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Addicted to a Cult: Comparing Cult Membership to Addiction on a Psychological and Neuroscientific Level

Lisa Bevers, June 14th 2023

University of Groningen

Bachelor Life Science and Technology, major Behaviour and Neurosciences

Supervised by Prof. Dr. A.J.W. Scheurink

Abstract

This paper examines cult membership through an addiction framework. Similarities in mechanisms, risk factors and consequences are discussed. The mechanisms to maintain the behaviour are based on a gradual increase in rewards and are related to isolation. Risk factors for addiction and cults involve dissatisfaction with daily life, novelty-seeking behaviour, dependent personality traits, neuroticism and psychiatric comorbidities. Neurological consequences require additional research, but there is speculation considering the involvement of the prefrontal cortex, the limbic system and the anterior cingulate cortex. Treatment that is beneficial for addicted individuals is discussed, and how this could benefit (ex) cult members. Although many similarities are found, further research is needed to conclude whether cult membership can be seen and treated as an addiction.

Key-words: Addiction, Cults, Reward system, Group mentality, Cognitive Behavioural Therapy

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Introduction

What could influence a mom to let her young child go blind from an eye infection instead of going to the doctor? For Liliane, it was not because of bad intentions but because of her cult's beliefs. After starting a family with her husband in the 1980s, he was forced to quit his construction business due to medical issues, leading to money struggles. This dissatisfaction with her daily life changed when her sister introduced her new boyfriend, Luc, claiming alternative medicine could help. He promised to solve the medical issue; all they had to do was pray with him. Although initially unsure, the family agreed since they had nothing to lose. Gradually, Luc claimed his 'healing powers' increased due to his direct contact with God, indoctrinating Liliane's family and pushing the boundaries of their beliefs. They became isolated from their other friends and family but became very close with their new community. Approximately 30 other families joined in their belief in Luc, who ordered them to build a church to live out God's plan to help humanity. Liliane's husband did most of the construction and thus received the bills, which Luc refused to pay since there was a rule in the community that no invoices were paid. This led to them being in more debt than before, but instead of seeing this as a warning, the family became more dependent on the community.

Over the years, more extreme rules were added, including the rule that no one was allowed to go to a doctor. Liliane lost her ability to think critically about the consequences of these actions and followed these orders. Only when a member died from untreated cancer, and her daughter became blind from an untreated eye infection Liliane was susceptible to change. An outsider, the piano teacher of one of her children, convinced her that her current lifestyle was destructive to her and her family. With more outside help, she convinced her children and husband to leave. However, her oldest son decided to stay behind, and she did not have contact with him for years. She describes the dark period of her life inside the cult and the dark period that followed. She was consumed with guilt over her daughter going blind, losing her son to a cult, and losing 20 years of living her life based on what others made her do (Libelle.be, 2019).

Liliane is one of the many people who were unaware that they were joining a cult; she got trapped in a long commitment to a community while searching for a better life. No one intentionally joins a cult; similarly, no one does drugs with the intent of becoming addicted. Cult behaviour or drugs is just a method to give your life an instant, short-term boost. Long-term effects are detrimental, but once you get addicted, it is difficult to stop.

Recently, a comparison of cults and addiction has been made (Rousselet et al., 2017). Especially the inability to stop and the chance to relapse allow for an interesting framework for cults. Although addictive behaviour has existed for centuries, alcoholism was declared a disease in 1956 (Leshner, 1997). Addiction to other types of substances was officially named a disease in 1987 (Leshner, 1997). However, behavioural addiction has only entered the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM–5; American Psychiatric Association, 2013), replacing 'substance-related disorders' with 'substance-related and addictive disorders' (Potenza, 2014). The reason for the alteration is that research proved a similar clinical and neurobiological basis for gambling addiction to substance disorders. Currently, gambling is the only non-substance-related disorder; however, different behaviours such as gaming, exercise, shopping and sex require further study to be included possibly (Potenza, 2014). We propose cult membership should be added to the list of possibly being an addictive disorder. In this research, we discuss how cult membership compares to addiction and what implications this has for treatment.

Cults

What is a cult?

Prevalence, definition and different types of cults

There are approximately 200-300 cults in the Netherlands, of which 84 are known to the government (npokennis.nl). Many cults are secretive, so it is difficult to tell how many there are in the world, but an estimation is made that 6-10 million people are involved or have recently been involved in cults (Clark, 1993). Examples of cults known and followed in the Netherlands are Miracle of Love and Scientology, seen as cults in most countries. However, there is a fine line between cult and religion.

Throughout history, the debate has been on what does or does not qualify as a cult (Berger, 2022). In this research, we define a cult as a change in belief from a broad spectrum of norms and values to a very narrow set of rules to follow to pursue that belief (Feldmann & Johnson, 2015; Lennon, 2019). The belief is practised by following and worshipping the cult leader, who often uses the cult to achieve personal goals, like more followers, status or money. People who join a cult are referred to as cult members, seeking a change from their current state. This alteration can be achieved by a change of environment and mystical experiences, which can be religious but does not need to be (Feldmann & Johnson, 2015; Lennon, 2019).

There are many different types of cults (Campbell, 1978). A major category is religious cults, also referred to as New Religious Movement. Depending on what the cult leader wants to achieve, there are also commercial, terrorist and political cults (Douglas, 2022). In the media, a typical portrayal of a cult is the doomsday cult, where the leader predicts the world will end and the cult community will be the only one saved. An example of this is the *Branched Davidians* in Waco, where a war with police was predicted, and people rather stayed inside a burning building than go outside (Rosenfeld, Stange & Strenski, 1994). This was both a doomsday and religious group, as the different types do not exclude one another. When families join a cult, like the story of Liliane, children are born and raised within these cults. These children have no frame of reference to reflect on their situation and thus do not know any different than their lives inside the cult. Children in a cult are highly likely to develop childhood trauma, mainly from shame or confusion, when they learn about the world outside of the cult (Langone & Eisenberg, 1993). Due to this detachment from the world outside of the cult, these children often end up staying in the cult and becoming very devoted followers (Langone & Eisenberg, 1993). But what about the other people who suddenly decide to leave their lives behind and join a cult? We will discuss some techniques cults use to recruit members and its consequences.

Mechanisms of a cult

A technique used by many cults is to isolate members from their family and friends (Rousselet et al., 2017). The new social community is projected as the only truly important thing. The outside is depicted as a hostile world, giving the cult a strong us-versus-them mentality. This increases the bonds within the group while decreasing the ability to see themselves as part of the outside society (Lennon, 2019). Previously mentioned doomsday cults automatically enforce this isolation and us-versus-them mentality to an extreme, where true believers can never return to the outside world and only have each other. The strong group feeling leads to deindividuation, which can be referred to as a loss of sense of self (Lennon, 2019). Cult members no longer think for or about themselves but instead only view themselves as part of the group. To complete the social isolation, many cults are secretive about their methods (Berger, 2022). This leads to further social impairment and no indication of what to expect when you first join the cult.

The cult is immediately rewarding to a new member. The warm community of like-minded people, who already see you as part of the community for which they would do anything, will feel loving and hopeful (Goldberg & Goldberg, 1998). This feeling will provide a strong sense of belonging and is the start of a dependent relationship where the cult provides positive social experiences (Burke & Permanente, 2016). By rewarding new cult members for a specific behaviour, with more privileges or becoming more of a fully pledged member, the people become conditioned to habitually perform behaviour closer to the rules and norms of the cult (González-Beuso et al., 2014).

The members are slowly introduced to increasingly radical changes from their old beliefs and lives (Golberg & Goldberg, 1988). The cult leader gradually increases the extremity of requests, similar to the 'foot in the door' compliance technique, where an agreement to a small request makes a person more compliant to agree to more demanding tasks later (Phelps, Berkman & Gazzaniga, 2022, ch12, p471). Tasks may involve ritualistic behaviours such as prayers, chanting and (financial) sacrifices that prove the commitment to the cult (Kulik, Alarcon & Salimath, 2020). If the rules are not followed, punishment is common. This differs per cult but often involves denying basic physiological needs such as sleep and food (Berger, 2022). The ultimate punishment is often very similar, namely being exiled from the cult (Lennon,2019). This results in losing everything they depend on and having to return to the outside world, which they believe to be a very hostile place. Although there are also things they disagree with inside the cult, they depend on the place for safety and their social group (Burke & Permanente, 2006). This is an important factor contributing to the destructive path seen in addicted people; although the cult member realises they have some negative experiences, they will do anything to stay in the cult (Rousselet et al., 2017).

Cult membership: demographics and consequences

In general, people who feel out of place and desire to feel happy are more likely to develop an affinity with a cult (Feldmann & Johnson, 2015; Nakken, 1988). This can happen at any stage of life, but young adolescents, in particular, are often in a transitional stage and are looking for guidance (Teixeira, 2010). This way, age could be a factor in the likelihood of joining a cult. Gender could be another factor, as almost 70% of the cult members is female (González-Beuso et al., 2014). Cults' main recruitment tactic is personally knowing and convincing one another (Rousselet et al., 2017). In areas with higher accessibility to cults, an increase in the likelihood of someone joining the cult is seen (Rousselet et al., 2017). This means the closer in proximity you live to a cult or cult members, the more likely you are to 'try out' a cult. Another commonality is the significant comorbidity with mental illnesses like depression and schizophrenia (Rousselet et al., 2017).

It is important to note that for many people, the word 'cult' has a negative connotation (Willmore, 2021). Media coverage is mainly focused on the extremes. Cults get their infamy from murderous cults like *The Manson Family* and *The Peoples Temple* in Jonestown, where over 900 members followed their leader into death (Wathey,2013). As mentioned, these can truly be categorised as extremes, but that does not mean other cults do not pose any dangers to their members. Many members follow their leader without thinking, a concept called groupthink (Phelps, Berkman & Gazzaniga, 2022, ch12, p448). Critical thinking and control are disabled, and emotions seem to be in control. Negative emotions, such as shame resulting from disobedience, play a significant role (Berger,2022). The repetition of ritualistic behaviours challenges a person's self-control (Hassan, 2020, p9). It is common for cults to have hard working days with relief at the end of the week, which can be in the form of sexual activities that members would not have performed previous to joining the cult (Nakken, 1988). However, there are also beneficial effects of the group. When there is moderation and a controlled environment, a depressive mood can be lifted by a loving group giving a sense of purpose (Goldberg & Goldberg, 1988).

The ability to leave a cult depends on the intensity and duration of the membership (Rousselet et al., 2017). Almost always, outside intervention is needed since members cannot recognise their situation or visualise a way to live without the cult (Rousselet et al., 2017). If people manage to leave the cult, therapy is needed since ex-members are likely to relapse and return to the same or a different cult (Berger, 2022). Currently, there are not many therapists who are specialised in helping ex-cult members. In the Netherlands, ex-cult members would most likely be treated as having dissociative personality disorder otherwise specified, but in this sector, there is a significant shortage of specialised workers (ggzstandaarden.nl). To see whether mental health care for addiction could benefit cult members, we further investigate whether there is a specific profile for a person likely to join a cult, what the effects of a cult are on behaviour and possible underlying neurological functions.

Profile of a cult member

Previous research mainly focuses on the cult leader to qualify what similarities there are and the potential requirements to be a leader. This ranges from claims of mental illness, like narcissistic personality disorder (Wathey, 2013), to just being very charismatic (Letzter, 2017). It is important to note that there are no including or excluding characteristics that make someone a cult leader or member. We describe common unifying factors present in cult members, which increase the likelihood of someone joining a cult.

Life dissatisfaction

As previously described, it is common for people to be in a difficult and transitional period in their life. They are in search of a sense of belonging, stemming from personal development and life dissatisfaction (Rousselet et al., 2017). This can occur at any moment in life but is highly prevalent in young adolescents finishing high school(Teixeira, 2010). In general, this time of your life is focused on finding your purpose in life and a first attempt at an independent life (Teixeira, 2010). If someone is pleased with their life and feels a strong sense of belonging, it is unlikely that this person would be open to any type of cult (Lalich & Tobias, 2006). However, people with a diminished sense of happiness or belonging are more susceptible to the temptation of change. The cult is used as a method to provide the wanted change in life. However, the cult rarely solves underlying problems like financial, social or mental health problems.

Novelty seeking

People who have a novelty-seeking personality are more likely to become cult members (González-Beuso et al., 2014). Novelty-seeking behaviour is related to impulsivity, openness to new things and experiencing highly rewarding stimuli (Wang, 2015). For a cult, this impulsivity is useful in getting people to push their boundaries further, especially since the feeling is rewarding to which they are highly susceptible (González-Beuso et al., 2014). Although people generally do not willingly join a cult, a certain openness and interest in spiritual experiences is required to be susceptible to the trance-like state cult rituals provide (Lalich & Tobias, 2006). Similar to hypnosis, a person who is open to suggestions will be easier hypnotised than a person opposed to those experiences (Phelps, Berkman & Gazzaniga, 2022, ch4, p132). This openness to spiritual and mystical experiences can be present in someone’s personality or due to previous experiences with mind-altering states like religion, meditation or drugs (González-Beuso et al., 2014; Lalich & Tobias, 2006). The openness has nothing to do with whether someone is more open to the effects of the cult but only how open someone is to explore and experience trance-like states.

Dependant personality

A predisposition of dependent personality disorder (DPD) traits increases the likelihood of someone joining a cult (Walsh, Russell & Wells, 1995). Low self-confidence and the inability to make choices for oneself are key traits of DPD (Bornstein, 1992). A cult can take away those doubts since it provides clear rules to follow. A cult can easily exploit this insecurity and lack of belief in yourself (Lalich & Tobias, 2006). People with DPD do not consider themselves equal to others and can more easily ignore being manipulated than others. Even when they realise they have been maltreated, they are more likely to respond with shame for their decisions than hold someone else responsible (Bornstein, 1992). Lastly, a fear of separation or abandonment is common in DPD (Bornstein, 1992). This makes them even more obedient to the cult leader if they feel that the consequences of disobedience are being separated from the cult. These traits are prevalent in many (ex) members; especially when dependent relationships like a family bond are suddenly decreased or lost, people become highly susceptible to replacing these with a cult membership (Nakken, 1988). However, in a cult's dysfunctional and manipulative environment, people can develop temporary DPD, even when they previously did not show these traits (Burke & Permanente, 2006). It is difficult to determine what comes first, but dependency is an important part of cult membership.

Neuroticism

Personality questionnaires show a significant increase in neuroticism in ex-members compared to the norm (González-Beuso et al., 2014). However, this is inconclusive in determining whether this is due to pre-existing personality traits or the changes that occurred during or after the cult. Neuroticism is characterised by the fact that minor stressors are easily upsetting and is related to a decrease in self-directedness (González-Beuso et al., 2014). The latter refers to a lack of determination and ability to regulate and adapt behaviour to achieve personal goals. High impulsivity and an inability to control emotions are other common traits of neuroticism (González-Beuso et al., 2014). A possible explanation for the preference of neurotic people to join a cult is the illusion of control, comfort and perfection a cult provides through its controlled environment (Berger, 2022; Nakken, 1988).

Psychiatric comorbidity

The more of the previously described traits a person has, the more likely they are to join a cult. Some traits are connected to mental illness, such as depression and anxiety disorders. Feldmann & Johnson (2015) describe depression as an influencing factor in cult membership, as well as in schizophrenia. Another study showed that over 12% had a prior addiction to joining the cult (Carpenter, 2020). Interestingly, substance abuse disorders decrease after joining a cult (Feldmann & Johnson, 2015; Judd, 1986). This can be explained due to strict rules within a community or by addiction swapping. Addiction swapping is based on people replacing their addiction with a new type. It is common to replace hard drugs with alcohol, which is considered less problematic in many countries. It is also common for people suffering from substance abuse issues to convert to a religion, helping them overcome their addiction (Waldorf, 1983). In case addiction swapping is the reason drug use is decreased when joining a cult, this would further validate the statement that cult membership can be seen as an addiction.

Nice to know: Meher Baba Cult as half-way-house (Robbins, 1969)

In the 1950s, the eastern cult of Meher Baba recruited American young adolescents who had experimented with psychedelic drugs. The cult replaced the psychedelic trips with mystical experiences that are less problematic, both legally and in physical demand. The cult functioned as a half-way-house for addicted youth to gradually adjust to a more conventional life style. Addiction swapping occurred, where the substance addiction is replaced by mystical experiences in the cult.

Neuroscience of cult behaviour

To determine what changes in the brain during and after cult membership, it would be beneficial to have neuroimaging at different stages of the indoctrination process. Unfortunately, due to the secrecy and isolation of a cult, we were unable to recover any research, including neuroimaging of (ex) cult members. This is why we will focus on speculative knowledge about brain regions and their function. First, we discuss the effects of group mentality on the brain; then, we look at brain areas involved in repetitive cult behaviour; lastly, we explain how cult members are influenced by emotional logic.

Group mentality

Cults are large social groups. Social psychology defines multiple risks that come with being part of a large influential group. One of them is groupthink, where critical thinking is reduced due to blind trust in the decision-making of the group (Phelps, Berkman & Gazzaniga, 2022, ch12, p448). Cult members decision-making is slowed down, and the leader is followed almost mindlessly (Hassan, 2020). Neuroimaging shows that groupthink reduces activity in the frontal cortex, specifically the medial frontal gyrus and anterior cingulate (Deulen, 2016).

Another consequence of being part of a group is deindividuation, where someone identifies more with the group's values than as an individual (Mendez, 2023; Berger, 2022). This can cause a person to dismiss harm done to them if they believe it is for the benefit of the group (Lennon, 2019). The medial frontoparietal network is involved with a person's self-awareness (Zhang & Volkow, 2019). Impairment in this area can lead to deindividuation, decreased personal value and problems with executive functioning.

The us-versus-them mentality described previously is also an effect of the group mentality (Berger, 2022). The ingroup (us) and outgroup (them) are known to have different neurological responses. People that are considered part of the ingroup activate the medial prefrontal cortex (mPFC) more strongly, than for people in the outgroup (Phelps, Berkman & Gazzaniga, 2022, ch12, p448). The outgroup shows a reduced response related to a lesser connection to this group (Phelps, Berkman & Gazzaniga, 2022, ch12, p448). In extreme cases, the outgroup is dehumanised, and this can allow for easier dissociation from the outside world, as well as hate and violence (Mendez, 2023). Since the mPFC is related to motivation and decision-making, the increased activity for the ingroup will likely be translated into actions that benefit the cult.

Religious experiences and rituals

In a cult, a person's spiritual acceptance is challenged, which is related to the previously described willingness and novelty seeking. Spiritual acceptance is the apprehension someone experiences about phenomena that cannot be explained by objective demonstration (González-Beuso et al., 2014). These phenomena, such as religious or mystical experiences, are caused by an overstimulation of the amygdala and hippocampus (Walt, 2010). Specifically, the hypothalamus-amygdala-hippocampus complex is involved with euphoric feelings of mystical experiences, while the hypothalamus-amygdala-cingulate complex is more involved in the motivational drive behind religious beliefs (Walt, 2010). Walt (2010) suggests that hyperactivity in these complexes, as well as inhibition of the neocortex to reduce the abilities of the rational mind, allow religious experiences to occur.

Cults introduce rituals that empower the group collectively, where members are motivated or even feel the compulsion to join in (Nakken, 1988). Performing these rituals as a group releases dopamine and lets people experience a trance-like state or religious ecstasy (Phelps, Berkman & Gazzaniga, 2022, ch4, p130). This is related to a dissociative mental state and decreases critical thinking by reducing activity in the frontal cortex (Carpenter, 2020). The dopamine release is an instant reward and

increases the likelihood of repeating the same behaviour (NIDA, 2018). The choice for immediate reward and discounting future consequences increases when decision-making is impaired (Goldstein & Volkow, 2011). This changes the motivation to be included in the rituals into a compulsive avoidance of the negative emotional state of being excluded from the group. This behaviour is reinforced by the amygdala-hypothalamic-brain stem circuit (Fonseca & Navarro, 1998). When these rituals are performed consistently, habits are created. Habit creation impairs control, specifically self-control, by decreasing behavioural intention and increasing compulsion (Gillan et al., 2016; Hassan, 2020). When self-control is decreased, it is more difficult to resist the intense urge to perform the behaviour called a craving (Berger, 2022). Cravings are regulated by the hippocampus, which reinforces the cause of the craving (Fesler, 2014). In a cult, this could be rituals or other compliant, rewarding behaviours that are subconsciously increased.

Emotional logic

Emotional logic, as defined by Nakken (1988), is the emotional experience taking over intellectual logic without losing the logical progression. Emotional logic drives compulsive behaviour, which results in satisfying an urge, while a person's cognitive thinking might not want to achieve the same (Nakken, 1988). Although a person is cognitively aware of the consequences, the emotional stimulus is strong and overruling. Berger (2022) connects the emotional logic used by the addictive personality to cult membership. In a cult, the emotional-logical connection suppresses critical thinking and emotional processing (Lennon, 2019), of which the latter may seem contradictory. The way people are allowed to feel is controlled, for example, by being isolated from their family and being indoctrinated into not missing them. Instead of the body regulating emotion and thinking, this is done by the cult leader.

We hypothesise that the Anterior Cingulate Cortex (ACC) is involved in the shift from a focus on cognitive to emotional logic during cult membership. The ACC connects the emotional limbic system and the cognitive prefrontal cortex (PFC) (Stevens et al., 2011). The dorsal ACC might be impaired since this relates to self-control and compulsion to perform habits (Goldstein & Volkow, 2011). The subgenual ACC is involved in the emotion regulation, which is most likely impaired in indoctrinated cult members (Walt, 2010). Another function of the ACC is awareness and interoception, which is the ability to feel one's own bodily state (Goldstein & Volkow, 2011). Emotional logic disables this and leads to ignorance of your personal needs (Nakken, 1988). This ignorance is characterised by reduced satiety and a denial of the illness. Typically, the last person to realise that they joined a cult is the members themselves (Rousselet et al., 2017). This leads them on a self-destructive path that is difficult to alter, with impairment in the ACC being the most likely cause.

In conclusion, the effect of the social group is focused on the PFC. It can be hypothesised that there is decreased activity related to reduced decision-making ability and a loss of self-awareness. Activity in the mPFC can increase when thinking about the cult and its members, while the outside world will show decreased activity. The latter could be an indication of how indoctrinated a member is, which could be useful for determining treatment. The repetitive behaviours, such as religious experiences, rituals or other habits, are rewarded by the limbic system, specifically the amygdala and hippocampus. The reward pathway influences decision-making by positively reinforcing compliance and negatively reinforcing disobedience. Critical thinking and emotional processing are suppressed in cult members, who use emotional logic instead of cognitive logic due to impairments in the ACC. This can lead to ignorance about their situation and makes it difficult to alter their behaviour, even when they are on a self-destructive path.

Addiction

What is addiction?

Prevalence, definition and different types of addiction

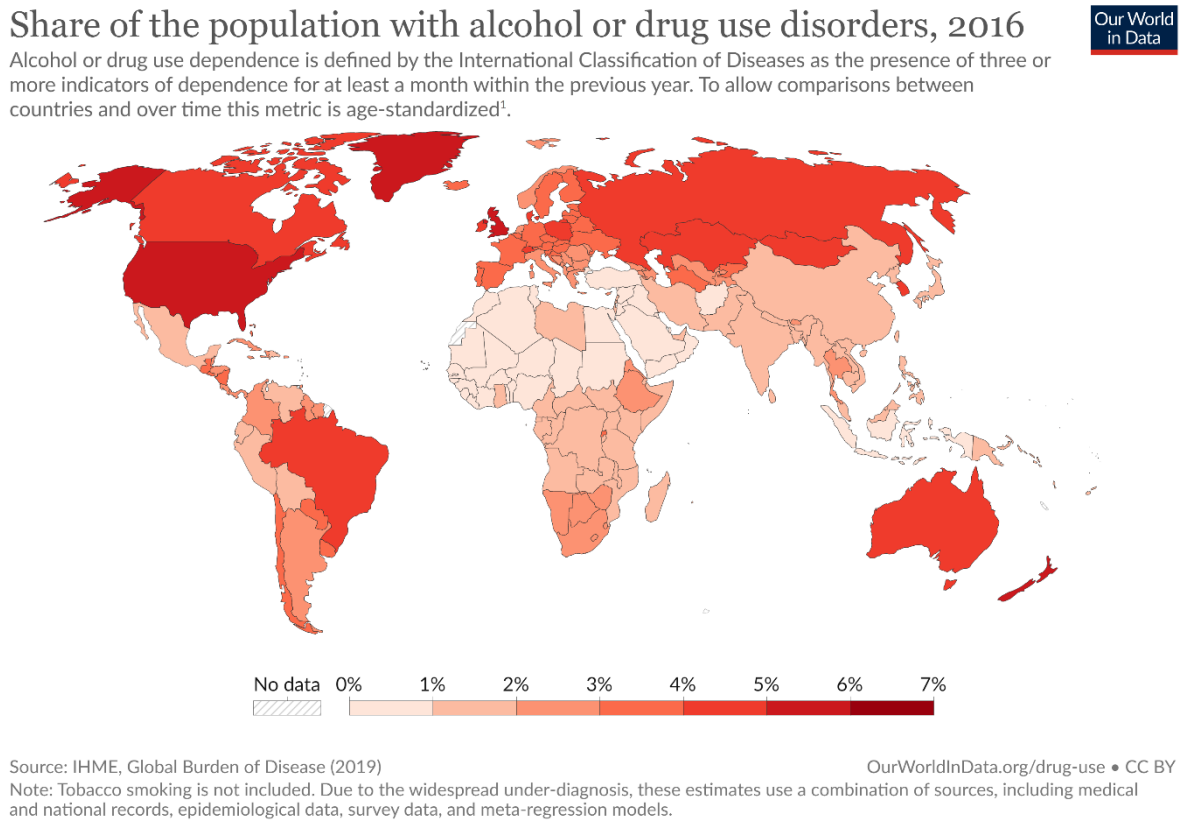

Figure 1. Share of the population with alcohol or drug use disorders in 2016. Source: ourworldindata.org. Accessed 6th of April, 2023.

Addiction is a global problem, of which substance use disorders for alcohol and illicit drugs are estimated to contain over 2% of the world (ourworldindata.org). This is visualised in figure 1, which shows that in 2016 2.7% of the population in the Netherlands suffered from substance use disorders, excluding tobacco use. When tobacco use is included, over 11% of the population is categorised as addicted (jellinek.nl). This means 2 million people in the Netherlands are addicted, of which 1.6 million are to legal substances like alcohol, cigarettes and sleeping drugs. Even excluding behavioural addiction, these numbers are already very high. Addiction is clearly problematic, but precisely to what degree depends on what is qualified as an addiction and what is not.

Addiction is defined as a chronic relapsing disorder with a neurological basis (NIDA, 2018). Addiction is the compulsion to perform a specific habit to achieve an alteration in their state of mind with temporary satiation and negative consequences long term (DSM–5; American Psychiatric Association, 2013). As mentioned in the introduction, two types of addiction are classified in the DSM-5. One is substance addiction, where drugs alter a person's state of mind. The other is behavioural addiction, where specific actions such as gambling are performed to achieve this (DSM–5; American Psychiatric Association, 2013). The key element to any type of addiction is the fact that people are unable to stop despite adverse consequences (Gleeson, 2019). We will discuss the underlying mechanisms of addiction that allow usage to become a compulsive habit.

Mechanisms of addiction

For something to be addicting, it needs to possess a rewarding property (NIDA, 2018). This can be positive reinforcement, something so pleasurable that you want more, or negative reinforcement, the absence of something unpleasant (Fonseca & Navarro, 1998). Most drugs possess both, where taking a drug improves the mood and makes you forget painful life, quite literally in the case of opioids. This reinforcement ensures that the behaviour is repeated, which can lead to the formation of habits (NIDA, 2018). Similar to what happens in cults, these habits lead a person along a path focused on reward and avoidance of negative consequences. The conditioning of the behaviour makes it very difficult to change, as well as the likelihood of relapsing (NIDA, 2018).

Substance addiction almost always starts voluntarily with small doses but tends to increase gradually (NIDA, 2018). As usage continues, addicts become more tolerant and need a larger dose to achieve the same effect (Gleeson, 2019). Addiction becomes a more prominent part of their life, spending more and more time preparing, using and recovering (DSM–5; American Psychiatric Association, 2013). Due to the gradual increase, it can be difficult to notice a change in yourself or someone else, allowing addiction to stay hidden for longer. Over time, the addiction becomes more important, reducing a person's control and increasing the lengths they go to, in order to achieve the mind-altering state (NIDA, 2018).

It can be discussed that isolation is a consequence of addiction, but it should not be dismissed as a cause. It is proven that someone is more likely to form addictive relationships after losing social relationships, for example, a divorce, moving to a new place or the death of a loved one (Nakken, 1988). Warning signs of addiction include replacing relationships and secrecy (Gleeson, 2019). This makes it more difficult to intervene and prevent the addiction from becoming worse. It is typical for people with an addiction to isolate themselves due to their preoccupation with the addiction (DSM–5; American Psychiatric Association, 2013). It has an exclusive place in their thoughts, reducing the need for relationships outside of the addiction (Nakken, 1988). For example, they might have a speed dial button for their drug dealer but have not called their parents in months. This specific environment they surround themselves with provides stimuli that reinforce the addictive behaviour (Fonseca & Navarro, 1998). This is utilised in treatment, where someone is sent to a rehabilitation clinic, completely changing the environment (Miller & Sharp, 2023). Even when the person returns, it is advised to change the environment to prevent relapse.

Demographics and treatment

Men are more often suffering from substance addiction than women. In 2016, alcohol and drug dependence was twice as common for men globally (ourworldindata.org). However, the prevalence of behavioural addiction is more common in females, with around 65% of the cases (González-Beuso et al., 2014). Age is also a factor; teenagers are more likely to experiment and feel a stronger need to fit in (Teixeira, 2010). Figure 1 shows the demographics for substance addiction. Some countries, like Afghanistan, have harsh living conditions. In these countries, more people tend to look for a quick escape (ourworldindata.org). Countries like Brazil have increased substance use due to the more widespread availability of drugs. It is proven that increased availability in an area also increases the percentage of people that are addicted (Nakken, 1988). Substance addiction is often related to the area and availability, similar to our findings on cult membership.

Many people, especially young adolescents from a stressful backgrounds, turn to drugs (Nakken, 1988). Often the problem is ignored for a long time, but it could be that a person realises their addiction is harmful, either through outside intervention or personal realisations (Gleeson, 2019). This is a significant step in the right direction, but treatment is required to overcome the addiction.

Although there is no cure for this chronic disease, it can be managed by treatment, including medication, behavioural interventions and therapy (NIDA, 2020). Effective treatment depends on the addiction as well as the person. Still, the focus is on treating withdrawal symptoms, staying in the treatment to gradually decrease the behaviour and prevent relapses (Larimer, Palmer & Marlatt, 1999). An effective treatment for alcohol addiction is a support group, such as Alcoholics Anonymous. This social group provides motivation and new relationships that can contribute to recovery (NIDA, 2020). As mentioned before, addiction swapping is common in people trying to overcome their addiction. This helps create the illusion that the problem is solved, both for the outside world and for the person themselves. If the new addiction is less harmful, it can be seen as an improvement but should not be confused with actual treatment (Blanco et al., 2014).

Profile of an addicted individual

A frequently asked question regarding addiction is whether an addictive personality exists. Although there is not one single trait or set of traits that is predictive of addiction on its own, there are common findings among different types of addictions. Griffiths (2017) defines an addictive personality as a specific but individually different style that makes a person vulnerable to addictive behaviour. It remains difficult to determine whether these commonalities are predictive of or a consequence of addiction. We will describe characteristics considered more likely to be present in a person who is addicted, as well as situations that increase the likelihood of an addictive relationship.

Life dissatisfaction

The drive behind addiction is an alteration of the current state of mind, which requires a level of dissatisfaction (Nakken, 1988). Addiction is used to detach this dissatisfaction, like pain, guilt, boredom or loneliness. Without a desire to change the current feelings, one would not perform addictive behaviour (Nakken, 1988). The addictive behaviour gives an instant boost but is not a solution for the underlying problems. A sign of addiction is constantly wanting and needing more, becoming less tolerant to the feeling of dissatisfaction (Gleeson, 2019). Consequently, people become more dependent on addictive behaviour, making it more difficult to stop. Similar to cults, addiction is more prevalent in young adolescents, who are in a transitional period in their life, leading to more dissatisfaction. Instead of thinking of long-term solutions, drugs or the internet are used as an escape (Phelps, Berkman & Gazzaniga, 2022, ch4, p130).

Novelty seeking

Novelty-seeking increases the likelihood of becoming and staying addicted (Nakken,1988). As previously described, a novelty-seeking personality is based on high impulsivity, an openness to experimentation and high sensitivity to experiencing rewards. The impulsivity of addictive behaviour is based on low levels of control, which leads to impulsive decision-making to maintain the positive state provided by the addiction (DSM–5; American Psychiatric Association, 2013). Another contributor to addiction is an exploratory activity in response to novel stimulation since you must experience something before becoming addicted (González-Beuso et al., 2014). Lastly, people who are more sensitive to rewards are more likely to reinforce the same behaviour. This intensity can be mistaken for the preferred behaviour, even though negative consequences are also experienced (Nakken, 1988).

Dependent personality

The Oxford Dictionary defines addiction as ‘a state of dependence produced by the habitual taking of drugs or by regularly engaging in certain behaviours’. This dependency is created by the addiction, but DPD traits can be seen in people who are at risk for developing an addiction (González-Beuso et al.,

2014). An example is low self-confidence, which reduces trust in their own abilities and future, as well as security in their relationships. Low self-confidence makes people more dependent on positive stimuli for reinsurance (Bornstein, 1992). The addictive behaviour can provide this reinsurance by consistently providing short-term positive stimuli. Addiction becomes a defining part of who they are, decreasing their self-worth even further (Nakken, 1988). Social relationships suffer from the addiction, replacing the dependency on social connections with a dependency on the addiction (Gleeson, 2019). When the addiction is the only relationship through which their needs are met, a person is obsessed and entirely dependent. Additionally, reward dependency is almost always present in addiction. Reward dependency is based on a tendency to respond strongly to rewards and learn to perform behaviour associated with the reward (Nakken, 1988).

Neuroticism

According to a meta-analysis by Griffiths (2017), addiction is correlated to high levels of neuroticism. This positive correlation of neuroticism can be explained by the high impulsivity and difficulty controlling emotions as key elements in addiction (DSM–5; American Psychiatric Association, 2013). When performing addictive behaviour, such as administering drugs, there is direct control over a person's emotional state. A decreased self-directedness is measured, which is related to the lack of determination and ability to regulate and adapt behaviour to achieve personal goals (Fonseca & Navarro, 1998).

Psychiatric comorbidity

Psychiatric comorbidity is higher correlated to addicted individuals than in healthy controls (Gleeson, 2019). Depression is highly prevalent and could be argued to be related to dissatisfaction with life (Carpenter, 2020). Personality disorders are more common in addicted individuals, especially borderline personality disorder and antisocial personality disorder, characterised by impulsivity and sensation-seeking behaviour (Griffiths, 2017).

The profile of an addicted individual overlaps with the profile of a cult member. Both are looking for an escape from the dissatisfaction of their daily life. Similar personality traits include dependency, neuroticism and novelty seeking. Both cult members and people suffering from addiction are more likely to have psychiatric comorbidities; especially depression is more common in both. We can conclude that similar risk factors increase the likelihood of developing addictive and cult behaviour. Next, we look into the consequences of addiction and look for similarities in changes in the PFC, Limbic system and ACC we discovered in cult membership.

Neuroscience of Addiction

The consequences of addiction can include extensive brain damage due to substance abuse (Koob & Volkow, 2016). We want to focus on the mechanism of addiction by looking into changes in the activity of brain areas, excluding the effects of long-term substance abuse. According to Koob & Volkow (2016), addiction can be described as a cycle of three stages: the anticipation, the intoxication and the withdrawal stage. We will describe the brain areas involved in these stages of addiction.

Prefrontal cortex

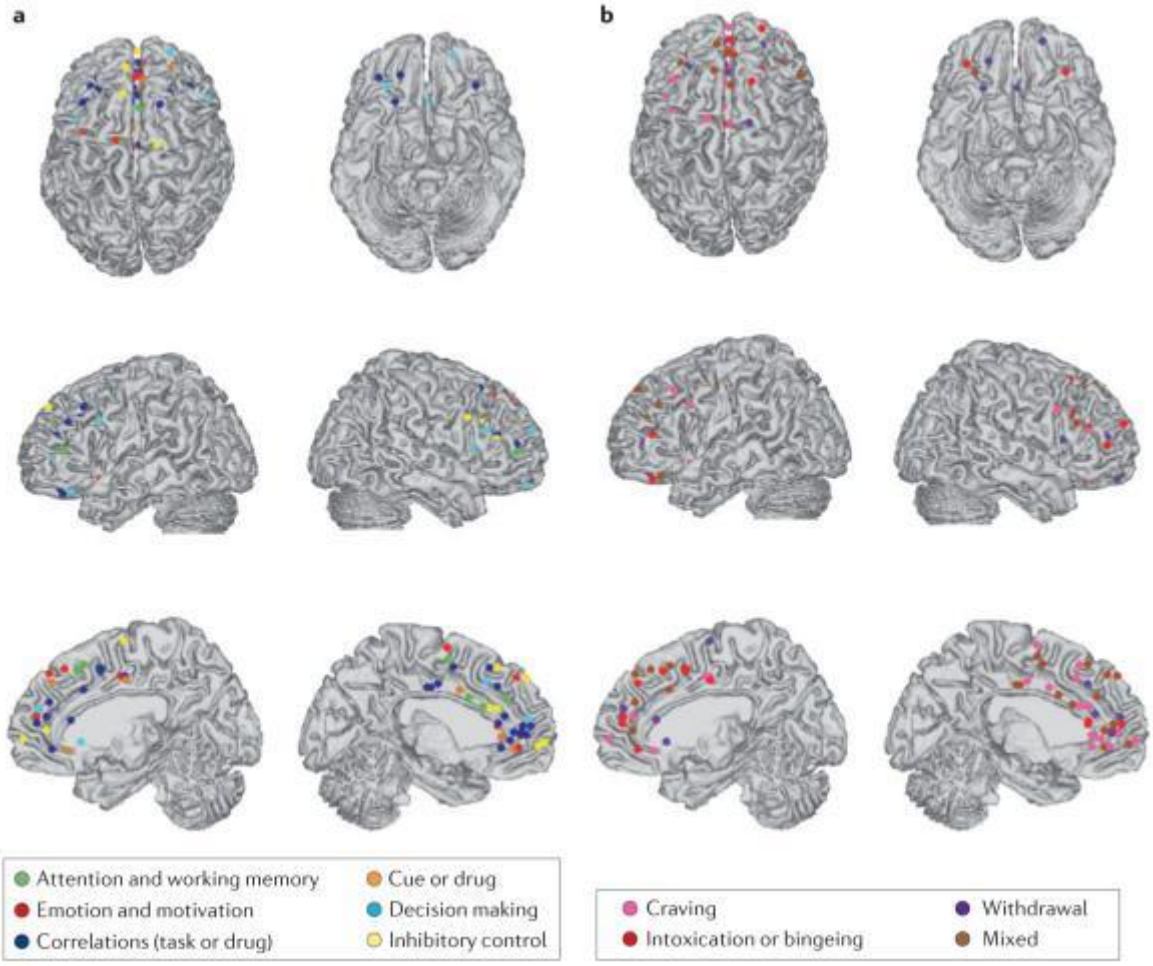

Figure 2. Combined results from magnetic resonance imaging (MRI), positron emission tomography (PET) or single-photon emission computed tomography (SPECT) of the human brain. The top shows dorsal and ventral view, the middle shows lateral, and the bottom shows medial surfaces. A shows the difference in activity between addicted individuals and healthy controls related to the different tasks performed, which is indicated by the different colours in the legend. B shows the difference in activity between addicted individuals and healthy controls related to the clinical stages of addiction. Source: Goldstein & Volkow, 2011. Accessed 13th of April, 2023.

Activation of the PFC is different for people who are addicted compared to healthy controls (Goldstein & Volkow, 2011). This change affects judgement and decision-making in the direction of the addictive behaviour, lowering the control over these actions. The PFC drives the anticipation stage (Koob & Volkow, 2016), where there is a strong preoccupation with the drugs, visualised in figure 2B as the craving stage in pink. The combination of positive reinforcement on addictive behaviour cues and negative reinforcement on anything else drives the decision-making process (Fonseca & Navarro, 1998). Figure 2A visualises the results of neuroimaging studies of the differences in PFC activity between drug-addicted individuals and control during decision-making tasks (Goldstein & Volkow, 2011). Specifically, decision-making in light blue and correlations in dark blue in figure 2A show significant differences in activity.

Another function of the PFC that is altered is executive functioning, where the focus is shifted to mainly short-term rewarding behaviour (Koob & Volkow, 2016). Thinking about the future is

impaired by a lack of self-awareness, which is regulated by different areas of the PFC (Zhang & Volkow, 2019). The mPFC is responsible for personal meaning and evaluation (Goldstein & Volkow, 2011). The ventromedial PFC is associated with personal value; activity increases when thinking about things that are important to us and is connected to the limbic system (Phelps, Berkman & Gazzaniga, 2022, ch12, p448). The dorsomedial PFC allows for the processing of social information and self-reflection. Zhang & Volkow (2019) found differences in functional magnetic resonance imaging (fMRI) of these areas in drug abusers compared to healthy controls, concluding that self-related decisions and control are impaired in people suffering from substance addiction. The difference in inhibitory control is visualised in figure 2A in yellow.

Limbic system

The reward system drives the intoxication stage indicated in red in figure 2B, which is regulated by dopaminergic neurons in many structures of the limbic system (Koob & Volkow, 2016). Due to the response to dopamine being so pleasurable, the behaviour is repeated (NIDA, 2018). The behaviour is conditioned by associating previously neutral stimuli with addiction, leading to intense cravings and challenge self-control (NIDA, 2018). Additionally, the strong reward response leads to habit forming, lowering the self-control threshold (Fonseca & Navarro, 1998).

The amygdala drives the withdrawal stage of the addiction, which is visualised in dark purple in figure 2B (Koob & Volkow, 2016; Fonseca & Navarro, 1998). The withdrawal stage is characterised by the fear and stress response of not performing the addictive behaviour for some time (Koob & Volkow, 2016). Emotional logic forces a person to choose addictive behaviour over any other behaviour, soothing themselves by avoidance of negative feelings (Nakken, 1988). The amygdala-hypothalamic circuit reinforces this behaviour through the automatic emotional response and memories (Fonseca & Navarro, 1998). These conditioned and explicit memories reinforce addictive behaviour since they are associated with positive emotions or the lack of negative emotions (Fonseca & Navarro, 1998).

Anterior cingulate cortex

Cognitive control is required to do things in moderation, which is impaired in people who are addicted (Fonseca & Navarro, 1998). The ACC is related to cognitive control, which includes decision-making, inhibition and motivation (Zhao et al., 2020). Goldstein et al. (2009) compared MRIs of individuals addicted to cocaine to a control group during emotionally salient tasks. Addicted individuals show hypoactivity of the ACC. Other findings include abnormal white matter connections in the ACC related to both substance and behavioural addictions (Zhao et al., 2020). This hyper-connectivity is associated with impulsive and compulsive behaviour (Zhao et al., 2020). Contrary, grey matter is reduced in the ACC in substance addiction patients, which is related to high chances of relapse (Zhao et al., 2020). The ACC is an area that could be a potential candidate in neuromodulation treatment, where areas are stimulated to increase activity and induce specific functioning (Zhao et al., 2020). Further research is needed, but it shows possibilities for future treatment.

Treatment

We will discuss some of the main forms of therapy currently used for addiction and point out the benefits it could have for (ex) cult members based on the similarities found in this research.

When someone is addicted to a substance, a detox program can be followed (NIDA, 2020). This helps a person deal with withdrawal symptoms in a medically managed program, of which the duration varies greatly. Once this is achieved, inpatient or outpatient rehab can be followed (Miller & Sharp, 2023). Inpatient rehab programs must be followed away from home, with supervision and structured plans. Outpatient rehab is often less intensive since patients can live at home and attend therapy and treatment on their own time (Miller & Sharp, 2023). These types of treatments are to manage the addiction and prevent relapses since addiction is a chronic disease (NIDA, 2020). There are many different types of therapy which will be discussed below.

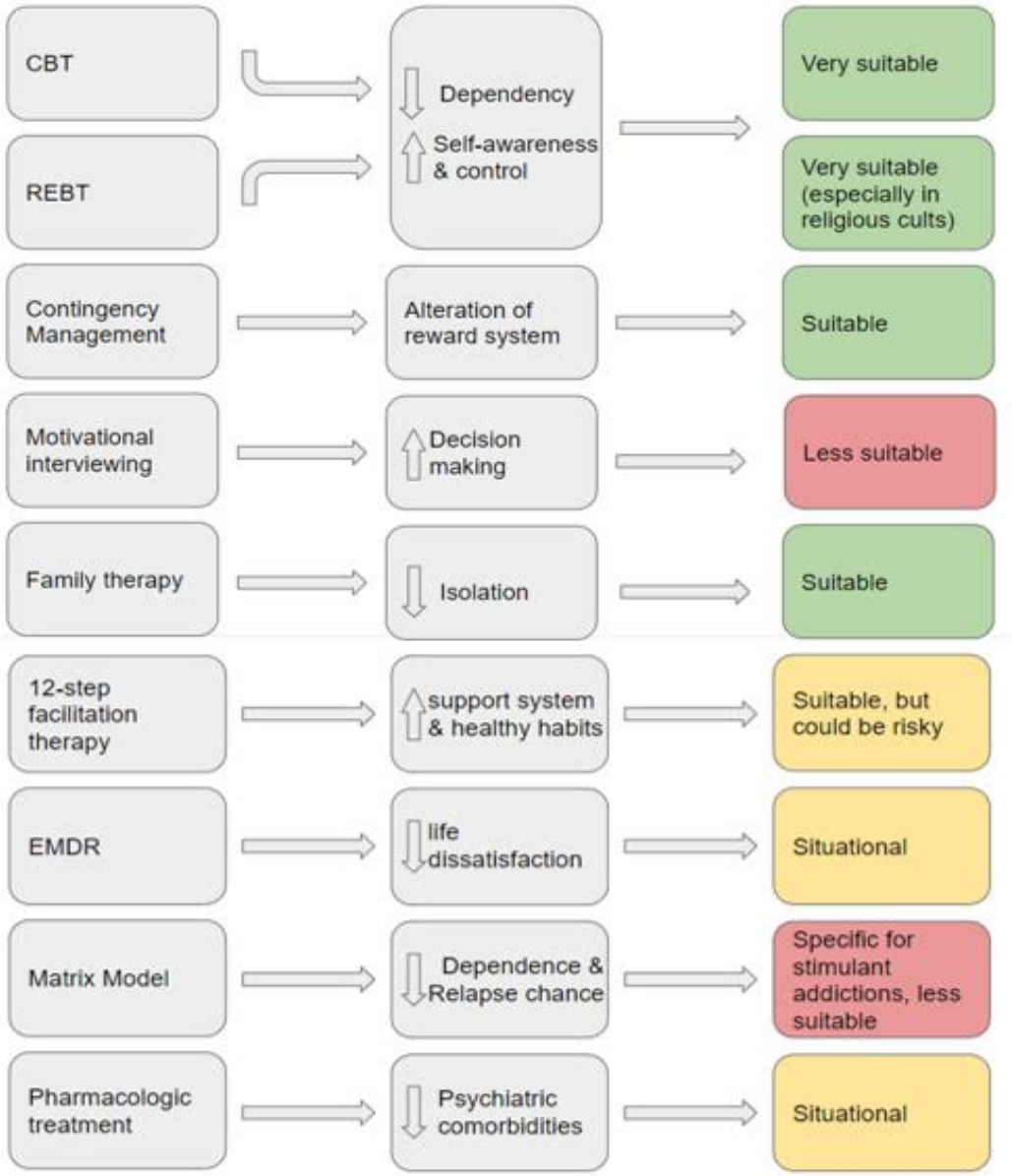

Figure 3. The effect different types of therapy used to treat addiction have on the symptoms present in cult members, including whether this is more or less suitable.

Therapy is focused on behavioural treatments and often targets the PFC (Potenza et al., 2012). One of these types of therapy is Cognitive Behavioural Therapy (CBT), which targets harmful thinking patterns (Karunaratne, 2019). CBT teaches people to recognise and change these patterns and behaviours (McHugh, Hearon & Otto, 2011). This is done by increasing their belief in themselves, allowing them to make better use of their problem-solving skills instead of giving in to cravings (McHugh, Hearon & Otto, 2011). It also helps to provide new goals and make people more future-oriented (Karunaratne, 2019). By changing these thinking patterns, their destructive path can be broken and changed into a healthier path. In conclusion, CBT can help reduce dependency, increase a sense of self and focuses on preventing relapse by recognising risk patterns and what to do about them. This type of therapy seems very suitable for (ex) cult members since dependency, self-awareness and control should be targeted in their recovery (figure 3).

Rational emotive behaviour therapy (REBT) is similar to CBT. It also identifies negative thought patterns but focuses more on a person's belief system and seeks to replace faulty and irrational beliefs with ones based on logic (DiGiuseppe & McInerney, 1990). Patients learn how to be okay in discomforting situations, reducing the craving and negative reinforcement from the addiction (DiGiuseppe & McInerney, 1990). The habits formed in both addiction and cult behaviour will be altered, and healthier habits will be developed (Miller & Sharp, 2023). In addition to the dependency and self-awareness targeted in CBT, REBT also targets emotional logic. This makes REBT very suitable for cult members (figure 3), especially for those with religious backgrounds (Ellis, 2000).

Contingency management is a therapy based on changing the reward system by rewarding people for positive changes, such as sobriety (Miller & Sharp, 2023). Although this type of therapy can be effective, it depends on the effect the reward has on the person and their internal motivation to change (Lamb et al., 2004). If contingency management is successful, it greatly decreases the chance of relapses (Miller & Sharp, 2023). For cult members, it could be a helpful method to decrease their dependency on the cult for positive reinforcement and rewards, perhaps in the form of approval or social interactions. This method is suitable for cult members (figure 3), but similar to its effect on addiction, it will depend on the individual receiving the therapy (Lamb et al., 2004).

Motivational interviewing is a form of counselling that focuses on the intrinsic motivation and values of the client (Miller, 1996). Instead of outside intervention, they seek an internal desire for change (Smedslund et al., 2011). The therapist will not direct the behaviour to any decisions, only discuss the consequences of changing. This will restore the clients' decision-making, but research is inconclusive about its effectiveness (Smedslund et al., 2011). Since it is debatable how effective it is for addicted individuals, we conclude that this would also be less suitable for cult members (figure 3). Additionally, cult members' intrinsic motivation is linked to the cult itself, which would likely be impossible to change without directing their decision. This is where cult members differ from addicted individuals, for whom the addiction is a means to an end, not their core value.

Family therapy focuses on reducing isolation and restoring relationships (Miller & Sharp, 2023). This type of therapy takes into account the socio-economic networks and the age group in which addiction is most prominent, which is similar to the prevalence of cult members (Crowley, 1988). Family therapy can prevent addiction in the future by strengthening relationships (Crowley, 1988). This can prevent long-term isolation, decreasing the chance of joining a cult. The support and approval that cult members receive from their cult can be replaced by relationships with family and friends. Thus family therapy is suitable for ex-cult members (figure 3).

Programs that combine different therapy methods are very effective in treating addiction. One of the most famous programs is Alcoholics Anonymous, a 12-step facilitation therapy for alcohol addiction (Miller & Sharp, 2023). This program is designed to make you connect with peers as a support group (Hardey et al., 2023). Addiction is seen not only as a medical disease but also spiritual, which explains the philosophical and religious practices included in the program (Hardey et al., 2023). The program finds its effectiveness in the social pressure to stay sober and the support of the new community, which at first sight seems very suitable for ex-cult members (Kaskutas, 2009). However, some critics claim that Alcoholics Anonymous is a cult, which is denied by the program itself (Kaskutas, 2009). Due to some steps, such as step 3, which states 'to turn our will and our lives over to the care of our Higher Power' (Hardey et al., 2023), there are concerns about whether this would improve the behaviour of the cult member. Therefore, 12-step facilitation therapy is suitable but comes with risks (figure 3).

Eye movement desensitisation and reprocessing (EMDR) removes traumatic memories, helps resolve possible triggers in the future, and is usually used to treat PTSD (Marich, 2010). There is desensitisation of previous experiences, which allows the client to shift to a more constructive mindset, such as becoming more open to CBT (Shapiro, Vogelmann-Sine & Sine, 1994). Marich (2010) states that EMDR can be especially useful for women suffering from addiction as it targets emotional instability and dependent personality traits. The effectiveness of this therapy depends on the previous experiences of a cult member but can be useful in specific scenarios (figure 3).

The matrix model combines various techniques, like CBT and family therapy (Miller & Sharp, 2023). Although the improvements in self-esteem and self-worth seem similar to the help required for cult members, there is a focus on rewarding abstinence (Mosel & Sharp, 2023). Transferring these methods to cult members might be difficult because this therapy is designed explicitly for stimulant addiction (Mosel & Sharp, 2023). We believe this therapy is less suitable than following CBT and family therapy outside of the matrix model for treating cult members (figure 3).

Pharmacological treatment can be specific to the substance someone is addicted to and affect the physiological processes to counter the withdrawal symptoms (Douaihy, Kelly & Sullivan, 2013). However, this is only helpful for the detoxification stage of recovery and generally requires additional counselling (NIDA, 2020). It can also be useful towards the end of treatment to prevent relapses by treating cues linked to the addiction, such as stress or a depressive mood (NIDA, 2020). Pharmacological treatment is effective in targeting psychiatric comorbidities such as depression (Stokes et al., 2020). Depending on the psychiatric comorbidities of the cult member, pharmacological treatment can be useful for cult members in specific situations (figure 3).

In conclusion, we believe CBT and REBT are the most suitable for (ex) cult members, as illustrated in figure 3. However, just like addiction, cult members require individualised treatment which needs to be adjusted to the underlying symptoms of a person. In the end, the most effective treatment is often a combination of different types of behavioural therapy and pharmacological therapy to form a personalised plan for recovery (Douaihy, Kelly & Sullivan, 2013).

Conclusion

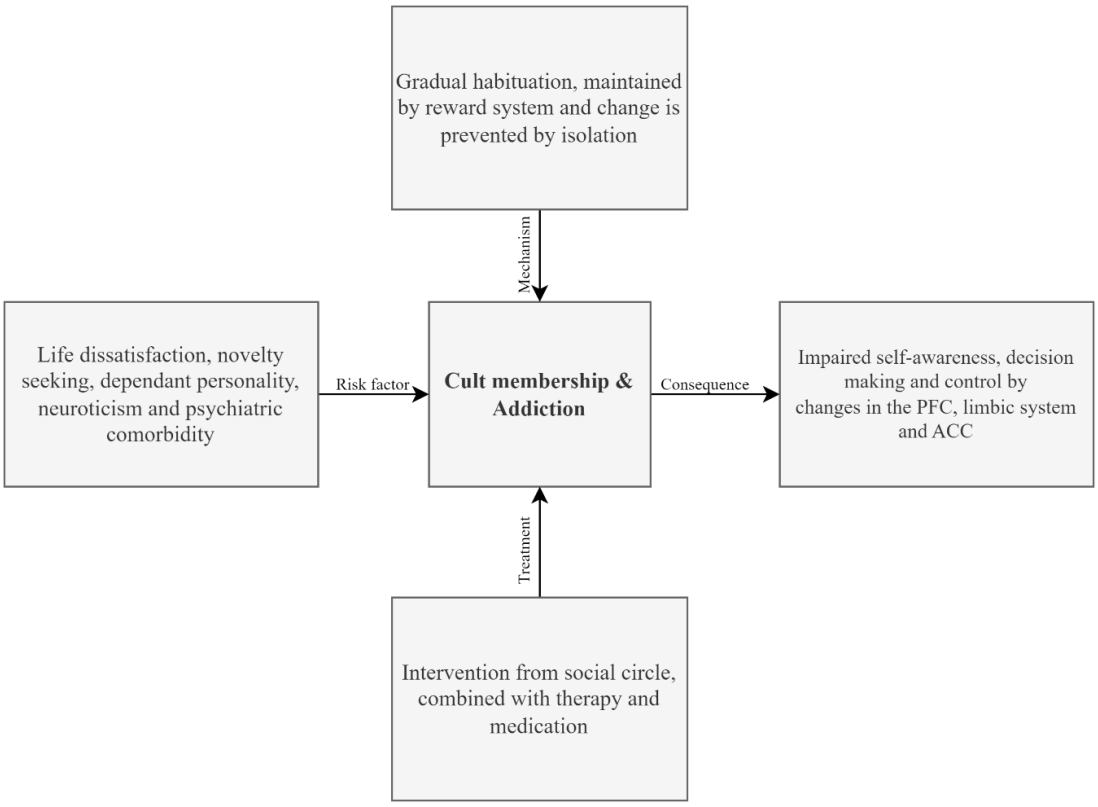

Figure 4. Similarities between cult membership and addiction. An overview of similar risk factors, mechanism to maintain the behaviour, effective treatment options and the consequences of the behaviour on brain functioning.

We have compared cult membership to addiction and have found several similarities, of which an overview is given in figure 4. Young adolescents are more likely to become addicted or join a cult based on high levels of dissatisfaction in this stage of life. The prevalence is directly correlated to the availability of, for example, drugs, cults or gambling opportunities. After a gradual increase, both are maintained by a reward system. Isolation and secrecy can be a cause or consequence of both addiction and cult membership. Specific traits that can be a risk factor in joining a cult and developing an addiction are dissatisfaction with daily life, novelty-seeking personality, dependent personality, neuroticism and psychiatric comorbidity. Although there is not one cause for addiction or joining a cult, the similarities in risk factors provide insight into a connection between the two.

Both addiction and cult membership come with similar negative consequences, which are often ignored, and a destructive path is followed. The cult or addiction is an obsession to which they conform their life, losing self-awareness and the ability to pursue long-term goals. Decision-making is focussed on short-term rewards by alteration of the mental state. Inhibitory control is lost, and rewards are pursued based on emotional logic. Neuroimaging studies provide proof that PFC, the limbic system and the ACC are involved in these processes and are altered in addicted individuals. Whether these areas are involved in cult membership is primarily speculative and requires more research into the changes in the brain during cult indoctrination.

However, there are also differences between cult and addiction. Some cults have spiritual value for the cult member, which is more than escaping the dissatisfaction of daily life but searching for something

with meaning. This is rarely the case in addiction, where the main reason is escapism. Another difference is the destructiveness of substances to (mental) health, which can make it more challenging to recover from substance addiction. Lastly, there is much knowledge available on addiction. Schools provide education to prevent the use of drugs or at least spread awareness to avoid drug use consequences. With cults, this awareness is not present. This affects the willingness to acknowledge your experiences and can influence the recovery period.

Due to the many similarities in risk factors, maintaining mechanisms and consequences, we believe that treatment for addiction can be beneficial for cult members. The importance of outside help is incredibly valuable in both situations, as well as a change in environment to decrease habituated reward cues. Therapy could provide help with executive functioning, decision making and inhibitory control to prevent relapse to a different or the same cult. CBT and REBT seem the most suitable to treat (ex) cult members. However, contingency management and family therapy also provide potential treatment methods. There is no generalised therapy for addiction, which is therefore not expected for (ex) cult members. The effectiveness of these types of therapy depends on the individual and their situation.

Although we believe the overlap between cult membership and addiction is significant, further research is needed to determine if and how addiction treatment can be applied to cults. Our findings are in agreement with the findings by Rousselet et al. (2017) that describe similar overlapping characteristics, like persistence and obsessiveness, with short-term psychological relief. Research is limited to primarily theoretical explanations and missing experimental data. Most behaviour and neurological research on cults are based on the leaders. Due to the isolation and secrecy of cults, it is difficult to find members willing to cooperate with research. Without experimental research, it is impossible to know if something is causing the behaviour or whether it is a consequence of indoctrination to the cult or addiction. Future research could try, especially when a cult is disbanded by authorities, to use neuroimaging to see the effects of cult membership on the brain, taking into account the duration and social circle outside of the cult.

An area of future research could be to specify the type of addiction with the most significant similarities to cult membership. We discussed the general effects of addiction, but it would be interesting to see how well specific behavioural addictions would compare. Specifying the type of addiction could provide further insight for mental health professionals and possible treatment for cult members.

When looking at cult membership through an addiction framework, apparent similarities can be found in risk factors and mechanisms. We conclude that addiction treatment could provide benefits for cult members due to targeting similar problems encountered by cult members and addicted individuals. In the introduction, we mentioned the example of Liliane and her cult experience. She started with dissatisfaction with her daily life, getting her into a situation where she lost her critical thinking. We can conclude that she was on a self-destructive path, where her relationships with others, including her own family, suffered from her preoccupation with the cult. Due to becoming tolerant of the increasingly extreme changes, she brought her children in danger. Outside help was required to allow her to recognise the problem. This is identical to the issues that arise for a mother with an addiction. Liliane should have received treatment, such as CBT or REBT, to decrease her dependency on the cult by increasing her self-awareness and control. Although specific therapy for (ex) cult members would be preferred, a combination of behavioural therapy for addiction would be a promising start to help people like Liliane get healthily reintroduced into society.

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