such as injury to the individual or even death. Furthermore, the failure to provide treatment may result in short-term benefits such as the hope of encountering an effective treatment; however, it may also result in long-term harm such as the continued use of one-to-one staffing ratios.

There are several principles that have been proposed that coincide with the treatment of pica behaviors (APA, 2013). Some of these principles include beneficence and non-maleficence, fidelity, integrity, justice, and the respect that is provided regarding the rights and dignity of individuals. All of these principles can be used to formulate specific actions that are related to the treatment of pica behaviors; however, beneficence and non-maleficence are the most obviously related principle to this endeavor as it implies an obligation on the part of the clinician to engage in behavior that is associated with benefits to the individual as well as not engaging in behavior that may impose harm to the individual. Additionally, this principle is aligned with treatment efficacy and the integration and implementation of evidence-based practices. An ethical standard that stands out in regard to this concern is that of competence. Clinicians working with individuals that exhibit pica behaviors should be competent, recognize their limitations in regard to treatment of pica behaviors, and look for additional training and assistance when they are required to work outside of their own scope of competence.

Behavioral Assessment

The purpose associated with behavioral assessment of pica behaviors is to identify the various environmental variables of which pica is a function that can be used within a behavioral treatment. These types of variables include the identification of antecedent stimuli (i.e., establishing operations, discriminative stimuli), consequences (i.e., reinforcers, punishers), as well as the effort that is needed to exhibit relevant behavior. When conducting a behavioral assessment of pica, the clinician should consider the influence that different independent variables have on the targeted behavior as well as its precursor behavior and adaptive behavior. Several antecedents could include establishing and disestablishing operations (i.e., food deprivation, recent eating) and discriminative stimuli such as the availability

of pica items. As a clinician conducts a functional assessment/analysis, a description should be provided of the chain behavior that occurs prior to the pica behavior or attempts as well as an analysis of appropriate behavior (i.e., eating appropriately). The consequences of pica and other behavior responses that are included in the chain should be delineated as well as the consequences that are associated with appropriate behavior. Lastly, an assessment should be provided of the role of response effort as it influences both pica and appropriate behavior.

Additionally, a behavioral assessment of pica should include stimulus preference assessments of both food and leisure items. It may also be appropriate to include an empirical assessment of aversive stimuli.

Measurement of Pica

In the initial stages of a behavioral assessment of pica, surveys, psychometric instruments, or interviews are used to ascertain the presence or absence of behaviors that may or may not require intervention. However, it is important to note that these types of screening measures are broadly focused and may not necessarily be entirely accurate.

Some observational measures have integrated the use of frequency or rate of pica behaviors or pica attempts as well as precursor behavior (i.e., scavenging). However, it may not be healthy or safe to allow an individual to engage in pica behaviors. In these types of situations, the use of artificial pica materials may be beneficial to utilize during assessment and treatment. Often, the engagement in pica behavior is the end response in a behavior chain. It may be best to intervene during earlier responses within the chain as this may be more effective than interventions that are only implemented once the pica item has been consumed.

The occurrence of pica may occur at low frequencies within the natural environment. Often, this is due to the unavailability of pica items as a result of

caregivers blocking access to the pica items or the engagement in pica behaviors. As a result, baseline rates that are naturally occurring may be deceptive as changes that occur between baseline and treatment may be associated with the availability of the pica items and practices that align with caregivers. Therefore, baited environments may be used where manufactured safe pica items are systematically placed. Some researchers have integrated the use of simulated paint flakes that have been made from dried flour and water (Finney et al., 1982). Other researchers have used bread as simulated cigarettes (Donnelly & Olczak, 1994). In most cases, materials that are used or consumed are replaced so that the availability of pica items does not influence the exhibition of pica behaviors.

Behavioral Interventions Utilized with Pica

When developing treatment goals that can be utilized with pica behaviors, multiple targets should be included. These targets should include reducing the rate of pica as access to pica items and opportunities to engage in pica behavior are present, increasing replacement behaviors (i.e., eating appropriate items), programming for generalization and maintenance of skills and behaviors, reducing and eliminating the use of restrictive behavior management practices (i.e., restraint procedures), and keeping the individual safe from harm. It is not sufficient to only reduce the rate of pica behaviors. By doing this, it may only be reflective of the use of preventative strategies. As a result, the most important outcomes that relate to pica behavior are those associated with reducing engagement in pica behavior, given the opportunity to engage in the targeted behavior. Treatment associated with pica behaviors is not able to be deemed successful when the individual does not engage in pica due to them not having access to engage in the pica behavior. Instead, treatment is successful when the individual is able to come in contact with an opportunity to engage in pica behavior but does not make an attempt to access the pica item or is able to come

in contact with a pica item without a safety concern. Therefore, a main outcome of interventions associated with the treatment of pica behavior is the acquisition, generalization, and maintenance of alternative behaviors that are associated with pica items.

Throughout the years, various researchers have developed and evaluated numerous behavioral interventions for pica. Some of these interventions include environmental enrichment, differential reinforcement, and discrimination training.

Environmental Enrichment

Environmental enrichment includes the increase of environmental stimulation, activities, or reinforcement. This may not be able to be used solely as an effective treatment option for pica. However, if preferred items and activities are able to be added to an environment, then environmental enrichment is more effective.

Differential Reinforcement

With pica behavior, differential reinforcement is provided for one response class (i.e., picking up a cigarette butt from the floor and handing it to caregiver) and withheld for one response class (i.e., pica). Differential reinforcement can integrate the use of function-based reinforcers that are identified during a functional analysis/assessment of pica. On the other hand, differential reinforcement may integrate the use of non-function-based reinforcers that are based on preference assessment results. Differential reinforcement may also be based on various response classes (i.e., differential reinforcement of other behavior, differential reinforcement of alternative behavior). The integration of differential reinforcement may prove challenging as pica is often maintained by automatic positive reinforcement (Hanley et al., 2003). As a result, it may be difficult to remove the reinforcer that is maintaining pica.

Discrimination Training

Some researchers (Mc Adam et al., 2012) believe that pica results from inappropriately broad stimulus control of eating. This means that individuals that exhibit pica behavior eat both food and non-food items indiscriminately as well as eat from inappropriate locations. Therefore, a solution to this challenge is to bring eating under stimulus control that is appropriate by means of discrimination training. Individuals can be taught to discriminate between edible and non-edible items.

Section 3 Personal Reflection

Which behavioral option for treatment do you feel would be the most successful for use in the treatment of pica behaviors and why?

Section 3 Key Words

Behaviorism - concerned with the philosophical basis of different behavioral approaches in an attempt to understand and change behavior

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