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The Joy in Being Me

Designen eines Spiels mit nachfühlbarer neurodivergenter Representation

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Designing a Game with Relatable Neurodivergent Representation

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Wien, 5. Mai 2025

Lena Christine Dolinek

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Kurzfassung

Videospiele, die sich mit dem Thema Neurodivergenz auseinandersetzen, sind oft nicht so gemacht, dass neurodivergente Personen selbst daran Freude haben. Entweder sind diese Spiele für den Einsatz als Therapie gedacht, oder sie richten sich eher an neurotypische Menschen, damit diese ein Mitgefühl für die Herausforderungen, mit denen neurodivergente Personen (tagtäglich) konfrontiert sind, entwickeln. Es gibt einen Mangel an Spielen, die das Thema Neurodivergenz auf eine nicht-pathologisierende Art und Weise behandeln und, die neurodivergente Expertise im Designprozess (sinnvoll) miteinbeziehen. Die Absicht dieser Masterarbeit war es, die Arten, wie Neurodivergenz aktuell in Videospielen dargestellt wird, zu untersuchen und festzustellen, welche Aspekte und Elemente wichtig sind, um authentische und respektvolle Darstellungen von Neurodivergenz zu designen. Bei Letzterem sollte dies anhand von Konzepten für mögliche Spiele erfolgen. Zu diesem Zweck wurden zunächst Interviews mit neurodivergenten Personen durchgeführt, um Einblicke in deren persönlichen Erfahrungen mit Neurodivergenz und deren Videospielgewohnheiten und -präferenzen zu erhalten. Mittels einer reflexiven thematischen Analyse wurden sechs Themen ausgearbeitet, die Aspekte von Neurodivergenz und Videospiele, über die die Teilnehmer gesprochen haben, behandeln. Diese Themen dienten dann als Basis zur Inspiration und Lenkung der Designs von drei Videospielen, bei denen neurodivergente Erfahrung und Freude im Fokus standen. Somit, war es ein Bestreben, mit dieser Masterarbeit einen Beitrag zu einem Verständnis dafür zu leisten, wie Neurodivergenz in Videospielen auf nachfühlbare, respektvolle und unterhaltsame Art und Weise inkludiert werden kann. Darüber hinaus ist noch weitere Forschung nötig, um besser zu verstehen, wie speziell Repräsentation, mit der sich neurodivergente SpielerInnen identifizieren können, in Videospielen designt werden kann.

Abstract

Video games that deal with the topic of neurodivergence are often not made for neurodivergent people to enjoy on their own. Either these games are intended for use as therapy or they are rather targeted at neurotypical people to make them empathize with the struggles that neurodivergent people face (on a daily basis). There is a lack of games that address neurodivergence in a non-pathologizing way and that (meaningfully) include neurodivergent expertise in the design process. The aim of this master thesis was to explore the ways in which neurodivergence is currently represented in video games, and determine which aspects and elements are important for designing accurate, respectful portrayals of neurodivergence through presenting concepts for possible games. For this purpose, interviews were conducted with neurodivergent individuals to gain insight into their personal experiences of neurodivergence as well as their game play habits and preferences. Through a reflexive thematic analysis, six themes were developed, which covered the aspects of neurodivergence and video games that participants spoke about. These then served as a basis for providing inspiration and guiding the design of three game concepts, in which neurodivergent experiencing and joy were the focus. In this way, the present thesis attempted to make a contribution to an understanding of how neurodivergence can be included in video games in relatable, respectful and enjoyable ways. However, much more research is still needed to better understand how to specifically design for relatability in video games when it comes to neurodivergent players.

Contents

CHAPTER 1

Introduction

Video games are not only a great pastime enjoyed all over the world, with a player base that is just as diverse as all the different games that exist, but they are also a popular subject in HCI research. One specific group of players that has been of interest in this area of study are neurodivergent individuals. Games developed in this context are often intended for the purpose of diagnosis or therapy, and as such follow a medicalized view of neurodivergence. They are designed to teach social and emotional skills which tends to be, in essence, an attempt to make neurodivergent people conform to neurotypical ways (inter)acting [1]. The focus on therapeutic outcomes is present even in cases where members of the neurodivergent target audience were involved in the design process, e.g. [2].

On the other hand, when it comes to games that concern themselves with experiences of neurodivergence, they are for the most part intended for neurotypical audiences. These games simulate the struggles that neurodivergent individuals face in their everyday lives and allow neurotypical people to 'experience' what it is like to live with such a 'condition'. As such, they elicit empathy and feelings of pity in the neurotypical players, and further, are not made for neurodivergent people. In fact, such games can help reinforce stereotypes and perpetuate the stigma against neurodivergent individuals [3]. Even when neurodivergent perception and interaction are not pathologized, neurodivergence (e.g. depression, psychosis) is still often framed in a negative light [4]. As a consequence, these games fail to show the positive sides of neurodivergent experiencing that do exist, but all so often get ignored in the conversation about neurodivergence. Another issue is that members of the target audience, i.e. neurodivergent people themselves, are often not included in the design process. Instead, researchers rely on psychiatrists, therapists, or parents to inform design decisions. Additionally, the principles of how to design games that are relatable for neurodivergent audiences have not been established.

In this regard, the present thesis seeks to address the following questions: How can neurodivergent joy be represented in games? To answer this question, the topic of

neurodivergent representation will be explored along these research questions:

- How do neurodivergent persons experience neurodivergent joy?
- How do neurodivergent players express themselves and their identity in video games?
- Which game design elements contribute to relatability, especially for neurodivergent individuals?
- How can specific characteristics or positive aspects of neurodivergence be translated into game mechanics and design?
- How can neurodivergent experiences be neutrally represented in video games?

Following this introduction in Chapter 1, Chapter 2 aims to provide some background knowledge and theory, covering three different topics. First, it establishes a basic understanding of what neurodivergence is, how it can be framed as a disability, and how the term is used within this thesis. Second, it explores different elements of games and relevant aspects in their design, particularly as it relates to creating enjoyable play experiences and characters that players can connect with. Third, it discusses various facets of the relationship between neurodivergence and video games. This includes play behaviors and benefits for neurodivergent players, games that are specifically developed for neurodivergent people, accessibility considerations, and most importantly, existing representation of neurodivergence in video games.
Next, Chapter 3 presents the study that was conducted as part of this thesis project and its findings. This involves laying out the structure and content of the interviews, as well as providing a description of the analysis process and the results of the thematic analysis that was carried out. The developed themes are grouped into the two areas of interest, neurodivergence and video games. The former, explores the joys and the struggles that participants experienced because they are neurodivergent, as well as the journey to finding acceptance and understanding neurodivergence as an integral part of their identity. The latter, discusses the motivations, play habits, likes and preferences of participants, and as such, covers three areas of functions and purposes that video games served them.
Chapter 4 introduces game design concepts developed as part of this thesis project. It describes the ideas for three games that were created based on themes of the interviews and drew inspiration from several other games.
In Chapter 5 both participants' experiences of neurodivergence and their game play habits and preferences are discussed in relation to the existing research that was laid out in Chapter 2. Further, it also discusses the design ideas developed as part of this thesis project in relation to existing games for and about neurodivergence.
Lastly, Chapter 6 provides a conclusion to the thesis, talks about the limitations of the present study, and gives a prospect for possible future avenues of research on the topic of neurodivergence in video games.

CHAPTER 2

Background and theory

2.1 Neurodivergence

The concept of 'neurodivergence' is at the core of this thesis. Thus, in order to develop the argumentation, it is important to first establish an understanding of what neurodivergence is. This is not a trivial matter of merely citing one concrete and clear-cut definition as there is a lot of nuance, further, requiring also a brief look at how the term was established in the first place.

2.1.1 Neurodiversity

We enter this conversation, starting off with the idea of 'neurodiversity'. One of the first mentions of the term 'neurodiversity' can be found in a thesis by Judith Singer from the late 1990s. This term, following the concept of biodiversity, refers to the biological reality that no two people's brains or, in other words, neurology will ever be exactly the same [5]. Having found its origin in online spaces dedicated to Autistic Self-Advocacy [6], 'neurodiversity' is tied in with activism as well as civil and human rights. In an effort to fight against the predominant rhetorics of cure and prevention perpetuated by the medical field and its view of autism as pathology [7], there intentionally are political connotations. According to Singer's conceptualization of the term as a political device, 'neurodiversity' serves two purposes. On the one hand, it establishes an additional dimension of marginalization and, in this way, serves as a factor for intersectional analysis alongside other categories such as race, gender, class, disability, etc. As such, the term describes just one more aspect of being human. On the other hand, 'neurodiversity' is an attempt at unifying and giving a name to the rising social movement fighting for the rights of all those who are part of a neurominority [5].

This so-called 'neurodiversity movement', seeks to point out the potential added value for society, suggesting that a diversity of minds is indispensable for maintaining cultural

stability. Thus, a focus is placed on nurturing this type of diversity, for example, through increasing the rights and welfare granted to those with non-typical neurology [8]. An additional interest to neurodiversity and its movement is the strive towards greater equality and social inclusion for members of a neurominority [9]. As stated before, the idea of neurodiversity originated from autistic individuals not wanting their way of thinking and communicating to be seen as negative. Consequently, there was an aim to undermine the prevalent notion of the autistic brain being pathologized in distinguishing it from a 'healthy' neurotypical brain [10], arguing instead that autism is a form of difference that should be respected [7].

However, autistic people are not the only ones facing obstacles and discrimination for their neurotype being different to that of the majority. To account for this reality, the use of the term 'neurodiversity' was expanded beyond the context of the autism rights movement [11] leading to the neurodiversity movement also including those who are not autistic. This requires the introduction of a new term.

2.1.2 Defining neurodivergent

Addressing this issue of the false dichotomy between autistic and neurotypical as everything non-autistic, the term 'neurodivergent', was coined to serve as an opposite to the word 'neurotypical'. This term takes into account the fact that there are other ways someone can have a neuro-atypical brain besides autism [12]. The definition provided by Walker [9] serves as a starting point for the discussion about what the term 'neurodivergence' actually encompasses. Here neurodivergence describes the phenomenon of somebody's brain differing significantly in its functioning from the 'majority brain', or in other words, it diverges from what society deems as normal and acceptable. Logically it follows that those who fall within this category are considered to be abnormal. This is based on the societal construction of 'normalcy' [13], which also encompasses the construction of a normative set of social behaviors and expectations that go unquestioned and are, thus regarded as the only way to behave correctly in interactions with others [14].

Sources differ regarding what conditions they list under 'neurodivergent'. A non-exhaustive list of conditions that get mentioned in the literature includes Autism [15], ADHD, Dyslexia [6], Depression, Anxiety, Anorexia [8], OCD, PTSD, Cerebral Palsy [1], Tourettes, Down Syndrome, Bipolar Disorder, Dementia [16] Dyspraxia, Schizophrenia, Psychopathy [7], Epilepsy, Traumatic Brain Injury [9], brain tumors, Intellectual Disabilities, Narcissism [8], Reactive Attachment Disorder [17], or any long-term neurological differences [16]. In short, neurodivergent describes anyone who is not neurotypical. Such broad and divergent (ha!) understandings of neurodivergence, however, seem rather impractical for this work, considering its focus lies on designing relatable experiences and representation. Thus, in the context of this thesis defining a specific subset of 'neurodivergent' via shared traits, rather than by specific diagnostic labels, might be a more sensible and practical approach, considering also that many overlaps in traits exist between different neurodivergent conditions [18].

However, even that can be problematic since, in general, neurodivergent conditions are defined by their outwardly observable traits [19] and the extent to which these negatively affect the lives of the people around the neurodivergent individual, thus effectively framing them as burdens [14]. Additionally, diagnostic criteria are predominantly created from the perspective of the neurotypical observer who fails to consider or understand the neurodivergent perspective. This means that these criteria implicitly contain negative value judgments and the term 'deficit' is assigned to any behavior that deviates from the expected norm [8]. At the same time, it has to be said that while two neurodivergent conditions might share the same outwardly observable presentation or behaviors [18], the underlying cause may differ. For example, difficulties in the social dimension, such as the establishment and maintenance of relationships, can be seen in both autism and ADHD. For the former, the absence of specific expected social cues, such as eye contact, seems to be the cause whereas for the latter, impulsive behavior and interruption are the most likely culprits [20]. So although the resulting disadvantages and discriminatory treatment from society might be similar, the internal experience of neurodivergence is not shared. This complicates the issue of formulating a useful definition for exploring how to accurately represent neurodivergent experiences in a relatable way. Further problematizing the situation, not every neurodivergent person will exhibit all of these traits or experience them to the same extent, even when the diagnosis is the same. In this sense, it is also impossible to represent every one of the possibly infinite ways of experiencing neurodivergence [21].

Before coming to a final conclusion about what 'neurodivergent' shall entail in the context of this thesis, it must also be considered how 'neurodivergence' can be framed in the first place. The conditions that fall under the umbrella of 'neurodivergence' are generally understood as disabilities because their defining characteristics are regarded as hindering people from living a 'fulfilling' life according to social norms and expectations [22].

Since for many neurodivergent people, their difference is almost exclusively located within their mind without any prominent physical markers, neurodivergence also can be counted as an invisible disability [19]. These can be defined as conditions of a physical, mental, or neurological nature that impact how a person navigates, perceives, and interacts with the world around them while not showing obvious outward symptoms [23]. In addition, neurodivergence is in many cases accompanied by comorbid mental health struggles, which in and of themselves can already be disabling. For example, depression and anxiety often occur alongside autism [24], while ADHD is linked to higher rates of depression and suicidal ideation [14]. On the other hand, it has also been argued whether neurodivergent conditions, such as autism, should even be considered as disabilities. The reasoning behind this is that depending on the context and the environment neurodivergence might not constitute an impairment for a person [15]. For the time being, however, neurodivergence shall be viewed as disability, since currently, we live in a world where neurodivergence still largely poses an obstacle, and as such it should be discussed through the lens of disability. Therefore, in order to orient the stance taken in this thesis, a discussion about the different ways of framing disability is necessary.

2.1.3 Models of disability

The most prominent approach toward disability, especially in medicine and research, is the medical model [8]. Characterized by an orientation around deficits and pathologizing tendencies, it locates the problem in the disabled person and their body. For this reason, it can also be referred to as 'individual model'. In its focus on the limitations of the disabled body as the sole explanation behind one's disablement, the medical model puts the blame on disabled people and thus has an interest in finding solutions to treat or 'fix' disability [25].
The medical modal also has been predominantly used in research relating to autism and other neurodivergent conditions [8]. Through prevalent notions of prevention and cure [7], the medical model frames neurodivergence as a disorder that is caused by a person's deficiencies when compared to neurotypical standards [26]. Moreover, there is a disregard for the internal experience of neurodivergent people in favor of measurable, i.e. externally observable, behavior when it comes to diagnosis and defining criteria. Thus, in essence, a medical model approach works to reduce a person to a list of symptoms [14]. As stated above, characteristics associated with neurodivergence are regarded as undesirable and hindering a social, independent, productive, fulfilling, or, in other words, 'normal' life [22]. As a consequence, minority neurotypes get labeled as dysfunctional and disordered.

However, some argue that the promotion of such deficit narratives only serves to distract from societal factors that create barriers and justify misguided and harmful approaches toward disability [25]. The ideas and biases embedded in this line of thinking are not only present at an institutional level [27], but they are then also perpetuated by the media through the depiction of negative stereotypes and harmful tropes, which end up becoming the basis for the predominant societal view on disability [13]. Thus, when it comes to ableism and disability oppression [25] it is worth searching for an alternative explanation for the cause of negative consequences and disablement. This might lead to an interpretation of disability that looks more so at interactions and societal aspects. This is where the social model comes in.

The social model of disability argues that the perceived so-called deficits are due to society not being accommodating (enough) of individual differences. Thus, it is not 'impairments' but a lack of accessible and equal opportunities that hinders disabled people from taking part in everyday social life as equals [27]. Specifically in the context of neurodivergence, the 'double empathy problem' plays a vital role when it comes to disablement. The concept of this problem emerged in autistic spaces and describes the phenomenon of communication breakdowns happening between autistic and non-autistic interaction partners due to their vastly different perception and social expectations. In essence, each side has a difficult time understanding the other's way of interacting. Such breakdowns in communication are in no way unique to autism, as they can occur between any two interaction partners. However, they will be experienced as more drastic the greater the difference in social disposition [19]. For this reason, the 'double empathy problem could certainly apply to anyone of a minority neurotype interacting with those of the dominant neurotype. In fact, many neurodivergent people find it easier to communicate

and interact with other neurodivergent individuals than with neurotypical persons. Such social connections can provide an accepting environment where one feels more free to be their authentic self and less required to hide or mask their traits [18].

Therefore, the sole responsibility for successful communication as well as communication breakdowns should not be placed on the neurodivergent individual alone [3].

From the neurotypical perspective, such relationships between neurodivergent people subvert the expectations of social awkwardness and deficits, as they are seemingly able to engage in social interaction or group activities with ease *'despite'* having, for example, a diagnosis of autism [28].

That is to say, differences of any kind only result in deficits or disability based on the social context.
However, existing as a minority in a society where one's innate way of processing information and interacting with the environment is incompatible with normative expectations, one is bound to be regarded as 'disordered' [10]. In the context of a social model understanding, the term 'disorder' can be reinterpreted as the "mismatch between individual and a specific environment" [29, p. 1028]. Thus it is through the social construct of normalcy, that the concept of disability and its perception as a problem emerge. The idea of the normative body positions disabled persons' bodies as 'abnormal' which results in disability being regarded as a state of absolute otherness [30]. In this sense, it can be argued that disability is socially constructed and does not describe a medical diagnosis, but rather how society responds to certain bodies. It can be said that since no one's body truly is without any limitations or 'impairments', it is highly dependent on context and the environment whether those impairments will constitute a disability [13]. One particular example of how the social context dictates whether something is considered a disability is dyslexia. While in modern society dyslexia certainly causes struggles, in a preliterate world, dyslexia would not exist as a concept, much less be a disability [11].
Additional factors adding to the struggles that disabled people face are prejudices and stigma. In particular, when it comes to neurodivergence, as mentioned before, there are overall no outwardly apparent symptoms. This has an effect on how neurodivergent people and their struggles are seen by society at large. Due to the nature of invisible disabilities, it is not always clear who might be affected. As a consequence, those with invisible disabilities are often met with disregard and disbelief, especially when their abilities and access needs fluctuate over time [23]. On the other hand, the minimization or dismissal of one's own experiences and the impact of one's disablement as universal experiences of being human, for instance, remarking that 'everyone gets tired', is also a common occurrence for invisibly disabled people [23]. Such societal reaction can result in feeling like others are not taking them or their struggles seriously, which works to invalidate actual lived experience. For example, in the case of ADHD, many do not regard it as a condition that genuinely exists. As a consequence, those with ADHD are not only left feeling misunderstood but also have their traits misinterpreted, such as distractibility or forgetfulness being seen as a lack of care (for others). In this way, many come to perceive their 'symptoms' of ADHD as considerably less disabling than the

stigma they are faced with [18]. Autistic people share a similar experience, as they are consistently rated less friendly, approachable, or trustworthy and overall more negatively by non-autistic observers [31]. A lack of understanding and empathy from others, as well as, misconceptions and wrong assumptions result in many invisibly disabled people facing feelings of isolation, in addition to receiving condescending treatment. All this has negative impacts on social relationships, not only personal, but also professional as well as educational, and thus also on mental health, in terms of frustration, anxiety, stress, or feelings of guilt. What is more, many are met with negative reactions or consequences when disclosing their disability status [23].
That being said, the social model also gets criticized for being too simplistic and reductive. In its focus on socially constructed barriers, it ignores the actual experience of having a disability [25]. For many, struggles and limitations still exist outside of societal contexts. The brains of autistic people, for instance, are on average 42% more active at rest, meaning they are processing more information without external stimuli, compared to those of neurotypical persons [32]. This can lead autistic individuals to feel overwhelmed and tired more easily, which might eventually result in burnout [33].

There are several other approaches that try to convey a more nuanced understanding of disability, as both the medical and the social model are seen as reductionist and quite polarizing [8].
The social-relational model of disability posits that disability should be understood as "a combination of personal and social effects resulting from impairments, and social restrictions resulting from social barriers, which together function as oppression" [15, p. 272]. However, it has been noted that the social-relational model might focus too much on 'impairments', therefore neglecting the strengths that oftentimes accompany neurodivergence [8].
A similar approach, which is commonly used in the context of chronic pain conditions, is the biopsychosocial model. This framework accounts for biological, psychological, and social factors of pain. It posits that since everyone's experience with disability is unique, the development of uniquely fitting management approaches, required for living in a society of able-bodied expectations, must be better supported [25]. Similar thinking could also be applied to neurodivergence and living in a neuronormative society. Further relevant in this context, is the minority stress model, which posits that difficulties and mental health problems will inevitably arise out of living in a society that is 'not made for you' [10]. As one possible coping mechanism for the lack of accommodation, many neurodivergent people resort to masking their symptoms and hiding their traits, which is likewise accompanied by stress and exhaustion [33].

A concept that specifically addresses neurodivergence is the neurodiversity paradigm, which encompasses a specific perspective and corresponding approaches to neurodiversity [9]. It can be used to represent different meanings or purposes, for example, serving as a framework for making sense of lived experience, an approach to knowledge production, ways to examine power imbalances and fighting inequalities, or simply an "ethical stance". Fundamentally, this paradigm is based on the premise that knowledge and understanding

of neurodiversity are influenced and shaped by (dis)positional, individual as well as contextual factors [16]. These neurodiversity approaches further adopt an interactionist understanding of disability. In essence, it is posited that disability arises out of the interaction between an individual, their traits and characteristics, and their environment. Since it can often be difficult, if not impossible, to strictly distinguish whether a certain challenge or problem is of individual or social origin, taking on a holistic perspective on disability that addresses both factors together is seen as more suitable and thus preferable [8]. The neurodiversity paradigm is fundamentally based on the idea that the diversity of minds is a natural facet of humanity [9]. Any variation of neurology, in terms of perception and cognition, should be seen as valuable and thus be respected as but one way of being human [15].

Further, the neurodiversity paradigm seeks to challenge the notion of a 'normal' (and healthy) brain by bringing attention to it being nothing more than a socially constructed idea. As such, normalcy of the mind is akin to other attributes used to construct an arbitrary and oppressive ideal of the correct way to be human, such as gender, race, sexuality, or culture [9]. In that, the neurodiversity paradigm both criticizes and outright rejects the false dichotomy between 'normal' and 'abnormal' brains that works to classify certain cognitive styles, and subsequently people, as defective or disordered based on arbitrary neurotypical standards [10]. Additionally, the neurodiversity paradigm represents a "theoretical and ideological shift towards reframing those who fall outside neurocognitive norms as 'neuro-minorities'" [16, p. 57-58]. Rather than individual pathology, this minority status arises out of the marginalization that results from a society structured around those with neurotypical cognitive styles [16]. In this context, it is further imperative to point out the power imbalances and inequalities that exist within the dynamics of society [9]. The hierarchies inherently embedded in social institutions are, implicitly or explicitly, favoring those deemed cognitively functional members of society. Here, the neurodiversity paradigm seeks to emphasize the interests and needs of neurodivergent people as being of equal importance to those of the privileged majority [16] and moreover highlights that "diversity, when embraced, acts as a source of creative potential" [9, NEURODIVERSITY PARADIGM section]. This way the concept of neurodiversity itself provides the possibility to "access and generate new forms of knowledge" and to "imagine the world differently to how it currently is" [16, p. 219].

Implementing perspectives of the neurodiversity paradigm in the context of research helps to ensure that work is both respectful and relevant. As a result, one's practice will also align with and support a social justice movement seeking to create a world where neurodivergent people are treated fairly and equally [10]. For this reason, it is crucial to not only pay attention to "individual weaknesses", but to also be cognizant of and account for the contributing contextual and environmental factors [8]. This way, it also becomes possible to tend to the strengths and positive aspects in order to frame neurodivergence in a more optimistic and favorable light [34]. When it comes to such neurodiversity-affirmative approaches, instead of focusing on normalizing, the emphasis is placed on maximizing, which can be achieved through, for example, supporting self-

acceptance, strengths, and confidence of neurodivergent people [10]. The double view of neurodivergence as both a disability and a morally neutral way of being, allows the conceptualizing of support for neurodivergent individuals in terms of enabling growth, providing opportunities in society, valuing their contribution and accommodation of needs. Additionally, this perspective emphasizes respecting and accepting neurodivergence [15] and neurodivergent people as they are. As far as the neurodiversity paradigm is concerned, efforts should be focused on effecting social change and adapting environments to be more accessible, in an effort to reduce discrimination and stigma. It is still regarded as legitimate and reasonable to support approaches aimed at the individual, however only in such a way that prioritizes adaptive skills, and is merely seen as additional to the aforementioned, since "[c]uring or normalizing the disabled person should not be goals" [8, p. 77]. Importantly, when pushing for 'improvements' to well-being and quality of life it is only done with the consent of those it would ultimately affect directly. In this context, valuing the consent of the neurodivergent person and putting an emphasis on the preservation of neurodivergent modes of experiencing and interacting with the world around them [15].

It should also be noted that there is a discrepancy between neurodiversity-affirming knowledge and principles already used widely among the neurodivergent community and the research and practice around neurodivergence which has (largely) not yet caught up to the prevalent understanding of neurodivergent 'conditions' from those with actual lived experience [10]. Overall, it seems sensible to take on a more nuanced and middle-ground stance that can address the individual, the environment, and both together [8]. Thus, this thesis will follow a perspective informed by the neurodiversity paradigm, acknowledging that a more accommodating society would certainly help make the lives of neurodivergent people easier, but it will not make all struggles magically disappear. It is still important to understand how different positionalities conceptualize and approach neurodivergence, especially given the dominance of the medical model in current research.

2.1.4 Identity

The last key to unlocking the understanding of neurodivergence that will be relevant for this thesis is identity. In framing neurodivergence as identity [16], one important consideration for defining what falls into the category of neurodivergence is the extent to which a person considers it defining who they are.

For example, autism, ADHD, dyspraxia are seen as integral to who a person is thus constituting a significant part of one's identity. In this regard, neurodivergence does not constitute something that can be separated as a disorder one is afflicted with or that is 'added' to a 'normal' person [10]. Another point that can be pivotal in terms of identity is whether there are any positive aspects for the individual. Here, mental health struggles like depression are generally experienced as negative and thus are less so seen as identity [8]. Similarly, in talking about post-traumatic stress disorder, those affected have described it as "unwanted ingrained responses to distressing experiences" [16, p. 219]. Since the main symptomatology revolves around negative feelings, mental

distress, and trauma responses, PTSD, along with also clinical depression and anxiety disorders, is seen as genuine pathology rather than a variation in perception and cognition [16]. Yet, anxiety can also be a 'gray area', where some seek out medical or therapeutic intervention, while others desire understanding and compassionate treatment from their environment. In such a case, it likely is most sensible to draw on both of these viewpoints equally [8]. A different consideration concerns cases where neurodivergence leads to or is associated with hurtful or dangerous behavior, such as narcissism or psychopathy. Affected individuals might exhibit negative qualities that can bring harm to others at which point intervention becomes necessary. Thus, in such instances, it is perhaps preferable to approach the condition from a medical model perspective, meaning to seek 'cure' rather than acceptance and embracing difference [8]. From this reasoning it becomes apparent that there is a need (for a way) to "distinguish between minority forms of functioning and genuine pathology" [16, p. 219]. However, one must also be aware that making such a clear-cut distinction might lead to negative consequences and exclusion for people in practice [16].

At the same time, when trying to define neurodivergence through positive aspects and as a natural variation, where it is not characterized by only negative attributes, it also depends on how traits are framed in the first place. This is because "strengths are, to a considerable extent, contextual" [8, p. 83]. What might be considered disordered in a deficit-oriented conceptualization of neurodivergence might prove to be very valuable when framed in a more positive and accepting way. For example, the common autistic trait of having very intense and specific interests, which often leads to very detailed knowledge and high expertise, is described by the diagnostic criteria in the DSM-V as "[h]ighly restricted interests with abnormal intensity or focus, such as a strong attachment to unusual objects or obsessions with certain interests, such as train schedules" [1]. Similarly, in the ICD-11 autism is characterized "by a range of restricted, repetitive, and inflexible patterns of behaviour, interests or activities that are clearly atypical or excessive for the individual's age and sociocultural context" [2].

Taking a stance informed by the neurodiversity paradigm, there is a push toward embracing the strengths of neurodivergence. For example, autistic people often have a great attention to detail which can help them in finding bugs in computer programs, resulting in a strength in working with computer systems. Likewise, ADHD also brings strengths, such as being highly creative and thinking outside the box. Dyslexia too is related to creativity as well as better three-dimensional thinking and visual-spatial abilities [11]. In this regard, it is also essential to touch on the discussion of ADHD being a misnamed condition, as it is not a deficit in attention, but more so about struggling with guiding the attention. "The misunderstandings of ADHD begin with the term Attention Deficit Hyperactivity Disorder. It's a horrible term [...] We don't have a deficiency of attention, but an abundance of it" [35, "We fundamentally misunderstand what ADHD

[1] https://www.research.chop.edu/car-autism-roadmap/diagnostic-criteria-for-autism-spectrum-disorder-in-the-dsm-5 (accessed on 25.04.2025)

[2] https://icd.who.int/browse/2025-01/foundation/en#437815624 (accessed on 25.04.2025)

is or looks like", para. 5]. As such, ADHD is characterized by the traits of hyperfocus and hyperfixations, which can potentially be great benefits given the right circumstances. Through the concept of neurodiversity, many people find that they like the way they experience and interact with the world, particularly also because it is different than that of most people. The term 'neurodivergence' then constitutes an important tool for shaping one's understanding of oneself. "I don't have to say weird, I don't have to say unique, I don't have to say different, I can just say neurodivergent, and I feel really proud of that statement" [18, cite p. 5]. Particularly significant for coming to this point is finding community. By interacting with others who are similar to oneself and learning about their experiences, individuals can become proud of their identity as neurodivergent, which positively impacts self-perception. As such, it can be said that the "validation and normalization of symptoms help[s] them improve their self-image" [18, p. 5] In this context, neurodivergence is seen as an inseparable part of a person, since it influences almost all aspects of life. This includes cognition, perception, sensory processing, and communication. Further, it is completely intertwined with a person's personality, their interests, and their way of engaging in them [36]. For this reason, neurodivergence cannot be separated from the individual as is often attempted in a medical model frame where, as previously described, it gets treated as disorder. "My Autistic neurology is me – it is my wiring and my identity. It is not a disorder, illness, or accessory. It fundamentally underpins who I am, how I think, express, and receive language and how I experience everything" [37, p. 3]. Such thinking gives rise to the notion that everything is determined by autism, or speaking more generally neurodivergence. Since a person's ideas, as well as their emotional, bodily, and sensory experiences are determined by processes in the brain, all of these aspects will inherently and inadvertently be shaped by neurodivergence [37].

Recognizing the source of being different from those around them and being able to label this difference as neurodivergence can feel very validating and empowering. This is because it allows the individual to "understand and accept [them]self as a neurodivergent [...] person [...] with different characteristics and needs from many people around [them], rather than viewing [them]self as a faulty or failed version of normal" [10, p. 17]. When describing how their ADHD mind works, Attias expressed the following: "I continue to feel different, experiencing the world with heightened senses, with emotional, tactile and kinesthetic intensities and responses to environments and life experiences that others don't understand" [38, p. 3]. Similarly, Davies also noted their sentiment as follows: "I cannot imagine a non-autistic version of myself" [10, p. 17].

Identity can be seen as a socially mediated experience, which means that the interaction with both society and media influences and shapes this part ourselves [13]. In connection with neurodivergence, this notion can be found in alternative approaches to conceptualizing certain neurodivergent conditions. For example, Hens talks about autism as being a concept of shared experience and meaning making. Through the argumentation, it seems that the specific cause or theory about why and what autism is, as well as ways of explaining the phenomenon that is autism, are ultimately not that relevant in discussing autism. Instead, it is much more about community, a sense of belonging, and identifying

with experiences, which all connect to relatability. As a consequence, the validity and 'realness' of autism are said to come from just these factors [29]. This kind of thinking can likely be extended to other neurodivergences. On the topic of community, many find that connecting with others who are neurodivergent has helped them change their perception of neurodivergence and move away from stereotyped understandings. Instead, they learned to embrace being neurodivergent and were able to discover new ways coping with their struggles [18]
It should be noted that when seeing one's neurodivergence as (part of) one's identity, it should remain a personal choice, whether someone seeks out cure or wants to embrace it [8]. Likewise, whether someone identifies as neurodivergent in the first place should also be left up to the person themself. As such, even in the context of conditions that would more so be considered as genuine pathology, some people find relief in adopting a neurodivergent-affirming framing [16].

At this point, it is also important to bring up my own identity as a neurodivergent person. Due to my own lived experience and understanding of neurodivergence, the personal connection I have to this topic fundamentally impacts who I feel comfortable representing and speaking on behalf of, consequently affecting my decision as to which part of neurodivergence I want to focus on in this research project. Furthermore, since one aim of this thesis to design video game representation of neurodivergence that is relatable, I feel it is necessary to justify my approach to this topic and my understanding of the experiences I aim to represent. Thus, this factor too influences the choice of how the subset of neurodivergence used in this thesis shall be defined.

Before going any further, it should be noted that the term neurodivergent was created as a tool of inclusion, and is not meant to exclude or erase other's experiences, or to divide people into unnecessary subsections [12]. In this sense, the definition given here is but a snapshot of the ways in which one can experience neurodivergence, and while based on specific diagnostic labels it is still open to include those who share similar experiences (cf. [16]). This also relates to the notion that being able to identify as neurodivergent is a privilege, since to know about these concepts means that one is 'allowed' to view one's difference in a more positive light when the dominant view is one of deficit and disorder [8]

2.1.5 Definition for this thesis

Due to the reasons discussed above, the meaning of the term 'neurodivergent' as it is used in this thesis centers around autism and its 'cousin' condition ADHD [20]. One particular factor that further supports this choice is that many overlaps in characteristics and presentation of traits can be identified between autism and ADHD. Moreover, it has been observed that the two conditions also frequently co-occur, meaning many individuals are affected by both autism and ADHD [18]. Thus, in this sense, this thesis will only cover a slice of what 'neurodivergence' could possibly entail. Both autism and ADHD are complex conditions that are characterized by unique combinations of several traits, meaning they can affect people in very different and varied ways [10, 20, 2]. Generally

speaking, shared attributes are found in the areas of “perception, sociability, emotionality, learning, and attention”, further include differences in sensory processing and sensitivities as well alternative temporal experiences [4, p.25]. For example, high creativity and the ability to hyperfocus are neurodivergent traits which are on the whole seen as quite positive [10] [14]. In this regard, giftedness can be another relevant factor since it is also commonly observed in those with ADHD or autism [39].

A common experience for both those with ADHD and those with autism is feeling different from the other people in their lives. Specifically, in terms of communication and socializing, many feel that others simply do not get them. Further, due to often struggling to get across what one means, misunderstandings and annoyance in the interaction partner are frequently occurrences. Another factor that contributes to social difficulties is that individuals with ADHD or autism are regularly perceived as not caring. On the one hand, this concerns struggles with being on time, staying organized as well as with forgetfulness and keeping in contact [18]. On the other hand, this is due to not behaving according to neurotypical social expectations. Specifically, the absence of the ‘usual’ social behaviors, such as eye contact, is a major reason for the negative impression by others [20]. A particular problem resulting from this is that others tend to take these issues and behaviors personally which likewise has the possibility to cause conflicts [18].

As touched on before, masking is often used by neurodivergent and invisibly disabled people as a coping mechanism for living in an unaccommodating world [33]. This involves efforts to appear like a ‘normal’ and ‘functioning’ person in society. In part, this behavior is also connected to the social expectations of what disability is supposed to look, as these often lead to being questioned and disbelieved when being open about one’s disability [3]. As such, many neurodivergent people feel the need to hide their traits around neurotypicals, which requires a lot of energy and effort to maintain [18]. Masking their true selves continuously and for prolonged time has considerably negative consequences for a person’s mental health as well as their personal sense of identity [2]. Furthermore, this coping strategy is linked to "exhaustion, burnout, anxiety, depression, stress, reduced well-being, and [even] suicidality" [8, p. 74] In this context, many neurodivergent people also talk about how they have to put significant effort into “learning neurotypical social skills and how to fit in with a majority neurotypical society” [10, p.18]. Even if in the end they are successful at appearing ‘normal’, many wish that others would understand how hard they have to work to achieve this [3]. At the same time, however, disclosing one’s neurodivergence is not always ideal either, since others often do not take the neurodivergent person seriously and rather invalidate their experiences by arguing that their condition is not real and that things are not that hard or by framing them as simply lazy. Thus, some neurodivergent individuals instead choose not to explicitly mention their neurodivergence by name, but rather how they are effected, as this way they tend to be taken more seriously [18]. Another common feature of autism and ADHD are struggles with executive functions. These span, among others, the areas of “inhibition, cognitive shifting, planning, working memory, and concept formation” [20, p. 34].

On a more positive note, both autistic people and those with ADHD indicate that they

find it easier to relate to others who are neurodivergent and thus prefer to surround themselves with such people. Particularly relevant for this perception and preference is that neurodivergent people often have more direct communication styles and tend to be more understanding of autistic or ADHD traits. As such many feel that they can be more authentic and true to themselves, and due to this the connections they build overall feel more meaningful [18]. Another shared characteristic is stimming, which refers to repetitive behavioral patterns of movements or producing vocal sounds. Stimming serves an important function in the lives of neurodivergent people as a vital way to self-regulate. Depending on the context, a person's stimming can have different meanings or purposes. Most commonly it used to relax and calm down, specifically when dealing with intense emotions or sensory overwhelm. At the same time, stimming is also a form of expression, not only for negative but particularly also positive feelings, such as excitement or joy. For this reason it can also serve as a form of communication. As such, stimming highlights the different communication styles, needs and preferences of neurodivergent people compared to the normalized neurotypical ways of communication [10]. In part, this also connects to the common experience of 'being too much' for others, since neurodivergent individuals can be perceived as highly excitable, emotional, talkative, etc., and thus overall too intense [18]. Lastly, while not exclusive to autism, ADHD, or even neurodivergence as whole, another commonly shared experience is being treated differently once people know [25]. As such, neurodivergent people are often faced with stigma and discriminatory treatment in various contexts, including employment, immigration decisions and access to medical care. As a consequence, those with ADHD and autism also shared negative effects on mental health, well-being and self-esteem, which potentially results in lower quality of life [8].

2.2 Video games - theory and design

The following section aims to provide an overview of different factors and elements that are relevant in a game's design. These include the purposes and motivations for playing games, as well as aspects of player experience and attributes that make games enjoyable. Further, since one particular focus of this thesis is the representation of neurodivergent individuals, the topic of game characters, customization, and emotions are also discussed in this regard and as they relate to the concept of relatability in video games. Overall, the goal of this section is to establish a frame of reference and guidance for designing the game concepts as part of this thesis.

2.2.1 The medium

Video games are quite different from other types of media, such as films or books, since they offer rich possibilities for interaction [40]. As such, the consumer, in this case, the player, is highly involved in the happenings, as opposed to, for example, watching a movie. When playing, a person enters and becomes part of a continuous loop of interaction through which emotional, cognitive, and behavioral responses are elicited

from the player [41]. Video games are considered multi-modal media, meaning that one of their fundamental characteristics is that they combine multiple semiotic modes, allowing them to portray and communicate experiences in richer ways. This is because they not only employ more modes, i.e. different options of representation, than other types of media, but also make them available for the user through the game's interactivity. In this context, semiotic modes refer to distinct ways of creating meaning, for instance, speech, text, music, animation, or haptics. However, it is only in their combination that an overall meaning emerges. The influence these modes have on each other plays an essential role in how the whole ends up being perceived. For example, the music choice for a scene impacts whether it might be seen as suspenseful or comical [42].

Another relevant concept, in the context of video games, are 'frames'. A frame describes the underlying mental structure through which an individual interprets and gives meaning to a situation drawing on social and cultural understandings. Ludic frames, which are used in the interpretation of video games, work to derive and shift meaning based on a gameplay context. Due to their nature, games are often predominantly seen as playful and childish, thus a ludic frame inherently possesses a trivializing quality. As a consequence of the redefinition of a thing or subject due to its inclusion within a game, the topic at hand, such as violence in games, might be treated as less serious than would otherwise be the case [43].
On a purely functional basis, video games are subject to a procedural mode. The rules that determine the behavior of the game (world) describe causal relationships, such that an input A will lead to a certain output B, or in other words, a change in the current game state. Further, these rules define an action space of possibilities and impossibilities within the game [42].

Video games are often seen as not serious and separate from real life. For instance, a player might experience no inhibition to engage in criminal or violent activity in-game when they would never do so in real life [43]. Moreover, the social and cultural aspects inherent to games also extend beyond the game itself to an individual or broader societal level [42]. In interpreting situations in-game, the responses given by the human player and the interactions between human and non-human (i.e. the computer) are responsible for constructing meaning [42]. Thus, rather than predetermined, meaning in the context of video games arises out of the mutual relationship between player and game [4]. Meaning itself is never fixed, but always dependent on various external factors, which in the case of video games can be summarized as the "assemblage of players, hardware, software, and social influences" [42, p. 6].

Taking a step back, the choice of playing video games in and of itself can be described as a person voluntarily confronting 'unnecessary obstacles' and striving to overcome them. In this sense, playing games would seem to be useless or a waste of time. Further supporting this sentiment, players decide to tackle challenges presented by the game even though there are no immediate and/or tangible rewards [41]. For example, in Pikmin 4 [44] in-game characters might give the player missions to try and complete during the levels. However, it is only when the player returns and talks to that character again that

they are given compensation for their efforts, thus the actual reward is not immediately received, or in other words, it is delayed. That being said, there are a plethora of reasons why people might want to play video games.

Video games are characterized by their value as entertainment, not only in the context of leisure but also for education or training, and their interactivity, which also defines the space for possible (inter-)actions. Additionally, games are said to take place in 'fantasy worlds' which in this case refers to fictional settings, that might be based on real life or historical events, but are not real in that sense [41]. Relatedly, games may also serve as environments to safely explore a vast variety of experiences different to one's own. Key aspects, in this case, are detachment from reality, as well as, acceptance of the in-game as real. Together, they open up a space for reflection. Moreover, the interactivity and direct involvement of the player in the flow of the story fosters a close connection between the character, their perspective and the player [23]. At the same time, one must be aware of the inevitable 'limits of play'. Since the frame for perceiving games is shaped by fun and playfulness, an unavoidable unseriousness is embedded in them, even for topics that would demand a more serious attitude. In such a case, it is possible for developers to recontextualize their game so that it is interpreted via frames used for traditionally more serious works, such as art, education, or documentary. This can help counter concerns regarding the representation or trivialization of controversial topics, such as mental illness [43].

2.2.2 Need satisfaction

An important aspect when it comes to video games is their effects on players. As far as the psychological dimension is concerned, it makes sense to take a look at the relationship between video games and the basic psychological needs of humans, those being autonomy, competence, and relatedness. First, autonomy describes the freedom of action [45]. This need is satisfied when an individual perceives their actions to be voluntary and resonating with themself, thus allowing them to feel in control. In the context of games, autonomy is facilitated by various in-game choices and options being provided to the player [46]. Second, competence is concerned with having control over an outcome [45]. As such, it is connected to a person feeling useful, skilled, knowledgeable, etc., which can be supported by the provision of in-game challenges [46]. Third, relatedness refers to the psychological need for connection with others. It is crucial for psychological well-being and the internalization of behaviors and attitudes [47]. A sense of mutual care that is established in video games through social interactions with non-playable characters or other players can foster a feeling of connectedness with others [46]. Relatedness is further linked to the concept of attachment in general and, thus encompasses a person's sense of belonging. As such, it also helps to increase players' enjoyment [48].

The basic needs of autonomy, relatedness, and competence will either be met or not. While their satisfaction can have a positive impact on well-being, their frustration negatively affects it. Ultimately, this may lead to a state of psychological distress, which is associated with feelings of anxiety, loneliness, and unhappiness. For this reason, these

needs are vital in determining whether a person feels content in their life. Video games offer one possible way to cope with frustrated needs, serving as a source of fulfillment and satisfaction that effects better well-being as well as improved mental health [46]. Thus, the satisfaction of psychological needs itself becomes one reason for play.

2.2.3 Motivation

Motivation is a key component in the study of video games, as it serves to explain the how and why behind a person's actions or behavior. Both personal factors of individual disposition and environmental factors of rewards or demands are highly relevant in this context. Simply put, motivation is the result of the inner push and the outer pull that cause a person to want to engage in certain behavior. Additional factors, such as emotion, cognition, or habits also play a role in whether motivation will indeed result in action [49]. Motivation is not only relevant in understanding why people play video games, but also for investigating the reasons why games are perceived as fun and enjoyable, as well as how games (can) contribute to satisfying the needs of autonomy, competence, and relatedness [50]. In the context of HCI, self-determination theory (SDT) is concerned with how the satisfaction of these basic psychological needs relates to intrinsic motivation. Regarding its application within games research, it aims to provide a greater understanding of positive play experience, player motivation as well as other effects of video game use [49]. Additionally, SDT also addresses the effect that extrinsic rewards might have on intrinsic motivation. In other words, self-determination theory posits that humans are motivated by nature to pursue the fulfillment of the psychological needs described above [45]. However, it has also been noted that HCI has been focusing too much on self-determination theory and, as a result, neglecting to take into account the nuances and other facets of motivation [49].

That being said, several other theories aim to explain player motivation as well. Flow Theory, for example, is another quite popular theory employed in the field of HCI [49]. It revolves around the concept of flow, which is described as a state of optimal engagement. This state is said to occur when the tasks provided by the game are at the ideal level of challenge in relation to the player's ability, or in other words, they are just challenging enough not to become frustrating. Flow is further characterized by an intent focus, continual feedback, a changed perception of time, and a general sense of confidence [51]. Alternative theories include motive disposition theory and mindset theory [49], however discussing these in detail would go beyond the scope of this thesis. Thus, rather than provide an extensive analysis of approaches to motivation in video games, the aim is to simply give an idea of aspects that are potentially relevant when designing and discussing gameplay experiences as a whole.
It should be mentioned at this point that motivation is separate from other concepts, such as volition (power of will and purposeful choice), goals (strive towards greatness and achievements), personality (innate desire), and abilities (self-confidence and conviction). However, these factors might still have an influence on a person's individual manifestation of motivation [49].

Considering the various factors that comprise motivation and its highly individual nature, there are several ways of classifying players based on their main disposition for playing video games. For example, the Gamer Motivation Profile (by [52]) defines six groups of motivational factors spanning twelve different motivation dimensions, namely "Action (Destruction and Excitement), Social (Competition and Community), Mastery (Challenge and Strategy), Achievement (Competition and Power), Immersion (Fantasy and Story), and Creativity (Design and Discovery)". Based on a person's scores for each of these categories, a player is assigned one primary and possibly one secondary gamer type out of nine base types.

Motivation not only determines why people play games, but also influences which genres and mechanics they prefer. This relates to the concept of 'player traits' which seeks to, instead of categorizing people into distinct categories, acknowledge that a person's motivation is impacted by more than one factor. In this context, a person is understood as the sum of several attributes. The Player Traits model utilizes five separate values for making sense of a player's motivation, scoring their orientation towards different game elements in terms of aesthetics, challenge, goals, narrative, and social aspects [50]. Therefore, these player traits also prove important for understanding how rewards might affect motivation in a person [45]. It is further important to view motivation from the point of player retention and how games manage to maintain players' motivation to keep playing the game. According to [53], the most significant aspects for player retention are customization, discovery, collection, and completing objectives. As far as social aspects are concerned, specifically in the case of single-player games that include social interaction with non-playable characters, these interpersonal relationships are regarded as less important.

2.2.4 Rewards

Rewards are a defining characteristic of video games and, in particular, relevant regarding player motivation as they have a role in extrinsically motivating gameplay [54]. In this sense, rewards serve to guide the player through the play experience by giving positive feedback to successful action. Consequently, they not only positively impact player experience and emotional state, but also motivate players to keep progressing in the game [45].

When it comes to the rewards used in games different types can be distinguished. First, rewards can come in the form of receiving access to new or additional gameplay content, such as unlocking levels or making progress in the story [54]. Closely related to this is the unlocking of new mechanics, which expands the options for interactions [53]. Rewards of this kind "increase the effectiveness of the player" [45, p. 395], for example, by giving them new abilities or extra equipment (e.g. a weapon). As a result these rewards make things within the game easier by providing more action possibilities thus facilitating gameplay. Objects in-game that help players avoid negative play states or make them less likely to occur, such as (pickup) items restoring player health, can also be seen as a type of reward. Further, games often reward players with glory and recognition through quantifiable

measures such as points, badges, or achievements. These kinds of rewards generally do not directly impact gameplay (in the moment). Another way of rewarding players is via the praise of successful gameplay action through words of acknowledgment, auditive or textual, for example, when completing an mission or objective [54]. Additionally, sensory feedback, such as visual effects, auditory cues, or haptic feedback, can be used as a reward modifier. This means they adjust the impact of a reward with the intent of increasing its positive effect on the player's emotional state and experience [45]. An example of this is a sparkling effect that appears and a short fanfare that plays when unlocking an item.

It is important to also make a distinction between rewards, as they are given by the game, and the concept of rewarding, i.e. enjoyable, behavior or activities in video games. In essence, a player might perceive certain in-game experiences, like exploration, as rewarding, however, this does not mean it constitutes a reward given by the game in recognition of player success. Rather, it is merely one of the gameplay aspects, that make video games fun to play [54].
Not all reward types will exhibit the same effectiveness for every player, since their effect on motivation differs based on an individual's player traits distribution [45]. For instance, the player trait of goal-orientedness has an impact on how a person might choose to engage in video game play in terms of achievements and the pursuit of completing objectives, trying to complete them all or ignoring those not absolutely necessary. Even games without clearly predefined goals, such as Minecraft [55], can be highly appealing for goal-orientation as they allow players to set their own goals [50].

In the context of self-determination theory, two opposing viewpoints on how rewards may affect motivation can be identified. On the one hand, motivation can be regarded as self-regulated. This means behavior that was initially motivated extrinsically by rewards can eventually turn into intrinsically motivated behavior when the player has internalized its value. On the other hand, rewards in video games might be prone to the 'overjustification effect'. Any behavior is said to start out with a certain level of intrinsic motivation, however, once it gets rewarded from the outside the motivation to engage in said behavior shifts to being primarily extrinsic. As a result, in-game rewards may contribute to diminishing a person's base motivational level that internally drives them to take on incentivized tasks [45].
This further relates to the different effects that rewards may have on a person's basic psychological needs. Rewards provided by the game can positively contribute to the satisfaction of the player's need for competence as they give a feeling of accomplishment, which is associated with improved levels of intrinsic motivation. At the same time, receiving rewards for intrinsically motivated behavior can also contribute to decreasing a player's sense of autonomy thus, negatively affecting their intrinsic motivation [45]. Additionally, as far as the relation between intrinsic and extrinsic factors of motivation is concerned, the removal of an extrinsic reward generally results in reducing intrinsic motivation [54].

2.2.5 Player experience

Possibly the most important aspect overall when it comes to game design is player experience. Here, a focus is placed on the game's ability to personalize the gameplay experience by tailoring different elements to each player and their preferences, which may even include their current emotional state. While the exact design will differ depending on game genre, narrative(s), and objective(s) [41], the aspects relevant to player experience are still shared. In this context, the basic psychological needs of autonomy and competence are important factors in shaping the gameplay experience. Additional aspects include interest and enjoyment [45], curiosity, as well as mastery, which is similar to the need for competence, and meaning, which refers to the player feeling they resonate with values presented by the game [56]. Presence [45] and immersion [56] constitute two equally significant factors and shall be explained in more detail in the following.

Presence describes a player's perception of themself as currently existing outside of their real-life environment. The interactions taking place in this space seemingly removed from reality appear reminiscent of real-world experiences and thus feel intuitive to the player. This is especially the case when the interaction facilitated by the controller mimics the way the corresponding action is performed within the game. Although the actions in the context of games potentially differ quite substantially from those in real life, they share a certain sense of embodiment, which also positively contributes to enjoyment and immersion [51]. An example of such an activity is playing Mario Kart Wii [57] with the steering wheel accessory. The related concept of self-presence refers to perceiving oneself to be inside the virtual environment. As such, it denotes the inclusion of the player's physical self within the game, which is, for instance, achieved through an avatar. Further, the concept of extended self-presence involves the inclusion of (parts of) one's identity within the game and the character that represents the player [46].

Immersion, on the other hand, can be described as a person's mind being fully absorbed within the gameplay experience [56], which is further facilitated by the suspension of one's disbelief. A key component of immersion is the acceptance of the rules established by the game both explicitly and implicitly. Explicit rules are determined by the gameplay mechanics and are crucial for engagement, while implicit rules refer to the laws that govern the in-game universe and as such are vital for immersion [51]. There are various ways of achieving immersion, such as an immersive story or narrative, as well as reality immersion where, for the duration of the game, the fictional is understood as part of the everyday. Character immersion, in turn, involves assuming the role and personality of a fictional entity. A player takes on a character's identity by pretending all of their identity is made up only of these fictional elements [58]. Additional aspects that contribute to immersion include audiovisual presentation, the game's difficulty, the establishing of the fictional universe, and the use of emotional elements [51].
Furthermore, it is important to recognize the impact that reward type variety has on player experience. Generally speaking, it seems that diversity is better than having just one type of reward. This ensures the game provides something for everyone since not all players might find the same rewards interesting or appealing. The design of sensory

feedback that often accompanies rewards, i.e. the reward modifiers, should be approached particularly carefully, as this feedback can potentially be perceived as too intense thus negatively affecting player experience [45].

2.2.6 Characters

As is the case with any kind of narrative work, in video games too, characters constitute an essential component.

A character can be defined as anything appearing in a game (or other types of media), that possesses human-like qualities. This includes not only humans themselves, but also mythic species like elves, anthropomorphic animals, or sentient objects [59]. In any narrative setting, characters function as agents since it is their actions through which the story is told [48] and as a result, works of fiction can be understood through them and their intentions. Specifically, in the case of video games, the character controlled by the player acts as a proxy for engaging with and understanding the fictional world as well as the events within. In this function, a game character contributes to further increasing levels of emotional and cognitive immersion [58]. Furthermore, video game characters serve players as tools that allow them to express their play style and skill [48]. For the interpretation of characters in a fictional setting, the cognitive construct being applied is similar to that used for people [58]. The person schema is based on the defining human qualities of body, perception, and self-awareness. It further includes emotions, intentions, language, voluntary actions as well as consistently present traits. This conception of a person sets expectations for and shapes someone's interpretation of others, applying equally to people and characters, which includes also those non-human. Such a mental model might not only be culturally specific but might also need adjustment based on additional information about the 'person' in question. For example, outwardly perceivable characteristics, actions and any available descriptions are among the factors that further contribute to constructing the model for a certain entity [58].

According to [60], each of the various functions a game character might serve can be broadly divided along three dimensions. In a narrative sense, a character exists in relation to a story that is told via the game, experienced by the player, and enacted by their collaboration. Through the character, the player takes on a certain role within a (larger) story. It is possible for this to also include role-playing aspects, where little characterization is given a priori by the game and is instead (co-)constructed by the player(s) themselves. A video game character can also be considered for their afforded actions. This encompasses anything that the game allows the player to do, which can, more specifically, refer to the simulation of certain actions and interaction abilities, the gameplay elements per se, or the game mechanics in general. The social communicational dimension of a character relates to anything that facilitates the social interaction between human players. In this context, game characters fill the role of enabling and representing the communication with and from other players [60]

[59] identifies three different types of characters, namely primary, secondary, and tertiary.

The primary character refers to the protagonist of a story. In the context of a video game, this amounts to the player character, who actively interacts with and thus, is able to manipulate the game (state). The primary character is who the story revolves around and the success or failure thereof relies on. One famous example is Mario in the Super Mario Bros. series [61]. A secondary character, while not in the main focus, still constitutes an important part of the story or gameplay. This type mostly consists of non-playable characters, but this is not necessarily the case. For instance, Oatchi, a companion dog in Pikmin 4 [44] that the player can take control of whenever they deem necessary, is one such secondary character. Tertiary characters include any other characters appearing in a game, that are either not all or only minimally important to the story. Examples of this character type are monsters in hoards, crowds making up an audience, and people in a town such as in the Pokémon series [62].

When it comes to the mental conception of characters, the differentiation between who takes control of them is equally relevant. For those played by oneself, the construction takes place along the possibilities and limitations imposed by the game rules, the action space, in-game as well as physically and cognitively. On the other hand, the mental constructs for making sense of characters played by others, including those controlled by the computer, use externally perceivable traits as a basis. Thus, at first, appearance (body, clothes, etc.) allows for an initial interpretation that is then revised upon receiving new information, such as name, verbal descriptions, actions, and finally dialogue [58]. Mental constructs of game characters are further influenced by representational aspects, which are concerned with how the character is used by or within the game and what the character is ultimately representative of. In one sense, a video game character can stand for the story or narrative, in another, they can be regarded as a proxy for the specific abilities, interaction possibilities, and action space. Alternatively, characters may be considered as vessels for communication with other players [60].

On the topic of representation, it is useful to introduce the term ‘avatar’, which refers to the virtual representation of a human being. In a multiplayer setting, this description can apply to any in-game entity that is controlled by a human player. In a more narrow sense, ‘avatar’ denotes specifically the player character controlled by oneself [47]. The player is ‘mapped’ to an avatar within the game’s universe, resulting in a detachment from reality and the ability to directly influence the encountered contexts [41]. Avatars can be categorized along two different axes, whether the avatar is more open or closed, and whether the identification with the character is central or acentral. With closed avatars, their identity and personality are predefined by the game and its narrative, whereas an open avatar leaves room for the player to project themselves onto the character and develop their personality over the course of the game [63]. It seems relevant, in this context, to distinguish between the concepts of inhabiting and controlling a game character. The former refers to a representation of oneself, which, with options for customization, more closely fits the notion of an open avatar, whereas the latter refers to player characters of an established ‘person’ within the game lore that one takes control of, or in other words closed avatars. This also relates to the relationship the player has

with the character. On the one hand, a parasocial relationship describes the situation where players view the character as a distinct 'person' separate from themselves. This can further include feelings of admiration and aspiration [48]. On the other hand, there is identification, which also links back to the second axis of character categorization. In the case of a central avatar, the player is emotionally close to the character and thus inclined to act as themself [56], while acentral avatars are perceived by the player as emotionally separate from them. That being said, in the context of player characters, central identification is significantly more common [63]. Thus, going forward, the term identification will be used to describe the phenomenon of essentially, for the duration of play, viewing oneself as being the character and the character as being oneself. This is particularly the case when the player can identify and relate with the characters based on (perceived) similarities they share [48].
Regardless of the exact intensity of such a player-character bond, identification is also linked to positive effects such as increased enjoyment and immersion [48]. Identifying with a fictional character in this way coincides with a shift in one's perception of self. This process is further associated with a loss of self-awareness and a connection with the game character on both a mental and emotional level emerging in its place. As a consequence, the player experiences their feelings as matching those of the character [56].

However, it has been called into question whether such a concept of (emotional) immersion truly applies to the psychological experience of character identification. Instead, it seems unlikely that players experience situations or emotions in the same way the character in the fictional world would [58]. As an example, in the reality of the game world, the character is actually facing the monster and fearing for their life since the threat is real to them in their universe. For the player, this encounter might still be scary, as is often the case in horror games, but they do not have to fear any consequences for their physical well-being. In addition, the very existence of a fictional character is contingent on a player taking on their role within the setting of the game or, at the very least, thinking about them. Thus, it seems that the player can only imagine how the character might feel or act based on a priorly determined profile. Such a profile draws on understandings that have been constructed or learned through past personal experiences, and is also influenced by the awareness that one is playing [58].
Having said that, certain player characters or avatars can still have an effect on the player and their behavior. The 'proteus effect', for one, addresses the phenomenon that visual characteristics and traits of an avatar are associated with specific behavioral stereotypes and expectations. This subsequently causes players to act how they believe the character should act. In contrast, the self-perception theory posits that when an individual believes others will expect certain behaviors from them because of their avatars' appearance, they will engage in those expected behaviors [56]. The related concept of bleed describes how the thoughts and feelings of the player influence and are influenced by those assigned, consciously or unconsciously, to the character [58].

Viewing characters in terms of experience, the discussion touches on aspects of how the player perceives and experiences the game character. One possible understanding involves

the character's role as the protagonist of a story. Here, they are perceived as a building block of the narrative, thus, in effect, constitute a 'narrative unit'. From a more functional angle, a video game character is experienced as the gameplay and the game mechanics. In their role as the 'ludic facilitator', they are understood as the sum of the functionalities that are allotted by the game and accessible through the character, which, in this sense, amounts to an interaction interface. Another way of experiencing characters in a game is as other players due to them serving as the proxy for communication initiated or sent by another player. Characters are the medium of social interaction and are, in a figurative sense, experienced as social interaction and communication themselves. In this way, they can be referred to as the 'social actor' representative of others [60]. To a certain extent, this representational aspect might also apply to oneself, in the sense that the character allows the player to represent themself as an individual and to communicatively express themself within (the confines of) the game world [60].

When it comes to emotional attachment to game characters, [48] identifies seven different themes of conceptualizing and relating to a character. Each of them is placed somewhere along a scale from providing predominantly functional value to predominantly emotional value. In the case of player characters, three of these themes are relevant. First, "Cool and Capable" is a theme relating to a person's fascination with the abilities and skills the character possesses in the game. Taking control of such a character instills players with a sense of empowerment and excitement over the action possibilities offered by the game as it enables them to engage in activities that are either difficult or impossible in real life. While their value for the player mostly comes down to their utility and power within the game(play), characters in this category are also appreciated for being entertaining and funny, as well as for their humor. These characteristics help players warm up to the character and lead some to perceive characters, such as Mario [61], as the type to hang out with in real life. Second, the theme of the "Admired Paragon" applies to characters who are seen as role models. This is because they embody virtues that players might (be inspired to) strive for in their lives and through that even try to emulate characters, such as Link from 'The Legend Of Zelda' [64], in real life. Among the attributes such characters are admired for are kindness, courage, selflessness, mental strength, and determination. Third, the "Sympathetic Alter Ego" theme is associated with players feeling sympathetic towards a certain character due to commonalities and shared experiences they uncover. When a player is able to recognize (parts of) themself in the fictional being, a video game character becomes a valuable tool for self-exploration and reflection. This function is especially significant in the case of characters enabling individuals to explore their marginalized identities, such as neurodivergence. It is possible for the line between self and character to become increasingly blurred the more strongly one relates and identifies with the character. Nonetheless, finding a character, such as Madeline from Celeste [65], that resonates with the player's lived experience, can provide them with comfort and the feeling of finally being understood. This further has a positive impact on attachment [48].

A character in a video game can also be understood as an intersubjective construct.

This conceptualization deals with the question of how a 'shared understanding' of the character is formed and established between the game and the player. Key objectives are to determine the essence of the character and the way the player thinks of the character. A focus is thus placed on the mental construct that the player creates based on (their interpretation of) what the game communicates, and subsequently also on how the player treats the character, particularly when (inter-)acting within the game world. In their conceptualization as a 'person', a video game character is seen as a fictional being possessing certain characteristics, traits, background story, and personality. This way, characters not only tell and move a story along, but it also allows the player to project themself or a certain personification[3] onto them. This construction of the game character as a fictional being is also impacted by both playing style and player preferences. An understanding as a 'game piece', equates the character to the functionalities and possible actions, as well as to the element possessing the "ludic properties". This way, a character can also be regarded as the proxy that allows the player to interact with and affect the game world. Yet another way of viewing characters in a game is as representing other players, or possibly even oneself, within the social space afforded and constructed by the game [60].

Another relevant concept in the context of player identification and character attachment is homophily, which describes a person seeking out others who share similar views and values. While it can also exist in relation to a person's in-game avatar, homophily especially plays a key role in social connection with non-playable characters. Here, a feeling of the character being similar to oneself is established through (continual) interaction, which is for the most part achieved through dialogue [56]. Essential in this context, is the likability of non-playable characters from the player's perspective, especially when social interactions with them are a vital element of the gameplay. Pivotal factors are the character design, their personality [53] and visual design, their role(s) in the game, dialogues and the character's behavior in them, as well as general believability [56]. These aesthetic and behavioral aspects influence how players engage and interact with such characters [47]. A player's perception of the non-playable character and the social connection with them are similar in nature to those with people. As a consequence, effects occurring in interactions with others might also apply, such as experiencing nervousness or social awkwardness when interacting with game characters, while social behavior may differ [56]. The level of engagement that is achieved with the characters in such interactions shapes the overall gameplay experience [47]. Interacting with non-playable characters is also linked to improved player experience since it contributes to the satisfaction of the need for relatedness. Delivery of, for example, a complement via a non-playable character can help make the player feel important [56]. This further has an effect on how players feel about the game as a whole [53].

[3] as a role they determine (in part) and act out

2.2.7 Customization

Customization is a crucial aspect of video games. Being present in practically any game to a greater or lesser degree, this feature gives each player options for tailoring the gameplay experience to their personal likings and preferences. For this reason, customization is linked to positive psychological effects, as it has been shown to improve enjoyment, engagement as well as motivation for play. The possibility for customization further provides the player with a sense of agency, autonomy, and control through choice [47].

In video games, customizing one's avatar helps players identify more strongly with their characters. Customization can be performed in terms of aesthetics or functionality. The former involves making changes to the character's appearance, meaning physical attributes as well as clothing. In this context hair, including both hairstyle and hair color, has been rated as the most important attribute to customize. Further, aesthetic customization encompasses the options of different 'skins' [66] such as the alternate outfits in the game Super Smash Bros. Ultimate [67] where this feature primarily serves the purpose of distinguishing players using the same character. The unlockable outfits in Mario Odyssey [68], for instance, would also rather fall into the category of skins. Regarding the customization of functionality, the attributes in this case include a character's skills, abilities, and class. This type of customization is most prominently featured in Role-playing Games [47]. Another functional characteristic available for customizing in some games, such as the Sims series [69], is personality. Overall, avatar customization serves as a useful mechanism for building the connection between player and character [47, 66].

Besides the player character, some games also offer possibilities for customizing other aspects in the game, such as the environment. This includes, among others, options for making changes to one's in-game house, town, or island in terms of layout and decoration (e.g. furniture, wallpaper, etc.) [53]. Games offering this kind of aesthetic customization, such as the Sims [69] or Animal Crossing series [70], become a space for creative outlet and self-expression [24]. Customization is, in part, also connected to the availability of choices. In this way, the collecting and unlocking of additional options and items become a part of customization [53]. An example for a functional customization of this type can be found in Mario Kart 8 [71]. Here, the player is able to build a personalized kart from the available options that can be unlocked through playing the game.

When it comes to the customization of interface aspects, attributes like colors, fonts, etc. are significant. This also connects to video game accessibility [30], which will be discussed further in Section 2.3.4.

2.2.8 Emotions

As established at the beginning of this subchapter on game design and theory, video games are dynamic media that offer rich interaction possibilities to their players. In turn, this enables people to engage in emotionally meaningful experiences [41] via dynamic affective states induced by the game [40]. As is characteristic of works of art, games have

the capacity to influence players' emotional states [23], and due to their highly dynamic nature, video games can elicit a wide range of emotions [40]. This is further enhanced by the requirement for a higher level of perspective-taking and increased active involvement of the player. As a consequence, the game necessitates initiative, responsibility, and choice-making from those who play it [23]. Emotion cannot be separated from video games. The rich and continuous interaction between player and game lends itself to complex expressions of emotion as well as evokes responses in terms of cognition, behavior, and affect [41]. This is also associated with more intense character attachment, particularly in its relation to acting or feeling as the character, such as in the case of the "Sympathetic Alter Ego". In this way, emotions in games work to blur the lines between fictional character and self [48].
Video games that are regarded as enjoyable do not only trigger positive emotions in players but may also elicit negative emotions, such as fear, sadness, anger, or frustration[40]. Players often voluntarily engage in experiences that might connect to such negative emotional experiences. This purposeful engagement also comes with anticipation, meaning that players are open to their emotional state being influenced by the gameplay [41].

Human emotions are a quite complex phenomenon [40]. Video games not only influence a player's mood and emotional state during gameplay but also have an effect on them both before and after play [51]. Since emotions are regarded as a key element of the gameplay it is vital to develop an appropriate understanding of players' emotions. This includes strategies for how emotions can be detected, modeled, and expressed in the game. Additionally, it must be considered how players can be enabled to express their emotions so that they become detectable for the game logic and subsequently define the possible ways for the game to react to them [41]. Individual differences should be considered in this context as well, since personality and emotional disposition differ from person to person. In video games, the traits and characteristics of a player affect their preferences in interactions and how they experience and interpret emotion [40]. This further connects to different types of players and their specific motivations for playing a certain game, such as seeking challenge or competition. As a consequence, a person's reasons for play also have an impact on their enjoyment and emotional experiences [41].

The 'affective loop' describes the process of the game continuously eliciting, detecting, and reacting to a player's emotions. The key phases of the affective loop start with the player interacting with the game and reacting to the presented scenarios or content. The response and expression of emotions by the player are gathered through their in-game actions. This is followed by the detection, evaluation, and modeling of the emotions the player communicates via their 'responses', i.e. actions, in accordance with the current gameplay context and game state. As a third step, the game responds by dynamically adapting its adjustable elements to the player's current emotional state. These modifications take place via game content, including its newly generation, and via the emotions expressed by and through non-playable characters. This affects both the body and mind of the player, prompting them to respond and thus deliver an expression of emotion so that the loop continues [41].

The insights into a player's psychology gained through play, can help to inform different aspects in the game, for example, how something is introduced, presented, or what is included in a scene. For some, the inquiry into their emotions and other personal aspects might be seen as uncomfortable or even intrusive [56]. Generally speaking, personalized experiences will be perceived differently based on the individual player's playing style, their experience of playing games, as well as their personality [41]. One specific approach to the elicitation and inquiry into the player's mind is implemented via non-playable characters. The intent is on trying to gain information on various topics while ideally feeling less intrusive and, through its embeddedness in NPC dialogue, potentially more seamless. Responses might be influenced by the player's relationship to that NPC, manifesting as either reluctance to share or more voluntary and honest communication. This is further also connected to a sense of intimacy and intrusiveness experienced by the player [56].

In general, the interactions with in-game characters constitute a significant aspect of the emotional experience associated with play. It is through these interactions that players are able to establish and deepen bonds with NPCs as they empathize and learn more about these characters through dialogue over the course of the game [53]. An additional aspect regarding emotion in the context of game characters is the vulnerability presented by certain (types of) NPCs who try to establish a relationship with the player not knowing if it will work out. Their defining characteristics include liking and approaching the player by default as well as engaging in acts of kindness, such as giving 'random' gifts, even though there is no guarantee for a positive response from the player. In games, such as those of the Animal Crossing series [70], having a focus on relationships with NPCs, the expectation to engage in talks and tasks can work to elicit feelings of guilt in the player, which, in turn, incite them to help and react positively, thus following the game world's social norms [25].

Due to its connection to positive gameplay experiences, the elicitation of emotions in players is one of the main focuses of game design [41]. A goal of emotional game design is for the player to become more inclined to share and respond, therefore also facilitating (social) connection to non-playable characters. This is supported through mutual sharing so that the NPC reveals information about themself before asking for the player's (e.g. age), which works on the principle of behavior modeling. Building trust through empathetic responses is also related to satisfying the need for relatedness, and further has a positive effect on player experiences in terms of presence and (overall) enjoyment [56].

2.3 Neurodivergence and video game play

2.3.1 Neurodivergent play behavior

Video games are quite popular among neurodivergent people [72] as they are a pastime enjoyed by many around the world. Especially many autistic people are particularly interested in video games, as they have been shown to play more than others when

compared to both neurotypical players and those with other kinds of neurodivergence [24].

However, video games are often associated with negative or even harmful effects. A phenomenon that has been observed in this context is 'problematic gaming behavior', which suggests that video games likely are contributing to aggression. Due to their captivating nature, games can lead to excessive play taking away from more important activities, such as physical exercise or academic responsibilities [46]. Further, research has also linked such problematic game play with neurodivergent traits. For example, it has been shown that there is a connection between characteristics that are commonly associated with ADHD and video game aggression, suggesting that those with ADHD are more susceptible to experiencing frustration when playing games. This, in effect, may lead these players to feeling agitated and being more easily irritated post-game as well [72]. Autism, on the other hand, has been linked to gaming disorder [73] and compulsive video game play. This is further supported by [24] as several of the participants in their study associated video games with obsession, addiction, and neglecting other activities. As such, feeling obligated to play was mentioned as one of the reasons for engaging in video game play [24]. Neurodivergence, in this context, is thus regarded as vulnerability to potential negative effects of video game play. Relatedly, the prevalent image of the typical gamer is connected to stereotypical attributes of neurodivergence, such as awkwardness and social deficits, which works to further perpetuate this negative framing of neurodivergent traits in the context of video games [4].

The results of such studies linking neurodivergence with problematic gaming behavior should, however, be taken with a grain of salt since many of them only vaguely connect to neurodivergence. In several studies, such as that by [72], the results related to neurodivergence are based mostly on people who scored highly on self-assessment tests. The questionnaires for these kinds of assessments rely on diagnostic criteria, which are based on medical and deficit-oriented notions rather than on inner experiences and, further contain fairly vague formulations, which can leave quite some room for interpretation. Researchers also tend to rely on pathologizing definitions for understanding the neurodivergent conditions 'included' in their studies, for example, describing ADHD as a "behavioral disorder" with "attentional dysfunction" [74, p. 3] or defining autism by deficits in social interaction and restricted interests [75] (see 2.1.2 for why such descriptions are, in general, rather inaccurate). In addition, the language used to frame neurodivergence often includes terms such as "psychopathology" [74], or explanations stating that, for example, "autistic traits make an individual able or unable to function" (depending on the context) [2, p. 15]. Such statements contain inherent negative value judgments.
Moreover, it has also been suggested that the mentioned negative effects of video game play might actually (only) arise due to already existing poor psychological well-being [46]. This could likely explain why the connection between neurodivergent traits and problematic gaming behavior is made in the first place, seeing as neurodivergent people are (more) prone to developing mental health issues due to living in an unaccommodating

society (see 'social model' in Section 2.1.3).

At the same time, it has been suggested that "adults with ASD may respond to game elements in very similar ways to adults without ASD" [24, p. 126]. This would suggest that it might be possible to apply general principles of game design and insights from games research in the context of neurodivergent players. Opposed to the general gamer population's like for FPS games, however, autistic participants in the study by Mazurek et al. tended to not be fans of this genre. They were more likely to have a dislike for violence in games, instead showing a preference for games with "prominent fantasy elements" [24, p. 126].
Still, it needs to be considered that neurodivergent people make up a vulnerable population [14], therefore the potential susceptibility to negative consequences should not be taken lightly. At the same time, such a complex issue should also not be reduced to a simple 'A causes B' relationship where one single factor is made responsible for everything. Instead, this problem is more nuanced, since the context of neurodivergence must also be taken into consideration. In a more social understanding of neurodivergence, the so-called problematic behavior is rather seen as the result of trying to cope with living in a world that is not accepting or accommodating one's difference [24]. This also relates to how existing as someone of a minority group in a normative society is associated with difficulties and obstacles [10]. Therefore, generally speaking, neurodivergent people are not only faced with stigma and discrimination [9] but also the resulting social isolation and loneliness [76]. A consequence of this is, as briefly touched on before, negative effects on mental health [46] as, for instance, among autistic people, anxiety is a common struggle [24]. In such cases, playing video games can serve as a possible coping strategy for dealing with such distress [46, 24]. In this way, video games can have potential benefits, especially for neurodivergent players.

2.3.2 Reasons and benefits of play

There are many reasons why someone might want to play video games. Among the general gamer population, their value as a form of entertainment and a means for socializing are cited as the most significant reasons. When it comes to disabled players, they list additional motivational factors, as video games for them also mean feeling enabled and equal to others [77].

As previously discussed in Section 2.2.2, research has shown that video games support the well-being of their players, especially psychologically, in various ways. Through game play, people are enabled to engage in positive experiences and explore different emotions. In this way, video games contribute to satisfying the psychological need for autonomy and support positive functioning by providing a sense of accomplishment. This is particularly valuable when those needs are not adequately met in one's regular everyday life [46]. For neurodivergent people in particular, video games prove valuable in the context of social interaction, as they may facilitate connecting with others via games as a shared interest or through playing together as a shared activity. This way, video games help alleviate or overcome potential mutual communication problems [24, 78]. In the case

of autism, for example, interactions with others and finding those who share similar interests constitute two significant social challenges [28]. Gaming in its function as a shared activity facilitates social interaction, both online and in person, and as a result, supports finding friends and strengthening bonds as well as allowing autistic people to more easily engage with others [24].

Another benefit relating to the setting of playing video games together plays to the distinctive features of neurodivergent intersubjectivity and how shared meaning is established in an interaction [78]. Activities in general play a vital role in neurodivergent friendship, and thus, video games can be of great significance in neurodivergent lives, serving as a tool of support. This is especially relevant since social connections with those having the same or similar neurotype can help a neurodivergent individual find understanding and share knowledge as well as experiences. Interactions facilitated in this way further support identity formation, and contribute to gaining a sense of belonging [2]. Here, games provide a framework for establishing and building communities as well as habits of care that can extend beyond the context of the game [76]. As such, video games enable players to gain a feeling of connectedness and relatedness through interacting and deepening bonds with others [46].

A further reason for video game play among neurodivergent people relates to mental aspects. On the one hand, games can provide mental stimulation by keeping players' brains active and challenging them to think in different ways as they are faced with various in-game obstacles. In this way, games also work well as time fillers since they become an option for passing the time on otherwise boring days and can give the player a sense of being productive by offering something to do when feeling unproductive [24]. On the other hand, video games offer players an escape from reality and a way to relax [72]. Video games function as stress relief as they provide players with some distance and distraction from daily worries, concerns, and negative emotions. Thus for neurodivergent people, video game play constitutes one valuable way of mood management and calming oneself down [24]. For example, games can help to mute a busy mind, which is common for those with ADHD [72]. Likewise, video games can help autistic individuals with feelings of anxiety considering they are more prone to having them than the general population [24]. An additional reason for the popularity of video games among neurodivergent people is that certain game structures and mechanics can support some of their needs. As touched upon in the subchapter on neurodivergence, common traits include struggling with executive functioning and having a need for structure [20]. Games are perceived as generally quite valuable in this regard, as they are (more) predictable and controllable than, for example, real-life social activities, and further provide players with clear informational cues and instructions as well as regular rewards [24].

Above all else, video games are simply entertaining and fun to play. Particular contributing factors are the challenges and achievements offered by the game. Not only competition works well as motivation; getting in-game rewards, as well as video games enabling players to challenge themselves, in terms of skills or wits, or completing all available objectives in the game, equally serve as motivational factors [24]. In this way, playing

video games can contribute to increasing a person's self-esteem by making them feel competent and skilled. This is achieved through completing challenges, leveling up, making story progress, and allowing players to do things that would be difficult or tedious in real life [72]. Particularly in the case of neurodivergent players, video games can especially be quite appealing in regard to their individual strengths or specific traits and characteristics associated with their neurodivergence. Consequently, this constitutes an additional motivation for playing games in this population. For example, for those with a strength in visual processing, video games provide visually stimulating environments and, in this way, essentially reward the player for putting their strength to good use [24]. Another important aspect in this context are the storylines many video games offer. This feature is regarded as quite positive and beneficial for players, since they help enhance the effectiveness of games as an escape by allowing the 'immersion' of oneself in the story [72]. Relatedly, playing through a game's story has also been said to provide a similar experience to that of reading a book. Due to the medium's interactivity, games lend themselves well to telling in-depth stories, of fantasy and adventure, while possibly touching on societal issues as well [24]. In this context, an emphasis is placed on the concepts of fantasy and immersion as they further relate to games facilitating role-playing. In exploring different worlds, players assume the role of the hero, thus for the duration of play they are able to perceive themselves as being someone important, noticed, and liked within the game world. For many (neurodivergent) players, this might be in stark contrast to their experience of feeling like 'a nobody' in their real life. Another facet, relevant to the element of fantasy, is games offering the possibility of doing things that are difficult or impossible for the player in the real world [24]. Therefore, when it comes to players with invisible disabilities, video games prove to be rather useful. Through providing access to desperately desired experiences of ordinary life at a time when those might otherwise be inaccessible, video games can give these players a sense of normalcy and, as such, function as distraction [25]. In the case of neurodivergent people, it can, for example, be difficult and exhausting to engage in social interactions or everyday activities such as running errands. Here, video games offer the opportunity to experience the normalcy most neurotypical people likely take for granted by allowing neurodivergent individuals to take part in everyday life in a way that is more accessible. As such, video games become a source of fulfillment and satisfaction, supporting better well-being and mental health of players [46].
Moreover, the stigma, stereotypes, and prejudice relating to disability, that exist in society and lead disabled people to being treated differently, are (largely) not present in the virtual context of a video game. This is because games typically do not know about the player's disability status. Consequently, the player can have the freedom to interact with(in) the fictional world without feeling like others act overly cautious and reserved around them or hold them to different expectations specific to being disabled [25].

Another appeal and benefit of video games connects to enabling individuals to live out their creativity, which helps satisfy the need for autonomy. In many games, the player assumes the role of the creator whose scope of activities can include both building things, such as in Minecraft [55], and creating 'stories', as is the case in the Sims [69]. Not only

is this kind of customization perceived as enjoyable, but it also allows players to exercise their imagination while being supported by the structures and frameworks provided by the game [24]. Graphics play a vital role here and can further enhance the experience through their aesthetic design, appealing visuals and scenery as well as (other) artistic elements [24].

Overall, it should be noted that video games are neither inherently good nor bad. Rather, their effects or consequences depend on the context as well as on how each individual player uses them. Thus, there is a need to raise players' awareness about healthy versus unhealthy or pathological gaming behavior [46]. Moreover, it is relevant to discuss how one can play video games while receiving the aforementioned benefits without experiencing potential negative effects or addiction [24, 46].

2.3.3 Games and technology for neurodivergent users

When it comes to the topic of neurodivergence, games specifically targeted at neurodivergent people have been a main focus of discussions surrounding video game use in this population. In this context, it is essential to look at how these games and their developers both understand and frame neurodivergence, along with the influence this has on their approach to design choices, determining specifications, as well as development and evaluation strategies. An additional matter of interest is examining how these types of games contribute to the fulfillment of players' basic psychological needs through facilitating experiences of autonomy, relatedness, and competence [1].

The discussion around disability and video games tends to focus on their potential usefulness in addressing impairments as well as their application and utility for rehabilitation or effecting behavioral change [3]. In this field of research, neurodivergence is still often understood as a deficit. Researchers end up pathologizing neurodivergent traits and characteristics which are then sought to be 'cured' by video games as intervention [1]. Games in the context of disability mostly being designed as a form of medical intervention or treatment reinforces the idea that 'disability = medical (diagnosis)', reflecting a medical model understanding [30]. Although researchers generally aim to provide their readers with an 'understanding of their users' when explaining their project, often the provided descriptions are mainly focused on the condition itself, framing individuals as a list of symptoms, or rather deficits. This results in researchers and designers attempting to 'fix' neurodivergent individuals without trying to understand them as people (first) [21]. In describing the features of neurodivergence framed exclusively as negative, it will seem only logical to stress the importance of, as well as the desire to offer a (technical) solution for addressing the deficits and the social problems associated with being neurodivergent [2]. For example, autism is commonly associated with a lack of social skills; however, as discussed previously in Section 2.1.3, this might not be entirely accurate, and can rather be attributed to the double empathy problem [19]. The study by [28] demonstrates this by the researchers voicing their surprise at their autistic participants being able to interact well within the study and group setting. As such, it hints at certain preconceptions on the researchers' part, rather than an actual deficit (of the participants).

For the most part, the games developed in the context of neurodivergence are targeted toward children, while little attention is given to neurodivergent adults [1]. Frequently, the focus is placed on correcting and teaching neurotypical behavior with the primary aim of making the neurodivergent person less of a nuisance to the people around them [21]. This (over)reliance on medical model understandings limits the purpose and use of games to therapy or intervention for getting rid of (so-called) 'undesirable' behaviors [1]. Generally speaking, when it comes to (the study of) technology for neurodivergent populations, a tendency towards "solutionism" becomes apparent. This means that rather than focusing on engaging with the nuances, facts are often misconstrued, leading to the invention of a problem and an emphasis on the need to solve it via technological means [2]. Research based on such thinking as well as the technologies and artifacts it produces are inherently "privileging perspectives that uphold neurotypical norms" [14, p. 13].
Such thinking is further reinforced by the fact that often neurodivergent people are not included in the development process or consulted regarding needs [1]. Game, technology, and interaction design research around the topic of neurodivergence mostly does not include members of the target group and their expertise, especially in the design phase. Instead, parents, therapists, teachers, or medical 'experts' are the ones being consulted [21], thus, the design will only be informed by their input [14]. Hence, the wants and needs of neurodivergent people are mostly not considered [21] and their interests and desires are not valued [1]. The prevalence of their perspectives, experiences, and wishes being ignored highlights that neurodivergent people are not, in fact, (considered to be) the population of interest in this area of research [14]. Although members of the target group are rarely ever included in the design process, they are, in some cases, involved in the evaluation. However, even then the measures of success regarding effectiveness are largely defined by the researchers, rather than by what would be important to the user [1]. The real experts in this context though are the people who are neurodivergent, who have lived experience and therefore should be acknowledged as primary stakeholders [14]. The very idea of pursuing the reduction of neurodivergent 'symptoms' as the goal, implicitly suggests that neurodivergence is to be pathologized, and further, that success is contingent on the individual becoming more neurotypical and less neurodivergent [10].

A majority of the games developed for neurodivergent people can be classified as serious games due to them centering on specific purposes, such as 'correcting' deficits. As serious games, their intended context of use falls predominantly within medical or educational settings, and as a result, this sets the scope of permissible play for neurodivergent people [1]. Further, since video games are treated as training or intervention with the aim of pursuing certain therapeutic goals, common game design elements and principles for engagement tend to receive little consideration if any at all [2]. The focus is rather on diagnosis or training (neurotypical) social skills and behavior. However, prioritizing therapeutic objectives over fun leads to these games often being unenjoyable for the neurodivergent target audience. In general, there is a lack of research regarding how to make fun and enjoyable games for neurodivergent players [1]. Video games, in this context, are often conceptualized as universal miracle solutions to (the problems of) neurodivergence. When such games inevitably fail to live up to such high expectations, outcomes are

bound to disappoint. At the same time, such framing inherently communicates to the player that they are in need of fixing [2]. This way, technology contributes to furthering internalized oppression by telling the neurodivergent individual that how they move and feel comfortable in their body or how they focus and interact, etc. is wrong and inappropriate, or "make[s] other people sad" [14, p. 11].

In order to move away from games that teach 'correct' behavior and tell players that the way they are naturally is bad, increased importance must be placed on drawing on lived experience when designing games for neurodivergent populations [1]. Thus, there is an interest in advocating for a change in thinking from fixing to embracing and supporting neurodivergent people to help them thrive [2]. Here, such video games also lend themselves to serving two additional purposes. On the one hand, they support players' socio-emotional development by providing a safe environment for exploring social situations. For example, in the game designed by Libbi, players are faced with difficult scenarios and supported in their development of strategies for coping with emotions and expectations in real-life interactions. Through exploring different neurotypical social behavior players can expand their options for interacting in social situations. Here, the author stresses that this behavior is not presented as the correct way of socializing but rather shows players what they might encounter outside the context of the game [2].

Furthermore, instead of an exclusive focus on (so-called) deficits and shortcomings, it is much more beneficial to foster not only adaptive skills but also individual strength. Only ever highlighting the (perceived) negatives of a person is hardly conducive to self-esteem, successful learning, and developing an overall sense of self-worth. For this reason, it is essential to treat neurodivergent people with respect and acceptance. Valuing and emphasizing strengths helps these individuals thrive and find ways to apply their strengths and skills [8]. At the same time, efforts should also be focused on combating the negative messaging of needing to be changed, which so common in such games. This can be achieved by stressing that there is nothing wrong with the player, and that others might simply find it difficult to understand them and their way of being [2].
When designed from an accepting and affirming understanding of neurodivergent people, games can take on a valuable meaning for members of the target audience. Moreover, considering that games are often viewed as a suitable medium for raising awareness of certain conditions or (mental health) struggles, such games might also be valuable in shaping outside understanding. Simultaneously, the idea of video games as intervention in the context of neurodivergence does not have to be discarded entirely; however, efforts should be focused on mental health struggles, such as depression or anxiety, rather than on neurodivergent traits. This is because of the "broad appeal, accessibility, and ability to keep participants engaged" [43, "Games and Mental Health", para. 2] video games are, on the whole, said to have. Additionally, certain design features, for example, in-game rewards or social connection, further act as motivators for continued play, which in this case are to be understood in a sense of sticking to a therapy plan or approach [43].

From a neurodiversity approach perspective, it is legitimate (as already discussed in Section 2.1.3) to aim one's efforts at designing solutions or approaches that target change

at the individual level, however, only under the condition that these neither make an attempt at normalization nor treat it as a goal. Teaching skills to neurodivergent people does not need to involve labeling and treating them as deficient [8]. For example, taking another look at the game by Libbi, this kind of thinking and approach to game design can be observed in its focus on supporting self-advocacy and fostering players' confidence in this area. As such, within the game, emphasis is placed on player self-development along four different skills: emotion, perspective, health, and self-advocacy. In addition, players are encouraged to learn through their failures [2]. Importantly, autistic girls themselves were actively involved in shaping the design and content of the final game (prototype). Following an inclusive design approach, the author conducted workshops where participants could share their experiences and express what they wanted and needed in such a game [2]. A positive effect of this co-designing approach is the empowerment of a traditionally marginalized group, allowing them to help design a tool that could be valuable for other members of their community. This further also contributes to "reinforcing the player's self-acceptance and sense of identity" [2, p. 42].

2.3.4 Video games and accessibility

Video games are quite demanding in several ways, such as physically requiring certain input devices, as well as mastery of the specific, sometimes complex, control schemes going along with them. As a result, games make implicit assumptions about the player in terms of the motor, sensory, and mental skills that are required for interacting with the game. This can become an issue for players who are not able-bodied and neurotypical [13].

Game accessibility can be defined as allowing any person to play the game by enabling them to interact with and overcome its challenges [77]. A general problem encountered in this context is that no unified common set of guidelines for accessibility exists. Approaches to accessibility vary from game to game and depending on their exact purpose, which results in the development of more or less specific guidelines, that often focus on one particular group of disabled people [77]. Specifically in the case of accessibility for neurodivergent players, the available resources are limited [34]. Moreover, neurodivergence has thus far not been sufficiently considered when it comes to the implementation of existing frameworks and guidelines [1].
According to [77], the most important factor in regard to designing accessibility in video games is customization. Here, the focus should be on player experience and developing games made for players with varying abilities. A useful principle in this context is 'universal design', which has the goal of enabling all players to enjoy the 'same', or in other words equivalent, game experience through the implementation of options for adjustments [13]. The challenge that presents itself is the balancing of giving players options to customize and adapt the gameplay experience to their individual playing needs and preferences, while preserving the essence of the game [77].

The first type of accessibility features pertains to access and enabling people to interact with the game in the first place. This includes aspects of input and output (customizing

which device is used), controls (changing button mappings), and presentation (customizing how information is communicated) [77]. For example, when it comes to displaying text in-game, it is imperative to choose a font size that is readable even over distance and additionally giving options to adjust text size or even to scale UI elements in general, meaning both text and icons. Another aspect here is font choice and opting, instead of a fancy font, that might fit better with the game's aesthetic, for a more plain and simple font, or at the very least providing the option to change. In this context, giving the player enough time to read by pausing the game itself when reading and only advancing upon button press can also be helpful [30]. Additionally, when designing a game's visual presentation, it is important to particularly consider color-blind users and how aspects such as graphics and text color might look for them [77]. Here, color blindness can be addressed by offering different color schemes or palette options and showing players a preview of what it will look like, as well as allowing customization of colors for specific uses, such as the cursor [30]. Furthermore, facilitating the interaction between player and game involves providing additional ways for communicating feedback and information during gameplay by using more than one mode of representation. This might, for instance, include subtitles, arrows indicating source location of a sound, highlighting important elements [30], controller vibrations, visual damage indicators, as well as the color, sound, haptics assigned to an interactable object [77]. Another important point is refraining from only using color to communicate information, such as for solving a puzzle [30] When it comes to the user interface factors to be considered might involve format, content (i.e. which information is included), font, and the size of the UI elements [77]. Both in terms of usability and available personalization options, interface design is regarded as important by players. Further, regarding the context of neurodivergence, a well-designed and appealing visual presentation has also been shown to help improve user experience for this player population [28] Above all, the most important principle for accessible game design is not prioritizing an appealing visual design over legibility and general usability. In providing players with various customization options, a good practice is to turn (certain) accessibility settings on by default and/or present the menu of (accessibility) options at the start of the game [30].

Another aspect of accessibility concerns challenge. On the one hand, this refers to game mechanics and modifying the game to make it enjoyable, and possibly beatable, for any player [77]. Examples of potentially helpful adjustments include more lenient time limits or completion thresholds, infinite health, and additional items [30]. In this way, accessibility in terms of challenge can address both aspects of performance, like reduced difficulty or game speed, and progress, like auto-saving or hints. With regard to progress, additional methods of support include the option of skipping puzzles and assist modes [77], such as the one of Super Mario Odyssey [68], which offers navigation assistance along story objectives. Further significant are games providing a tutorial, as well as a space for practicing the controls; and automatic actions, such as dynamic camera orientation [77] or the auto-accelerate feature in Mario Kart 8 [71].
On the other hand, challenge can also refer to moderation, or in other words, "adjusting the emotional challenge of the game" [p. 8], and pertains, for instance, to the use of

language, options for interactions with other players, and toning down sensitive content [77]. When it comes to neurodivergent players, it has been shown that they tend to dislike when there is too much violence or overly intense types of it, sexual content, and objectification of, mostly female, characters in video games. Some also reported their negative experiences and frustrating encounters with other players and their actions, including bad language and cyber-bullying [24].

[13] draw a distinction between implementing additional options for accessibility and developing a game from a disability-informed understanding and framework so that accessibility becomes an integral part of not only the design process, but the game (logic) itself. When designing, it is crucial to consider and address the needs of diverse users so that games, and technology in general, become more inclusive and accessible for those who are disabled or, specifically in the context of this thesis, neurodivergent [34]. The overall goal of game design should be to "foster competence and mastery, while minimizing frustration" [24, p. 128]. It has, however, been noted in the context of designing accessibility that neurodivergent people as a group are highly diverse regarding their preferences and needs for their sensory environment (in terms of colors, sounds, information presentation, etc.) such that it becomes unfeasible to provide generalized recommendations or statements [21].
Still, designing and collaborating with disabled people, as consultants and/or co-creators, can provide valuable input as well as insight that could improve the experience for all players. This is particularly valuable for identifying accessibility challenges and deriving solutions from actual lived experience [13]. Moreover, direct involvement of disabled players in the assessment of a game's accessibility is pivotal, since a player's individual needs and preferences are the determining factors when assessing the adequacy of provided accessibility options [77]. Considerations that have come up in the context of neurodivergence and game design largely revolve around players' sensory sensitivities and proneness to overwhelm in this respect. As such, neurodivergent players can be more likely to experience physical discomfort or pain, such as headaches or their eyes hurting, from video game play. Furthermore, they seem to rather avoid games with first-person perspective or motion controls, in part due to reasons connected to neurodivergent players' sensory processing [24].

Overall, it is also a good idea to place the focus on outcome, i.e., a more enjoyable experience for everyone [77], since this can make games more accessible for any player regardless of disability status [13]. Although constituting both a social and a legal issue when it comes to disabled players, greater accessibility benefits everyone and can potentially even contribute to a more inclusive society [77]. In addition, it has been said that access to video game playing is something that is highly important for "our identity, psyche, and sense of self" [13, p. 194].

2.3.5 Normativity in video games

In the discussion about what video games can be for neurodivergent people, it is crucial to look critically at how normalcy and social constructs are both created and perpetuated

within video games, as well as (broader) gaming culture. Further, their attitudes towards disability and accessibility must also be examined [13]. Normativity in games can take many forms, most prominently in the identity of the main character. Typically, the protagonist will be white, male, able-bodied, and compliant with heteronormative ideals. In contrast, there has been a general lack of (good) representation for women, people of color, and other minorities. Often, their depiction in games contributes to perpetuating stereotypes, biases, and stigma against those marginalized groups. The discriminatory beliefs and preconceived notions embedded in video games this way may also lead to bigotry and toxicity manifesting outside the context of the game itself [42].

Video games, in general, are prone to both consciously and unconsciously relying on dominant, usually negative, stereotypes. As a result, they are responsible not only for reinforcing existing norms, but also for creating new ones. For example, the common 'definition' of a hero includes the attributes of male, muscular, and, commonly, having exaggerated body proportions. The frequent depiction of such (unrealistic) male body ideals undeniably has the potential of setting a new standard for what a 'normal' body is 'supposed to look like' [59]. On the other hand, there are also only a few predetermined ways, in which women generally appear in games. Female characters are very often used simply as 'props' for the story. Frequently, they play the role of the victim [59], and many games resort to the objectification of their female characters, seeing as they are often designed to be primarily appealing to the male gaze. This manifests itself in them wearing revealing clothes, being highly sexualized and functioning as objects of fantasies, as well as a game's marketing strategies [42]. Since the 'hypermasculine' male and the 'blatantly objectified' female are still mostly the norm in video games, the depiction of diverse experiences, particularly relevant for this thesis those of disabled people, becomes difficult. Since game developers can often only imagine a disabled person in certain stereotyped roles, they are thus merely (re)producing a very limited set of possible representations [59].

The design of characters in video games is socioculturally shaped, meaning their creation will always be based on a mental framework that determines the understanding and interpretation of who or what a person of that specific group is. Considering that a majority of games are created from male-dominated narratives and perspectives, owing to the fact that the game development industry is predominately made up of white, male, cis, straight, able-bodied and neurotypical people, it is not wonder that video games in the whole perpetuate both Western ideas and ideals [42]. The societal norms and expectations embedded in games this way can often be harmful (directly or indirectly) for marginalized people, especially when it comes to self-representation [25]. In terms of norms relating to identity, in many video games players are only able to play as characters with light skin [76], including several instances of game developers avoiding specific representation in favor of racial ambiguity [59]. Another facet of normativity in video games relates to gender and the freedom to express oneself. In many games that involve the creation of a player avatar, the player has to pick from two possible genders, male or female. Players are then further expected to follow the gender roles associated

with the option they picked [76]. Moreover, gender non-conformity expressed through, for example, one's choice of clothes is sometimes even pointed out as weird or inappropriate by the game and its non-player characters [79, 25].

However, games also have the potential to show alternative histories or narratives. In critiquing and challenging the dominant discourse as well as the (forms of) discrimination embedded in it, the representations of identity and power structures in video games can be revealed. Moreover, it becomes necessary to reflect on how normative ideas can be reinforced or countered in video games and the representations in them. Players of marginalized identities continually push for increasingly accurate representation of their identities and lived experience, with the goal of making video games and games culture more "accessible, diverse, and inclusive, reflecting the image of gamers and the world they live in" [42, p. 735]. At the same time, it should be mentioned that there can also be positives to the norms and social rules established within a game's universe. A phenomenon appearing in this context can be described as "paradoxical enjoyment", which a player derives from the pressures to conform to the expected norms. Games with an emphasis on social aspects, for instance, provide players with an experience that feels similar to 'hanging out' with friends in the real world and, as such, present social and societal norms that in-game interactions adhere to. This is particularly valuable for those who might not have access to or cannot (easily) participate in such activities in their real life [25].

2.3.6 Representation of neurodivergence and disability

So far, the research about the representation of disability in video games has been rather limited. Still, it is showing that disabled characters are significantly under-represented. Existing research on the topic of dominant portrayals in video games mostly focuses on gender, while some work also discusses race and ethnicity. It has been argued that parallels can be identified between games' depictions of race or gender and those of disability, regarding the ways in which they are represented and handled by developers [59]. It should be acknowledged at this point, however, that the representation of disability and those of other marginalized identities are separate issues as they face different discrimination and stereotypes. Further, being aware of historical and present-day differences, it would be inappropriate to make direct comparisons. At the same time, one should at least be cognizant of how other forms of marginalization are depicted because of intersectionality, meaning how different identities influence each other and therefore affect the struggle for more accurate portrayals. In general, it is most sensible to be very particular when addressing sensitive topics and issues [76]. Nonetheless, it can be useful to look at the portrayal of (other) marginalized groups to understand which means or aspects of the game and its elements are significant in portraying minority identities in video games. In understanding and discussing the representation of gender, race, or class in video games, it is vital to consider the identity markers that define a character's portrayal. These markers are multi-modal, meaning they are comprised of several different factors, such as image (e.g. character model), color (e.g. skin tone), or speech (e.g. accent), which as

a sum make up a character's identity. The social and cultural understanding of these identity markers informs their representation in games [42].

Common tropes and depictions of disability

As touched on previously, research revolving around video games and disability primarily focuses on their use as medical interventions. Yet, even games about disability still often take a medical approach to disability [13]. Video games, in general, are mostly focused on telling compelling and captivating stories rather than on (accurately) representing the diversity of humankind. In games, the identity of a character with a marginalized identity is frequently used to set the narrative and drive the story. For example, if the character is a person of color, the story might be driven by racism. This can also be seen in video games' use of oftentimes exaggerated and dramatized portrayals of disability. In their very few depictions, disabled characters are often central to the plot and integral to moving it forward [59]. Mitchell and Snyder have used the term "narrative prosthesis" to describe how disability commonly serves as "a crutch upon which literary narratives lean for their representational power, disruptive potentiality, and analytical insight" [80, p. 49]. In other words, the disabled person is essentially reduced to a 'plot device', which can come across as both offensive and forced [59].

A phenomenon frequently encountered in the context of media portrayals is commodification, which refers to certain identities being perceived and presented as the 'fascinating other'. Often such characterizations are unintentional, as they are influenced by the dominant cultural understanding of disability as abnormal and as "a subject of corporeal fascination" [p. 189], rather than just another way of human experiencing [13]. Many games exist where disabled characters are depicted as 'enhanced'. This is typically achieved by the character using specific technological equipment or having special powers and abilities to compensate for their 'impairment' and even "overcome their disability" [59, p. 7]. Such enhancements are crucial for disabled characters to allow their (continued) existence and participation within the game's universe. Moreover, they make it possible for these characters to be framed as 'productive', valuable, and useful despite or rather because of their disability. Portrayals of this kind and their prevalence help to "perpetuate[] an unrealistic, non-real world view" [59, p. 19]. Thus, when it comes to representations of disability, there is a fine line between visibility and commodifying or glorifying. [13].

Awareness, empathy and games for neurotypicals

Although video games are generally understood as entertainment, they also serve as a medium for addressing more serious topics, such as crises, war, or mental health. In this sense, video games can serve as valuable tools for bringing awareness to marginalized identities, such as disability or neurodivergence [43]. The goal, in terms of raising awareness, is to inform players about disability and accessibility to foster an understanding of how these two aspects are relevant to and affect game culture as a whole. This aim of making people aware of the topic and the currently existing challenges for disabled

persons is often framed in the language of advocacy [13]. However, among particularly self-advocates focusing solely on awareness constitutes shallow advocacy and ideally advocacy should go beyond that. For example, in the case of autism, a common sentiment of advocates is that rather than focusing on 'awareness' the emphasis should be placed on advocating for 'acceptance', since merely being aware that a certain difference exists does not solve the connected challenges or obstacles [81].

The inclusion of sensitive topics, such as disability or neurodivergence, is often connected to issues regarding the acceptability and appropriateness of discussing them within the context of a video game. The issue raised here is the potential of trivializing and stigmatizing the subject matter through creating problematic and stereotyped depictions [43]. Still, it should be mentioned that even more shallow advocacy, and by extension somewhat problematic representations, can help to keep the discussion on the need for increased representation and accessibility in gaming going [13].

Common depictions of neurodivergence

When it comes to the depiction of neurodivergence, the dominant understanding of neurodivergent people regards them as nothing more than a set of symptoms [14]. In the context of media representations and, in particular, games that aim to simulate neurodivergence, the neurodivergent individual is predominantly portrayed as weird, quirky, unpredictable, and a walking list of diagnostic criteria [21]. This is especially the case with mental illness, as video games often present and perpetuate stigmatizing ideas about mental health struggles or conditions and the people who are affected. This can be indicative of a lack of understanding or care by those who create these narratives. At the same time, there has been a growing fascination with mental illness and disorders within society [43]. This can be seen, for instance, in how popular documentaries or movies have led many people to become obsessed or infatuated with real-life serial killers [82]. Such trends make evident that media depictions equally have the power to desensitize to the seriousness of this topic, as they have to perpetuate harmful stereotypes. In any case, this leads to an inaccurate and one-sided image of mental illness and neurodivergence more generally.

Games specifically designed on the topic of neurodivergence are predominantly targeted at neurotypical people for them to understand the experiences of neurodivergent individuals [13]. This approach to raising awareness is intended to make players empathize with those who are affected [23]. Currently, most games created with the purpose of eliciting empathy do not allow players to engage with neurodivergent experiences as being equal to their own. Instead, these games frame neurodivergent individuals as needing to be cared for by the neurotypical player [4]. As a consequence, the representation of neurodivergence in video games has not only been rather poor, but further leads players to feel pity for neurodivergent people [6]. In this context, it is useful to discuss the concepts of empathy and sympathy. Empathy, on the one hand, refers to sharing the feelings of another person due to being affected by their emotional state, and thus 'feeling with'. Sympathy, on the other hand, describes an individual's reaction to something, usually negative, happening

to another person. Through this notion of 'feeling for', a person might be inclined to help others feel better. However, this sentiment can easily turn into pity and result in 'painting' the other person as 'victim'. This way, the emphasis is placed on the observer perspective [23].

Certain design choices and technological affordances can support the emotional engagement by 'downkeying' the game from a ludic frame to a more serious tone that is more appropriate for a sensitive topic. Here, a focus is placed on supporting immersion. One way to achieve this is through a high level of detail in the way a game character expresses emotions, such as facial animations. Another possibility is using environmental changes and (directional) sound to simulate certain aspects of neurodivergent experience and perception, such as hallucinations [43] or sensory overload. The use of such techniques can be seen in simulation games for the purpose of bringing awareness to neurodivergent experiences. These types of games generally lead neurotypical players to feel pity and support their belief that neurotypicality (and able-bodiedness) is preferable. For example, the game 'Auti-Sim' aims to simulate hypersensitivity and sensory overload [3], which are common in autism [2]. The game uses fear to represent autistic experiences by triggering overwhelm and uneasiness in the player through intensifying static on the screen and a cacophony of sounds of children. This form of representation not only pathologizes disability, but also ignores social attitudes as disabling factors. As a result, these games reinforce ableist assumptions and increase the stigma against neurodivergent people [3]. Ultimately, these simulation games end up evoking sympathy and feelings of pity rather than eliciting empathy for neurodivergent people.
Empathy games, on the other hand, constitute one game genre that specifically includes emotional aspects. The interactivity that video games offer aids in strengthening the bond between player and character, and as a result, the perspectives of disabled people become more approachable. In empathy games, an emphasis is placed on delivering emotional experiences and "encourag[ing] the player to inhabit the emotional world of their character" [23, p. 1]. The themes being addressed often involve social and political issues, personal adversities, or medical conditions.

The role of video game representation

Video games have the capability to either promote or reduce biases that shape the common understanding of neurodivergence [13]. When analyzing such games it can be helpful to adopt a disability studies perspective for taking a look at which messages about disability are perpetuated by games and how this shapes societal attitudes and treatment of disabled individuals [3]. In relation to the discussion surrounding disability and accessibility in game culture, the dominant discourse influences how developers understand and implement disability, and, vice versa, how games represent disability influences discourse. One example is the perpetual focus on 'disability = wheelchair' which, in turn, suggests that using a wheelchair is the only way to be disabled and thus again, subsequent representations will fall back on this image [13].

As touched on previously, neurodivergent and particularly mentally ill characters are

often depicted as strange, aggressive, unpredictable, and/or violent. Further, notions like "insanity"[4] [43, p. 2] are sometimes used to explain a video game antagonist's motivations and justify their 'evil acts'. Representations of neurodivergent people following such harmful stereotypes, on the one hand, instill fear in and further the stigma held by the general public and, on the other hand, promote self-stigmatization which leads people who are struggling to not seek help [43]. Generally speaking, depictions of disability in video games are frequently characterized by negativity and hopelessness, leading to narratives and representations that merely attend to negative aspects. In addition, an overly pessimistic tone of the game and its main character has the potential to wrongfully convey the image that people with (invisible) disabilities are always playing the victim [23].

In this context, it is thus relevant to reflect on the "ideological and cultural implications of using games to manage and represent disability" [3, p. 25]. In other words, the focus should be placed on examining the meanings that are (implicitly) communicated through the depiction in relation to aspects of "identity, embodiment, and experience" [3, p. 25]. This also pertains to how these factors are addressed within the game and their potential impact on whether a character ultimately constitutes meaningful representation or another exaggerated stereotype. In order to avoid stereotypical and harmful representations of marginalized identities, it is further crucial to be deliberate in one's handling of the modes used to define a character and consider the (potential) impact of the inherent values communicated through them. This puts developers in a position that allows them to promote greater inclusivity and a more nuanced perspective on disability within game culture [42]. At the same time, video games serve as tools for allowing players to engage with and explore neurodivergent experiencing in a more approachable and lighthearted way. Here, a representation should do three things in order to facilitate this way of engaging and relating to neurodivergent experiences, the first of which is encouraging reflection. Further, the relationship between player and character should not be strictly hierarchical. This means that the dependence is going both directions. The player is responsible for the character's action, while the character holds information not (yet) available to the player. In addition, the engagement is mutual, or in other words based on cooperation and teamwork between player and character [4].

Video games can be useful for fostering empathy and reducing stigma, particularly for invisible disabilities. By showing the challenges of everyday life living with a disability, others can come to understand 'what it is like'. This extends to the thoughts, feelings, perspective, as well as the state of mind of people with (invisible) disabilities [23]. In this way, video games can help players understand the internal struggles of living with disability or mental illness, which has the potential to increase empathy and understanding in those who do not have any comparable experiences [43]. Beyond the narrative representation of one person's (internal) experience with disability, games must encourage players to also see the bigger picture. It should be communicated to players that the experiences shown

[4]This term is highly stigmatizing and derogatory (see e.g.: `https://therollingexplorer.com/ableist-language-to-avoid-and-acceptable-alternatives-insane-edition/` (accessed on 05.01.2025).

in-game are not just individual and isolated cases, but are embedded in a larger social context. A video game's story represents but one instance or snapshot of disability. Thus, it is necessary to draw attention to the social structures and everyday obstacles that lead to struggles, inequalities, and differences not being accommodated. Normativity and normative structures impact how disabled people (can) move through the world, which highlights the importance of factoring in the social context when trying to understand disability. For this reason, video games serve as a powerful tool for allowing players, especially those who are non-disabled, to realize the social component of disability that exists in conjunction with the bodily component [4].

The importance of representation

Video game representation matters greatly for disabled people, since identity can be understood as a socially mediated experience (see also Section 2.1.4). As touched on before, in the social context of media depictions, disabling stereotypes and the use of harmful tropes for the portrayal of disabled characters or individuals can frequently be encountered. The narrative representations that exist of disability define the available options for disabled players to imagine "their own subject position" [p. 182] and the extent to which they are enabled to perform their own narrative, or in other words, play as themselves [13]. "Representation provides evidence for what forms of existence are possible" [83, p. 4]. As such, disability media representations allow disabled people to negotiate their identities, however, at present, this is (for the most part) only possible in terms of harmful clichés, stereotypes, and tropes [30]. Thus, inaccurate portrayals impact how disabled people (get to) see and understand themselves. This is further influenced by accessibility to interact with media (e.g. games) that portray them [13]. In a study by Shell, which included both disabled and non-disabled individuals, participants overwhelmingly thought there was not enough representation of disabled characters in video games [59]. Specifically looking at depictions of neurodivergence, a significant lack of games that present a nuanced understanding of neurodivergent experiences has been noted. Conversely, video games are regarded to be a suitable medium for communicating embodied understandings of others' experiences, further hinting at their potential usefulness beyond the context of therapy or education [4].

The lack of good representation might also have an impact on how psychological needs are fulfilled by games. For example, relatedness (i.e., connecting with and relating to others) is important for intrinsic motivation [45]. However, it can become difficult for a person to fulfill this need if one's experiences are not accurately or meaningfully represented, or in other words, there are no game characters that one can relate to [76], potentially leading to diminished player experience. Similarly, this may also apply in terms of immersion and self-presence as they rely on the player's ability to get fully absorbed in the game, which is made difficult by the scarcity of genuinely relatable representation, (see also Section 2.2.5).
It should be pointed out that some change has been noticed regarding the depictions of disability, mostly by disabled players. In the data analyzed, Shell found that the disabled

characters appearing in video games are increasingly portrayed as the 'good guys' and specifically more often placed in the role of the protagonist. This opposes the stereotyped view of disabled characters as antagonists [59]. However, it is important to also be mindful when praising games for their inclusivity and portrayals where disability is not presented as evil or as defining the character. While they certainly indicate a step in the right direction and set a positive example, being overly optimistic can reduce the sense of needing to further address or improve representations of marginalized identities in video games. Carried to extremes, this sentiment can take the form of "toxic optimism", which works to oversimplify the complexity of the issue and exaggerate accomplishments while diminishing currently still existing and potential future accessibility issues. This results in reduced scrutiny towards developers and game culture as a whole [13].

More accurate neurodivergent representation

There is a desire to create more realistic and respectful as well as positive representations of marginalized groups, such as neurodivergent people. In conveying embodied experiences of neurodivergence, video games work to promote empathy and understanding [43]. At the same time, they also create relatable representations for neurodivergent people [4]. Generally speaking, it seems that disabled people are more aware of disabled characters and also play as disabled characters much more frequently compared to non-disabled people. Disabled people's lived understanding of disability could also affect the identification of characters as disabled. Additionally, it might make them more 'sensitive' to noticing disability or paying attention to disability of a character when playing video games [59].

There is an interest in moving away from commodification and the use of neurodivergence as a narrative tool for framing and driving the story to alternative approaches that allow for presenting (actual) lived experience in an approachable way [4]. Disabled people are wanting themselves and their disabilities to be represented (accurately) in video games, similarly to how gender and ethnicity are also areas where people are pushing for more (accurate) depictions. Thus, it has been pointed out that more work on designing and developing games that allow disabled players to play disabled characters is needed [59]. Representations of disability that are designed to be faithful, accurate, respectful, and meaningful hold great significance for these players since they not only show understanding and relatable experiences, but often also address stigmatization and the associated struggles for disabled individuals. As a result, such depictions can be quite impactful as well as helpful for people struggling in their real life, especially with a lack of understanding from others. Here, video games can offer support in self-discovery, connecting with experiences, and being able to put one's own experience into words [43]. This can be especially helpful for alleviating the mental burden of needing to explain experiences, that are often difficult to describe, to others [23], (see also the discussion on neurodivergence as identity in Section 2.1.4). In this way, games may also serve as a way to 'get the message across' to people, such as family members, who do not understand. As such, video games have an educational value that might not only help to raise awareness

but also alleviate stigmas [43]. The significance of such representation further becomes apparent when viewed from a social model perspective which recognizes the meaning of games and their portrayals of disability for disabled people as offering possibilities of perceiving themselves and shaping their identity [30]. As such, games function as a space for identification [3].

One aspect of framing neurodivergence in video games concerns narrative and storytelling. Common narratives tend to follow one of two characterizations. As previously stated, portrayals of neurodivergence tend to focus on mental illness, equating it to horror, violence, and dangerous behavior. Consequently, neurodivergent characters are framed as the villain, however without providing an explanation (or exploration) of their situation [43]. Some games, on the other hand, adopt a more serious and educational tone, devoting the entire game to presenting a specific 'disorder' [3].
When it comes to the depiction of disability in video games, certain considerations are necessary. For example, developers should consider how the disabled character might be received, especially by non-disabled players [23]. This is because video games hold significant power regarding representation as well as perception of marginalized identities due to their popularity and wide appeal. For this reason, one must be aware of their influence on socio-cultural understandings and question what rhetorical purpose disability is being used for in the narrative [3]. This necessitates paying attention to the framing that is used for the character's portrayal and how it might connect to, for instance, understandings of the medical versus the social model of disability. In addition, it is crucial for developers to be consciously aware of the implications their design choices might have [23]. An important aspect to consider here are the modes of games. This means taking into account multiple modes of communication and how they interact with one another and further examining how meaning is presented and conveyed via games [42].

The question arising in this context is how meaningful narrative inclusion of neurodivergent characters can be achieved. According to Gibbons, this would involve leaving behind stereotyped depictions and shedding light on the social and political factors associated with disability. Following this reasoning, neurodivergence should not be made the game's main focus but should instead be embedded in a wider narrative [3]. Therefore, a useful approach for considerate and accurate portrayals is to combine faithful representation of traits with exploration of the character's personal background and embed them in a larger story and world. It is then possible to switch back and forth between a more ludic frame (focused on storytelling and gameplay) and a more serious frame (addressing symptoms and stigma). Such a strategy makes serious topics more approachable by keeping players engaged and creating "more serious, empathetic moments" [43, A Narrative of Psychosis, para. 5]. Regarding the more accurate depictions of neurodivergence, it is relevant to discuss the concept of attunement and its significance as an alternative way of effecting empathy in video games. In essence, attunement constitutes feeling with the game character and can show that neurodivergence is more complex than a mere list of 'symptoms' or traits. Attunement requires giving the player space for reflection and

fostering the relationship between player and game character. It is “an embodied way of sensing difference and attending to without predefining it” [4, p. 17]. Thus, the goal is not to understand, but to actively engage with and immerse oneself in the experiences of another [4].

An example of a game that aims to depict neurodivergence in a considerate and respectful way is Hellblade [84]. In its representation of psychosis, it strives to not be a game about neurodivergence, in this case, psychosis, but a game *with* neurodivergence, meaning it is simply part of the gameplay and story. There is no attempt at explaining (the intricacies of) psychosis. Instead, the idea is to incorporate the experiences of neurodivergent people as game mechanics. As a result, neurodivergence is depicted implicitly [43] so that “[f]eeling-of becomes feeling-with, and the matching of behavior is replaced by an attempt to match feelings” [4, p. 17]. As part of the efforts to represent psychosis in a respectful way an emphasis was placed on collaboration with experts, researchers, and in particular those affected by similar mental health struggles. Through these considerations within the development and design, the game overall has a rather serious tone [43] .

There equally is a need for more uplifting and encouraging content about neurodivergence [23]. For this reason, it is important to recognize the value in showing the positives of disability since in this way games can provide an alternative perspective, moving away from the sole interpretation as negative, undesirable, less than, or awful tragedy and instead presents a more optimistic attitude [2]. At the same, one must of course not ignore the very real struggles that do exist. Consequently, advocates encourage striving for video game representation of disability or neurodivergence that focuses on acceptance, neutrality, and inclusivity. The creation of such depictions can be facilitated through efforts to "write or program games from disability" [3, p. 32].

Besides a clear objective and a defined end goal, the actual goal of games, such as Hellblade [84], is for players to truly engage with the experiences of the neurodivergent character and their story [43]. Similarly, stories told in games like Celeste [65] can be understood as a journey to self-acceptance and coming to terms with one’s neurodivergence, instead of attempting to overcome or cure it [4]. When a character’s neurodivergence is embedded in a larger story or narrative, it becomes both more meaningful and powerful for those who share similar experiences. Such portrayals help neurodivergent people feel like they are truly being included, especially when depictions are often very negative, stereotyped and one-sided. Through this approach to representation, video games work to challenge assumptions about disability, both within the game world and in the player. “Progress toward the end goal of a game does not need to be progress toward overcoming or curing disability for a game to be meaningful for disabled people” [3, p. 35]. Emotional immersion can be supported by game mechanics intended to allow the player to experience emotional states similar to those of the character. For example, in Hellblade [84] players are threatened with losing all progress when failing too often in order to instill a sense of anxiety in players. The intention here is on simulating the feelings that are common with mental illness [43]. Similarly, in Celeste [65] helping the protagonist get through a panic attack by joining them in a breathing exercise also helps to calm the player down

themself [4]. Another example are the intense sound and visual presentation in Auti-Sim that aim to elicit overwhelm in players [3]. Although such strategies can be powerful for feeling with the character and better understanding neurodivergence or mental illness, depending on scope and execution this may be considered inappropriate [43]. At the same time, when creating games that aim to give an understanding by allowing players to explore experiences of disability it is also essential to communicate how disability to a significant degree results from and is reinforced through the structures of society. With such an approach the goal should not be on pity but to effect a shift in attitude and encourage action towards a more inclusive society [3].

It has become apparent throughout research that there is a need for games that better portray the heterogeneous and dynamic nature of neurodivergent experiences [4]. For more accurate representations of neurodivergence, one must take on a holistic view of neurodivergence and notice the connections commonalities shared across different neurodivergences. Moreover, increased emphasis should be placed on giving personality to neurodivergent characters, instead of (solely) focusing on symptoms and diagnostic criteria [14]. The importance is on acceptance as well as "letting neurodiversity exist as it is instead of (re)shaping it to be easily consumed in videogames" [p. 26] and putting neurodivergent experiences into a box [4]. To support the meaningful representation of marginalized groups or identities in general, video games must offer alternatives to the typical white, male, heteronormative, able-bodied protagonist. Treating diversity as a core design pillar enables the inclusion of a diverse cast of characters, each with their own aesthetic, backstory, abilities, personality, etc. in games. In such a setting, divergence would be taken for granted and seen almost as mundane, as in constituting merely one part of a whole person. Game characters embodying such a design philosophy lend themselves to positive representations of disability and contribute to combating stigma, prejudice, and exclusion. As a result, developers can create a universe where everyone feels welcome and empowered to realize their possibilities, in turn reflecting the diversity of players [42], (see also Section 2.3.5).

Involvement of neurodivergent people

An important cornerstone to designing accurate and considerate representation of marginalized identities in video games is the dedication to thorough exploration and engagement. In cases where a development team strives for authentic representations of neurodivergence, the depiction should be created based on research and in collaboration with experts as well as specialists, but in particular, also individuals diagnosed with the same neurodivergent or mental health condition and those sharing similar experiences to those of the character being created. [43]. The reason being that when developing and evaluating a game about disability, it is sensible to include the voices of (similarly) affected people to gain insights into what they want others to know or understand about their disability and lived experience. Thus, it is vital to consult with disabled people throughout the development process about what their "thoughts on the game in relation to their invisible disabilities and their own experiences" [p. 2] are, as well as which of the

scenarios presented in the game resonate with their own experience and how [23]. On the whole, a dedicated and respectful development process should emphasize conversations, prototyping, play testing, and generally consulting those the game is about for advice [43]. It is of vital importance to both understand and include perspectives from the marginalized groups, in the context of this thesis, neurodivergent people, themselves in research regarding them [24]. Even if that largely is not the case currently, as those affected are in general being excluded from such game design processes [43], (see also Section 2.3.3).

Increased efforts to foster the development of games from a disability perspective are needed [3]. In this regard, there is a focus on centering the stories and experiences existing at the margins of society. This means shifting the dominant perspective of looking from the outside to an insider perspective informed by lived experience, i.e. that of the individuals holding marginalized identities [10]. Particularly, it is the creation of new stories and ways of expressing them that allows "engag[ing] with identities and experiences that were previously marginalised in representations aimed at the neuro-majority" [6, p. 64]. In this way, video games and other forms of artistic expression made by disabled people aim to "challenge negative stereotypes of disability and to redefine the experience of disability as a potential source of empowerment and pride" [10, p. 20]. This line of thinking resonates with the sentiment 'nothing about us without us' that is commonly promoted in efforts of disability advocacy and can also been seen in the works of other marginalized researchers, see e.g. [85, 86]. Since narratives can be a powerful tool for creating counter-stories and rejecting normative ideas about neurodivergence, "storytelling is valued as a fundamental element of neurodivergent lived experience" [6, p. 65]. Neurodivergent-authored stories provide a break from the dominant and pathologizing stories told about neurodivergence by mainly neurotypical people. Through affirming, embracing and empowering neurodivergent experiences, such stories can help other neurodivergent individuals to better understand and accept themselves [6].

One possible approach is using autobiographical games as a medium for effectively sharing marginalized experiences. The power of this type of games lies in the developer drawing on their first-hand experience to represent what it is like to live with a certain disability, at least for them. This can have a positive impact on players' ability to empathize, in particular since they often refrain from employing a narrative of overcoming adversity, i.e. disability. Still, such games have the potential to frame disability in a negative light in an attempt to depict the 'harsh' reality of their situation [3]. For example, in a study by Vilches Gonzalez et al., most of the participants, who had invisible disabilities themselves, connected with the in-game scenarios and felt that the game was accurate to their personal lived experience. Further, in cases where their own disability and that of the in-game character were different, participants still felt like they could relate to the consequences that the character experiences due to their disability, such as stigma, and a lack of understanding and empathy [23].

Disabled individuals and the people in their lives need to see alternative narratives of disability, that go against the dominant narrative, so that disabled people can imagine

themselves and their lives outside the need to conform to certain expectations that center around neurotypical and able-bodied norms, without feeling forced to pursue such an arbitrary standard of normal. In this context, awareness of how games influence and shape cultural beliefs about disability in society is vital [3]. Lastly, it is important to note that while representation matters, it is only one part of the discussion on social justice in video games. Overall, the focus should be on fostering an understanding about how games are influenced by and, in turn, themselves influence their social, cultural, and material contexts [42].

CHAPTER 3

Study

As part of this thesis project, interviews were conducted with people who are neurodivergent. The goal of these interviews was to find similarities and shared experiences between different neurodivergent individuals, in particular concerning the positive aspects and joys of being neurodivergent, as well as their overall perspective on (their own) neurodivergence. A further aim was to gain insight into their preferences regarding video games and their play habits, as well as how traits of neurodivergence might connect to these. Overall, the interviews served the purpose of gathering pointers and inspiration to inform the design of a game about neurodivergent joy and create positive representation of neurodivergence.

3.1 Interview structure

The study was designed as semi-structured interviews consisting of two parts. The first part was designed for gathering information about the participant, specifically their attitude and experience of neurodivergence, and contained questions such as:

- How do you experience (your) neurodivergence, and how do you feel about being neurodivergent? Is it more positive, negative, or rather neutral?
- What makes you different (because of your neurodivergence) in a good or positive way? Do you think your neurodivergence gives you strengths/makes you good at particular things/makes something easy for you that is difficult for others? What is an example of that?
- How or in what ways does neurodivergence affect your everyday life? What kind of strategies or structures are necessary in your life? What brings you comfort?
- What brings you joy in your life? How do you express yourself, especially your joy?

- What are your stimming habits? What are your 'go-to' stims? What kinds of sensory experiences feel good to you?

The second part of the interview revolved about video games. Specifically, participants would be asked about their favorite games and genres, as well as about how they engage with and enjoy these games, in order to get an idea of neurodivergent people's preferences when it comes to (playing) video games. On the whole, this part was designed to be less structured and more open than the first part, as a way of simply getting people to talk about their favorite games and what they liked about them. At the same time, some questions and examples of game elements, mechanics, and activities were prepared, in case a participant was not quite sure what else to talk about. These included the aspects of levels design, items, interactions with NPCs, character customization, story, as well as graphics and visual style. Further, one vital question also regarded the activities they particularly enjoyed in a game, such as running and jumping, collecting items, or fighting.

As far as the mode of the interviews is concerned, participants had the choice to either talk online via video call or meet in person.

3.2 Participants

Initially, the participant requirements were set to look for individuals between the ages of 15 and 27, who are neurodivergent (Autism, ADHD, Dyslexia, etc.), and interested in video games. For this purpose, I created a flyer to be shared and contacted a few therapists I knew to ask them to put this flyer up in their offices, or possibly show it to clients that fit the description and they thought would be good candidates. The recruitment using these initial criteria proved to be rather difficult, as only two people had reached out to me. However, I also got the response from some of the therapists, that they did have someone who they thought would technically be an ideal candidate, except they did not fit within the age requirement.

As such, it appeared that the factor contributing most to the low number of people who responded to the call for participants was the upper age limit, thus I ended up dropping the age criterion all together. For this reason, there was also a large time gap between the first two interviews and the latter ones, which required refamiliarization with those two interviews when conducting the analysis.

The process with each participant involved arranging time and date, and sending them a consent form which informed them about the interview process, collection and handling of their data, as well as their right to withdraw at any point. Specifically, it lays out that the audio of the interview will be recorded and that the collected data will be anonymized so that it is not possible to identify them. Further, the consent form also explains that the recordings will only be used for analysis, as such they will not be published and deleted once the project is finished.

In the end, I managed to conduct six interviews with the participants listed in the following table. Entries in round brackets indicate that the person has not been formally diagnosed with that neurodivergent condition.

	Age	**ND**	**duration**	**mode**
Participant 1 (P1)	27	gifted (ADHD)	40 min	Zoom
Participant 2 (P2)	23	ASD[1] ADHD	30 min	Zoom
Participant 3 (P3)	27	ADD[2]	32 min	Discord
Participant 4 (P4)	41	ADHD panic disorder autistic-like traits	32 min	Zoom
Participant 5 (P5)	36	ASD[1]	55 min	Zoom
Participant 6 (P6)	28	(ASD[1])	29 min	in-person

[1] autism spectrum disorder
[2] outdated term for ADHD Inattentive Type

Regarding the diagnostic label listed for P3, I chose to stick to the term that they used to describe themself, despite it not being used officially any more today, because the participant specifically made it a point to clarify that they had ADD and not ADHD. This choice was also made since the term appears in several of P3's quotes used in the Results section.

The interviews were conducted online (exception: P6 in-person), via Zoom (exception: P3 via Discord) and mostly lasted around 30 minutes (40 minutes with P1, 55 minutes with P5). The interviews were conducted in German.

3.3 Analysis

The method used to analyze the interviews was a reflexive thematic analysis based on the theoretical framework by Braun and Clarke.

The reason for choosing this approach, are its characteristics of being inductive, experiential, and exploratory, and as such, it provides a flexible approach to analyzing qualitative data. In this regard, reflexive thematic analysis is very well compatible with the neurodiversity paradigm as well as neurodivergent-affirmative research practice, as these are equally about not trying to fit the data into predefined ideas.

An important point in the context of thematic analysis is that themes do not 'emerge' from the data, but are constructed by the researcher through intense engagement with the data. This means that their individual perspectives, biases and preconceptions will inevitably influence, to a certain extent, the interpretation of statements and thus which themes will result in the end [87]. That is to say, my own bias of having lived experience of neurodivergence likely had an impact on how I made sense of what participants talked

about, particularly regarding their neurodivergence. In this sense, I want to acknowledge that thematic analysis is not an objective but subjective research approach. However, the focus is still exclusively on what participants say, their actual statements and words they used

3.4 Approach

The approach to the analysis was as follows: after each interview was finished, I used Microsoft Word's transcription feature to generate an automatic transcript. These initial transcripts were far from perfect, therefore I had to significantly edit them regarding not only bringing them into a usable structure but also fix parts that were not accurately transcribed by the software, including speaker pauses, emphasis, and other speech patterns. This required intense listening as well as relistening to several (difficult-to-understand) parts of the interviews, resulting in an intense engagement with the interviews and their content. This contributed greatly to (data) familiarization, which is regarded as an important initial aspect of reflexive TA [87].

Upon finishing the respective transcripts, each of them was imported into QDA Miner Lite[1], where I did a first round of coding. Here, I took a step-by-step approach to coding as laid out by Braun and Clarke, which for each interview consisted of an initial read-through and then a round of coding. Since the interviews were split into to two parts or topics, I decided to first look through and code the part about neurodivergence of every interview before moving on to the initial coding of the part about video games. After finishing the first part, an intermediary review of the initial codes created thus far and the content they encompassed was done. However, at this point the codes were not yet revised or refined, instead the intention was to get an overview of what had been coded so far. One reason in particular for this was that through the first reading of the transcripts before coding, it became clear that the section on video games was also influenced by neurodivergence in several. Thus, the idea was to keep neurodivergence in mind while coding the second part, in order to more carefully look at aspects that (could) relate to neurodivergent traits (that had maybe already been touched on by another person). Even though the interview was strictly divided into two, in the end more or less distinct, parts, it was crucial to also realize that neurodivergence will have an influence on any part of life, which includes video game preferences and play habits. Additionally, after each interview had been coded, I would go back to the interviews coded before that and see if any of the newly added codes could perhaps apply in their case as well.

On the first round of coding, 23 codes pertaining to the topic of neurodivergence and 15 codes pertaining to video games were created. A code called 'miscellaneous' was also used during the first go-through, however, all data items it was assigned to were recoded by the end.

[1] https://provalisresearch.com/products/qualitative-data-analysis-software/freeware/ (accessed on 15.08.2024)

The second coding phase involved refining the codes. Upon doing more research and rereading the material on thematic analysis, I realized that some of the codes were too broad. Thus, I decided to go more in-depth for codes that had many entries and/or where the code seemed to capture too broad of an idea. These consisted of the codes 'neurodivergence' with 75 entries, 'play behavior' with 99, as well as 'attributes' with 47, particularly also because this code seemed very vague. Similarly, the code indicating what participants liked in the context of video games, 'likes' with 69 instances of use, was broken down into several distinct categories to be more useful for designing the game ideas and justifying decisions later on. The same was then done with the code 'dislikes' even if it contained significantly fewer entries with only 30. The initial idea was only to recode the extracts of the mentioned codes, but in the end, I ended up recoding the data items of all codes. Since the coding software I had been using felt not particularly friendly towards creating new codes (as that was more of a hassle), I decided to import all extracts of a specific code into a spreadsheet in Google Sheets[2], where I developed and assigned more detailed codes. In this sense, the first round of coding was a bit more rough with the codes, but that also worked to kind of presort the data to go more in-depth with the analysis.

I first clustered the extracts around the more-detailed codes within their initial code by reordering the rows of the worksheet. Once this was complete, I tried to combine all the clusters with similar codes beyond their initial code classification. However, attempting to do this within a spreadsheet felt rather limiting as there was only one dimension to arrange and group the extracts when I actually noticed more complex connections between the data items. Thus, I imported only the new codes into a Miro[3] board as digital sticky notes, that were colored according to their initial code as that was helpful for retaining the broad idea an individual code belonged to. I then clustered the codes within a 2D space, making use of closeness, direction and branching to indicate (more or less close) relations between codes. After this clustering, I attempted to construct initial themes by circling all codes that seemed to represent a certain (general) idea. This resulted in some overlaps of the categories and codes that applied to multiple ideas. As such, I tried different ways to connect the codes and determine a unifying idea. In the beginning I struggled with clearly differentiating between the concepts of theme and topic (summary), which was reflected in my list of candidate themes, however with the help of my advisors, I got to my final themes. After circling the code sticky notes accordingly and writing a basic short description for each theme, I then assigned each of the data extracts within the spreadsheets one of the themes (though some fit multiple themes) to, on the one hand, make sure I gather all the aspects that relate to that theme, and, on the other hand, to find the quotes I was going to use in the writing up of results.

[2] https://workspace.google.com/products/sheets/ (accessed on 15.08.2024)
[3] https://miro.com/ (accessed on 15.08.2024)

3.5 Results

Through the analysis, I came up with a total of six themes, which are separated in alignment with the two parts of the interview. As such, there are three themes that revolve around participants' neurodivergence and three themes that cover their habits and preferences regarding video games. Since the interviews were conducted in German, I decided to translate the quotes I would use within the theme descriptions into English. In an effort to preserve the essence of participants' statements, I tried to stay as close as possible to the original wording, thus some of the quotes might not sound entirely natural in English. Parts of quotes that were originally said in English will be written in cursive to highlight those as being the participant's own words quoted verbatim, and words written in bold signalize an emphasis made by the participant.

3.5.1 Neurodivergence

When it comes to the topic of neurodivergence, participants overall noted feeling different to many of the people in their lives. This feeling of difference manifested in two different ways. On the one hand, they felt positive about not being like others, and took this difference as an advantage. On the other hand, participants expressed rather negative feelings towards being neurodivergent and thus different, considering also how many things often seemed to be more difficult for them. The former sentiment corresponds to the theme 'The joy in being me', while the latter is 'Sometimes it's not so fun'. Taking a step back and looking at the full picture, the last theme 'It is what it is' resulted from participants combining both sentiments. It describes coming to terms with one's way of being, accepting the difficulties and appreciating the gifts, because ultimately neurodivergence makes them who they are.

The joy in being me

This theme revolves around finding joy in being neurodivergent and discusses the positive sides and aspects that participants connected with their way of being. This includes any interests, stimming, their perception and way of thinking, as well as fun and humor derived from one's neurodivergent traits. Further relevant, in this context, is how neurodivergence serves as an advantage for participants, as it relates to the strengths they associate with their neurodivergence in particular, and also identify in comparison to other people. In this sense, the positive ways in which neurodivergence influences their lives make participants enjoy being neurodivergent and feel positively about themselves. As such, questions of what neurodivergent joy is and how neurodivergent people experience joy in general are central to this theme.

The first area where participants felt that neurodivergence had a positive effect is focus. When talking about their experiences, some specifically also made reference to the concept of *hyperfocus*. In this context, focus was described as getting into a state of flow, and being able to intensely focus on and engage in a specific subject matter. The sustaining of high levels of concentration for long periods of time that is enabled by this state was

further pointed out by participants as allowing them to get things done very quickly. That being said, however, there generally tended to be one little caveat in regard to achieving such in-depth engagement, which is, that whatever one tries to occupy oneself with or get immersed in must be interesting.

> Particularly also, I don't know, regarding work, regarding any projects, that I just simply can really thoroughly engage with a matter. It just has to interest me, that is a little bit the difficulty with that, but when it does interest me then it is like— yeah, only just works— it then just only works all or nothing, and all can just also actually be very positive. - P4

Participants described being in this state of hyperfocus as an exhilarating experience of getting immersed in a subject of interest. A further benefit was noted in terms of productivity. Entering this flow state allowed participants to finish their tasks and responsibilities faster than others, as it enables focused studying and concentrated effort for extended durations. In addition, participants talked about the feeling of positive excitement brought on by engaging with their (intense) interests in this manner.

> ... it definitely is the case for me that I, when I'm in something once, also am in a focus, incredibly quickly get things *done*. Well, starting with that is an entirely different topic. But once I get into that, then something like that happens quickly, and I also noticed that a lot at uni. So like, I don't know, writing any kind of submissions, writing documents. When I start with that, then it is done, and normally three times faster done than other people. - P3

The next area where participants made associations with feeling joy was memory. First, some spoke about having great (long term) memory which, particularly in the context of neurodivergence, acted as compensation for struggles commonly encountered in school or other academic settings. Examples include, problems with concentration, rote memorization and paying attention in class, which will be discussed in more detail in the next theme. Further, a strength in memory was associated with the ability of remembering things from long ago better than others. This proved not only to be beneficial to participants but also was the cause for astonishment of the people around them in certain situations. In addition, the ability to memorize information well and for long periods of time also allowed participants to develop, maintain and cultivate very in-depth knowledge about specific topics.

> ... I usually have, when I then [...] have anything that reminds me and that somehow activates this network where that lies in my brain somewhere, then I can usually remember a lot, actually. But— or at least, I almost always know if we've already once discussed certain topics. I don't know, for example, [...] I randomly talked about IBANs with a friend, and I immediately remembered:

> 'okay, we already did that once in Algebra, we've already once calculated this check digit in Algebra.' And he wasn't sure at all anymore. But we're both— We both started studying in the same semester, we just are friends until now. And he couldn't remember that anymore, but for me that somehow was immediately clear [...] we must already once have done that. - P1

Regarding the way in which their memory works, participants noted easily remembering things very well, which further pointed to a connection with both special interests and hyperfocus. At times this can also lead participants to not even realize themselves just how intense an engagement or their fascination truly is.

Memory also has particular relevance in terms of learning. Participants found themselves being able to very quickly learn, which proved helpful in contexts such as job training or university courses. Specifically conducive to fast learning is their individual process of compartmentalization, which overall helps with recall even further.

> But on the other hand, it of course also has advantages. For example, I learn new things extremely fast, because I can simply organize that much better in my head and also remember it. In general, I kinda have the feeling my brain works faster. - P6

In part, this great recall is explained by participants with the way in which their mind works through associations between objects or situations and knowledge. As such, it is often connected to great visual memory, where thoughts are tied to items in one's physical surroundings which can then also serve as reminders. A consequence of this great memory experienced by participants were benefits for their academic and professional endeavors. Examples of this include requiring little preparatory study time (such as for an exam), and quickly internalizing instructions with minimal effort, with the aforementioned caveats concerning interest and concentration.

At the same time, differences (from a neurotypical norm) regarding memory in the context of neurodivergence can also manifest itself in having an atypical learning style. The way in which this might show up is in requiring additional input, needing different modalities regarding learning material, or doing things on one's own how they best work for that person. To some extent, this also relates to struggles and a certain level of frustration experienced in a standard learning environment, such as school or university.

> At uni, I now also take a Chinese class. So I would say maybe— I would say specifically Chinese then also really is a very *special interest*, where I now already also take the time to watch shows, read books as well, even if I'm actually not at that level yet [...] that is simply how I learn. I simply have to expose myself to that. I can't just wait. Because I just notice that I don't make the *progress* that I would like to, solely from being in class. So I just do 25 things on the side, that are actually not part of class and that I actually

> shouldn't do yet, because I'm not at that level, but I notice it just helps me. - P2

Another point that was brought up by participants is how they felt as though they had a different starting point when it comes to learning new things. In particular, this applies to those that involve interpersonal communication, athletic skills or anything else that, at least on the surface, seems to come naturally or easily to most neurotypical people. In these areas, participants find themselves rather unable to rely on intuition, which often results in needing much longer to learn. However, at the same time, it also means that they invariably (have to) learn and engage with these things more systematically and thoroughly. As a consequence, participants reported often acquiring detailed knowledge about structural workings and interaction strategies. In this sense, having so-called deficits actually works in one's favor, as being able to learn and approach new things with an open mind and little to no conflicting prior knowledge or preconceived notions can be very advantageous over neurotypicals in the long run.

> ... because of the lack of gut feeling, I had no other choice but to learn it properly. And now I have properly learned it, and now it works, and that applies to very many areas of my life. That means, because I have a disability and simply can't do some things at all — when I first start with that, I act totally clumsy — but that forces me to learn it completely persistently and mindlessly. - P5

At the base of such dedicated learning endeavors is also intense emotional engagement and experience. In this regard, a considerable motivation for engaging in subjects to such depths is the positive experience that is gained through it. Participants describe how intense emotional experience and affective states act as a kind of inner drive that compels them to pursue a subject further and devote themselves entirely to it. Consequently, this also relates to their strength in (this type of) focus as well as to the development of specific deep interests or *special interests*.

In addition, participants talked about learning new things on their own for fun as providing them with positive feelings, so much so that the intense focus and excitement (about the topic), at times, lead them to lose track of time.

> ... especially, for example, when I [...] research something that strongly interests me, there is also often— how do I explain that? There is definitely always a lot of positive excitement. So it is a little bit like, for lack of a better term, kinda like Doctor Frankenstein, when he's building one of those monsters. It simply is like: 'I'll do that until I'm finished and until then you don't need to talk to me, because I'm exactly here and that's exactly where I'll be staying now'. - P2

Another important motivational factor for intense engagements is a need for challenge and mental stimulation. Here, participants expressed their fondness of working on projects and general tendency of always wanting something to focus on. In essence, they needed to always occupy their minds, which in part is also highly relevant to participants in fighting boredom. Engaging in activities that allowed them to challenge themselves and their brains is what brought participants great satisfaction and happiness.

Of particular note is further the need for novelty expressed by many participants as it also relates to learning, concentration, and focus. These individuals found tremendous joy in working on a fresh challenge, as well as in learning new things and deeply engaging with them. Likewise, a need for change and variety also contributed to participants getting energized by novel tasks.

> ... then I just learn that, and it's not, I think, very understandable for many people that it somehow is something fulfilling that you just kinda constantly *challenge* your brain and just somehow need new *inputs*. I've also started learning [to play] piano this year, and it isn't easy, but it just somehow still is an interesting *challenge*, to learn new things, again and again. - P1

Such deep engagement is partially also fueled by a propensity for detail-orientedness. When wholly invested in a topic, participants find themselves interested in every last detail about it. This additionally goes hand in hand with hyperfocus and finding oneself in a state of flow where one is going further and further into depth, driven by the need to know everything there is to know.

> So what is very positive is that I can occupy myself with one thing to no end and I don't get bored with that. Like, I've just always been extremely detail-oriented in my life. So things that have interested me, there just every detail about it interested me, and I think that is a— can by all means be a very positive trait. - P4

Intensely engaging in a topic is connected to a desire to learn (more), and this willingness to learn and research constitutes a considerable strength for participants.

When one's academic or professional career constitutes such an intense interest, it can become both rewarding and (almost) effortless to keep learning on, developing in-depth knowledge about the subject, and further improving one's craft. As a result, some participants even recounted receiving praise and positive feedback from others. In essence, participants felt proud of themselves through knowing their remarkable abilities, which also contributed to boosting their confidence. A particular emphasis is placed on having a tendency for taking a research-oriented and/or structured approach. Thus, while neurodivergence can cause someone to have fewer skills on the whole, it can also lead them to being exceptionally great at those.

> Especially just, for example, my will to research is something that very strongly probably also comes from [my neurodivergence]. Also, this [thing of] 'how deeply I engage with things', very strongly comes from my autism. And— I study literature studies so that I can engage in precisely that [which interests me]. - P2

Beyond having a different approach to learning and engaging with interests, participants expressed an overall sense of seeing things differently than others. This difference was based on their way of thinking, understanding and perceiving the world because of their neurodivergence, which in turn allows them to take a different perspective from the normative one. Further, it was also regarded as positive in providing alternative views and opinions. Another aspect of this, to a certain extent, unconventional thinking is that it gives rise to the perceived difference in addressing topics and managing interactions with other people.

> I do have the feeling that I see the world a little bit differently than other people. Like, I somehow have a bit of a different view, I feel like, but it's not— so when you say that it kinda seems a little like: 'I see colors differently'. I mean, I'm also red-green color-blind, so I really see colors differently [laughs], but— I don't know, it's difficult to say something concrete, but it— yeah. So with everything together, the whole package [...] I do connect it to [being neurodivergent], I would say. [...] a little bit different for sure, and somehow differently approaching your everyday or like, problems. - P1

Some of the participants connected this different perspective and difference in mental processing to being overall more creative and also 'childlike'. Attributes such as curiosity, imaginativeness, childlike wonder, and perhaps, to some extent, childishness are reflected in their way of thinking, which allows them to retain (some) childlike qualities as adults. As such, participants spoke about thinking outside the box and being able to come up with many creative, and sometimes also weird, ideas. In this sense, perceive oneself as more creative than others serves as an advantage for their academic or professional as well personal endeavors.

> What I can definitely say is that I am, I think, more childlike than others in many, many regards, like, also in the thinking and such and in terms of creativity am a little bit more childlike. I find that quite nice, though. So I wouldn't say now: 'oh no, I am more childish', rather kind of a: 'that is in this case, I think, something really nice', this 'retaining a little bit of a childishness'. And that I do have, like, this way of thinking is a little different. - P3

Creative thinking as well as a more childlike and pronounced (sense of) curiosity also connect with participants' enthusiasm and propensity for getting preoccupied with and

excited about certain things. For many, this manifests as developing special interests as well intense fascination with or passion for particular, sometimes quite focused, subjects.

One thing that came up in relation to this is the experience shared by participants that one seems to find joy in different things than neurotypical people, and further, that neurotypicals often did not care for the neurodivergent person's subjects of interest. Rather, the neurotypical people in participants' lives appeared to be of the opinion that they were enjoying and appreciating seemingly small or trivial things. In this context, it is important to also note the connection with a difference in directing attention as a contributing factor.

> What I've also noticed already is that it brings me joy, that it feels pleasant when shapes fit together. That was, especially as a child, always very fascinating. [laughs] And, yeah. So, I just think you experience joy in other things than, let's just say, 'normal' people. - P6

Illustrated in the above quote is the satisfaction this participant derived from the sensory experience connected to visual stimuli, which, in this way, constitutes a form of stimming. Regarding the topic of stimming, participants found that it overall took on a positive role in their lives. When it came to describing their stimming habits, a general tendency towards physical and movement based expressions became apparent. Interestingly, many of the mentioned stimming activities also shared a connection to musicality in some way. In particular, participants talked about singing, humming, dancing around, beatboxing, or tapping rhythms. Additionally, one participant also described their experience with a seemingly related phenomenon, that of hearing music in their head constantly.

> I also always have a song stuck in my head. Always. 24 hours a day. Learned that also only recently, some call that an 'internalized echolalia'. *Fascinating.* I'll stick with: 'there is music playing in my head, always.' I think that's nice. I think that's awesome. - P5

The significance and importance of stimming can not be understated since, beside simply feeling good, it helps neurodivergent individuals regulate themselves. In this way, participants draw a connection between stimming and emotion, in particular, its positive correlation with joy. Generally speaking, emotions have an effect on neurodivergent traits and their manifestation. Specifically mentioned in this context was the personal observation that happiness and fun both contribute to one's traits becoming more pronounced and stimming behavior increasing in intensity as well as frequency.

> Joy? Hmm... So what I can definitely say is that when I feel joy, or when I am *happy*, or in a good mood, I'm much, much more fidgety than when I'm not in a good mood. Like, all of these things that I exhibit as an ADDer, like for example, the wiggling and the spacing out, you name it. All these things

> are very amplified, it feels, when I'm doing well. [...] Like these, I don't know, these active things, this active wiggling around, who knows what, along those lines, there it's rather, I find, dependent on fun and joy. - P3

In many regards, participants viewed their neurodivergence as an asset for their lives. As such, they shared an overall positive attitude that resulted from framing their differences as both useful and valuable. Here, participants referred to, among others, their great memory, eagerness to learn, giftedness, routine-orientedness, and hyperfocus as examples of advantageous traits. Of particular note is that the characteristics mentioned, on the whole, were ones which supported participants in their productivity.

That being said, not every neurodivergent trait can easily be placed in this category, at least not initially. For example, honesty, commonly taken as bluntness, was seen by one participant as a positive character trait for its role in facilitating straightforward and direct communication when interacting with others. In this way, an affirming mindset can make it possible to frame even one's criticized and often pathologized traits in terms of strengths, which consequently allows an individual to see their neurodivergence in a more positive light.

> ... and I notice now that I've found something where I can turn it into a strength and where I also actually really need it, that it really can also be something very good. [...] I also notice though— Like, I have to say I have a lot of positive feelings about the traits that I have. Also just, I deliberately also allow it a lot. - P2

Advantages were specifically pointed out in regard to creativity and divergent thinking style. Here, for participants, the traits of seeing things differently and having a more childlike imagination, as well as, in combination with a fast-working mind, were considered highly valuable, particularly in the context of problem-solving. In this respect, participants described their ability to find creative solutions, and to do so relatively quickly.

> So I find it actually very good that I'm creative and that I just rather quickly come with solutions, because I think that somehow this is more of an advantage for me personally, just to immediately find solutions. - P1

Such advantages in the area of thinking and (cognitive) processing further also connect to experiences of joy. Specifically, participants reported gaining great satisfaction from making progress and getting things done, which is in part also connected to lifting one's mental burden. Furthermore, things going smoothly or in one go, facilitated, for example, through hyperfocus, brought them joy as well. Thus, just as was the case with the approach to learning new things, here too, the way in which one is able to engage in a subject proves to be an advantage for participants.

> I do have the feeling that I can do some things that others can't do so well. So, I can get incredibly worked up over things; in the positive and in the negative. But, in the sense of– in the ADD-ADHD literature there are these, in quotations, hyperfocus things, right? - P3

Generally speaking, it seems that one particular avenue that helped participants in developing a positive attitude towards themselves and their neurodivergence was through humor and discovering hilarity or absurdity in several aspects of the neurodivergent experience. This is also highly relevant in the context of exchanges with others who are neurodivergent and sharing common, sometimes frustrating, experiences in a more light-hearted way. In this way, being able to take daily experiences as a source of comedy and humor allows participants to frame their difference in a more positive light.

> The 'misunderstanding your fellow humans' and of course I quite like to also laugh a little bit about this now, since social media. There are these great posts that turn this around and say– Or like, as of late [...] I'm totally into these guides of how— what *neurotypicals* mean when they say something. And I'm then always like: 'oh, I see, really, serio– *oh shit*.' - P5

In certain scenarios, neurodivergence can even serve as a sort of 'party trick'. Participants shared their experiences regarding how people around them react to things that relate to or are a result of their neurodivergent way of thinking and approaching things.

On the one hand, this refers to neurodivergence being understood as quirky and consequently regarded as funny from an outside perspective. Thus, in this context reactions from others can constitute a sort of praise of one's quirkiness and idiosyncrasies which are regarded as interesting as well as unique.

Moreover, participants described sometimes being met with bafflement or disbelief, in particular, when it came to seemingly 'paradoxical' or contradicting neurodivergent traits and characteristics. For example, one such area this applies to is in the context of memory, as was touched on before. In addition, tendencies such as having a chaotic mind and forgetfulness are also often seen as humorous by others seeing as these can, at times, lead to comical situations.

> Well, just the scatter-braininess is usually among friends, it's just plain funny, because I'm late or forget or whatever else. - P1

On the other hand, neurodivergence can also be surprising and work to impress others. This relates to both the strength in memory and the intense engagement with specific topics, which lead to participants possessing very in-depth, and sometimes seemingly random, knowledge.

> I also watch a lot of YouTube videos about [The Binding of Isaac] and because of that I maybe have a more *in-depth* knowledge than I would have expected. I recently realized that, because I was out and about with friends one time, and they then all of a sudden were like: 'you know such *weird shit* about the game'. I was like: 'oops'. [laughs] - P2

At the same time, participants also described that they themselves were surprised how paradoxical or contradicting the neurodivergent experience can be at times and in certain situations, for example, when one's approach seemingly compensates for an ascribed deficit or shortcoming. As a result, it made participants reflect on how a certain diagnostic label and its associated characteristics can fit with one's lived experience as a neurodivergent individual. In this regard, it was noted as well that different neurodivergences can cancel each other out in cases where one trait might take away a characteristic struggle of the other. In some instances, this might lead to a person seemingly not conforming to the stereotypical image anymore, such as when giftedness compensates for ADHD.

> I studied direction, film direction. And I am very, very good at it. Like I'm really good. The actors always give me the feedback: 'wow, what a great director'. They just really felt it and knew what they should do and how the scene works and how I construct all that. And that is absolutely fantastic. And I find that quite fascinating, because it could well be a little conflicting. Like, there is this autist, and he can convey to people just really well how they should feel, what they should think, how they should act something. - P5

On the whole, these traits and characteristics lead participants to have a positive attitude towards their neurodivergence. Being different from the norm not only brought them strengths, but also acted as a source of joy in their lives. That being said, however, participants also acknowledged that it was not always easy to not be like most other people in their lives. For this reason, neurodivergence was found to also cause troubles sometimes.

Sometimes it's not so fun

This theme largely deals with feelings of frustration targeted at, on the one hand, oneself and one's own neurodivergent traits that make everyday life more difficult and, on the other hand, at society and the treatment one receives from others, be it a lack of understanding, stigma, or unaccommodating environments. Further noted here were overall lower levels of social acceptance that resulted from negative reactions by others to perceived strangeness and the consequent misconceptions and wrong assumptions.

The first category of frustrations addressed in this section concerns itself with the negative feelings that are directed at external factors.

To start, the world in general was regarded as a notable source of frustration. In particular, the sensory environment, that is at odds with one's sensitivities and subsequently causes feeling overwhelmed by the intensity of the outside world, and places high demands on individuals both physically and mentally. Seeing as moving through everyday life posed a significant challenge for participants, their experience of neurodivergence was further associated with considerable levels of exhaustion. This resulted in some participants sharing the sentiment that the world was simply not made for them. In general, they faced unsupportive environments and a consequent lack of accommodations, which in some cases was even independent of diagnosis status. Participants were often confronted with others in their lives not showing consideration or understanding of their differences as well as struggles and, as such, felt as though they were not being taken seriously. As a result, they end up not having the resources that would be very helpful and necessary for managing life or thriving in certain situation.

> Because I think there probably also are many people that do get diagnosed, but live in an environment where they— where that maybe, I don't know, not all [acknowledged] by their family somehow, because they then are turned into ridicule or something along those lines, do you know what I mean? Like where there's simply also not a lot of resources. - P4

One environment that participants pointed to in particular regarding its inaccessibility and incompatibility with their neurodivergent way of being was school, or more generally the educational setting. In this context, some explained that regular class structure was not optimal for them, specifically because of their divergent learning needs (which were discussed in the previous theme). As a result of the typical class environment not being able to accommodate those (education) needs, this necessitates the neurodivergent individual's own effort to accommodate and compensate for lack of appropriate resources or educational approach. In addition, participants also noted how the form of learning required in school did not work for them. Mentioned in particular here were rote memorization as well as quiet and focused listening, which constituted continual problems through one's educational career.

> But I notice that class is not quite designed so that it works optimally for me, rather I just have to simply do things that help me on top of that. - P2

At the same time, for some of the participants, their grievances extended beyond a mere misfit between teaching and learning style to serious struggles with surviving in a normative educational setting. Here, participants expressed how regular educational structure did not work for them. In particular, they shared the general sentiment that school was awful, and for many of them nothing seemed to work during those years. As such, they felt like they just could not manage life and the traits and challenges that came with their neurodivergence. It was not uncommon for participants to experience a

complete lack of support, as schools often do not accommodate their needs, either due to inability or outright unwillingness. In some cases, on top of that, participants also faced interpersonal struggles, such as negative treatment from other students in class. Therefore, interpersonal treatment too is a significant factor that makes school a horrible experience, particularly when being neurodivergent. As a consequence, participants recounted having had difficulty navigating such an environment where they already had difficulty meeting learning demands. All of these factors make for a not very great experience and effects of this can drag on and also carry over to other areas of life, subsequently applying to experiences with work and professional environments in similar ways.

> I have a completely typical ADHD life story. School was an absolute horror for me. Not because I don't get it or because I'm dumb or something. Simply because the structure was impossible for me. And I was bullied and such, and well, dropped out of school. - P4

As can be seen, participants' experiences with school varied quite considerably, ranging from mildly annoying (like the above quote from P2) to genuinely awful (like the quote from P4). At the same time, participants found themselves also thinking that, (at least) in hindsight, it could have been worse. Thus, even if their school experience was not the best, they still could easily imagine scenarios in which they would have certainly struggled more, due to more rigid structural demands and difficulty with acting accordingly to meet those. Participants also found that, at least in part, their struggles were also connected with a lack of appropriate medicative support.

> I experienced the full force of ADD as a child and in school and such, without any medication whatsoever, which sometimes was not so fun, but at the end of the day then also was okay. [...] Like, if I had now, for example, been in such an elite school, quote unquote [...] there I would have had no chance, I'd not have cut it. Simply not– like not out of incompetence, because I was actually always quite good at certain subjects, but simply out of the fact that I wouldn't have been able to focus. - P3

On the topic of medication, which was particularly relevant in the context of ADHD, a lack of appropriate care in this way was also, in part, explained by external stigma and fear around such meds. In situations like these, it is often parents who are scared of ADHD medication and thus do not feel comfortable with this type of support. This lack of access proved to be particularly detrimental in school contexts, as seen, for instance, in the previous quote. Outside of that, some participants still make the conscious choice to remain non-medicated, simple due to the structural hurdles and hassle associated with receiving this kind of medical treatment, such as long waiting times for prescriptions.

The next major area of frustration relates to the communication with other people. Here, participants expressed experiencing difficulty with social interaction and (maintaining)

friendships, in addition to one's communication differences commonly leading to being disliked. First, misunderstandings were a common experience for participants. Commonly, the notion of the double empathy problem (which was discussed in Section 2.1.3) comes into play here. The predominant sentiment of participants was that being constantly misunderstood is not only annoying, but also poses a major challenge to these participants' lives. Furthermore, they reported significant frustration with misinterpretation of one's statements by the people one interacts with. This is particularly the case in situations where one makes the explicit effort to be as clear and precise as possible when communicating one's thoughts. What tends to happen, though, is that others often approach them with a mistrustful attitude, as they try reading some kind of ulterior motive or hidden meaning into the neurodivergent person's statements. As a consequence, participants were regularly confronted with not being believed, even when they were openly expressing their true intentions and not trying to hide anything.

> And then now also in the other direction, in the communication with the world around me. I have long gotten into the habit of adding to almost any sentence I say to a neurotypical person: '**and I also mean it like that**.' I mean it like how I say it. Yes, I mean it. I mean that **exactly** how I said it. [...] Because people just always try to understand something differently than what I say. And that is incredibly frustrating and annoying. And I just absolutely cannot get that out of them. And even if you emphasize five times that you mean it exactly like that, they still don't believe you. - P5

As a further consequence, participants often found themselves faced with the generally negative attitudes of others towards themselves. This can often be traced back to a lack of understanding of the neurodivergent individual's way of being and the approach they might take. Further, the mischaracterization of one's person or misrepresentation of one's nature, in part also appearing through being called names, is a result of low acceptance and a lack of tolerance or consideration. As such, participants described having been framed as self-important, attention-seeking, or know-it-all, as well as, dealing with the dismissal of one's experiences or input. In this way, the perpetual negative social perception they receive from people in their lives can eventually result in frustration.

> I notice, for example, that now and then especially neurotypical people can't quite deal with how exactly I engage in things, sometimes. Like, particularly in my childhood, it was then often like: 'yeah, you're just a smart ass anyway' or 'you're just putting on airs', or— just all kinds of things along those lines. - P2

A particular source of frustration is also found in situations where others are being dismissive of the participant's approach, even when it has been proven to work and, in some cases, even better than the normative way of doing. Likewise, feelings of frustration

also are a result of not being listened to when attempting to give advice. Often, the recommendations or suggestions brought forward by the neurodivergent person get treated as nonsensical, impractical or unhelpful, and as a result, participants are annoyed with other people who seem reluctant or too stubborn to switch up their approach and try out a different, perhaps somewhat unconventional, approach. In general, it seemed to participants that neurotypical people usually were not meshing well with their neurodivergent way of being. A frequent consequence in this regard were mean comments or rude remarks from others, being upset at the neurodivergent individual's communication style and how they approach social interactions. More specifically, a few participants expressed their frustration with discussions and arguments that revolve around them appearing disinterested for not interacting or reacting as would be expected or not forming opinions the same way that others do. Similarly, some participants have made the experience that other people tend to have a hard time understanding and accepting how neurodivergence can affect a person, often in contradicting ways, such as struggling with forgetfulness while also having great long term memory. Both of these aspects not only have the negative consequence of annoying and irritating the conversation partner, but might also lead them to thinking that the neurodivergent person does not care (about the interaction or relationship).

> I do have the feeling [...] that I then retain the information for a very long time. Like, really— I can to some extent still remember the things written on the board from my [secondary school] days. So for really very, very long, in some cases, which is then difficult to understand for the people around me, when I forget appointments, that I arranged today, within three days. - P1

Conversely, when it comes to such misunderstandings or situations where one inadvertently annoys or upsets other people with such communication differences, it can, at times, even seem as if others were purposefully misunderstanding and doubting one's truthfulness. It should be noted that it interestingly was also the participants who voiced their frustration with neurotypical people engaging in the exact behavior they were getting accused of themselves, that being, deceptive communication. Put differently, participants described routinely feeling frustrated with intransparent communication that might have hidden meanings and unclear intent, particularly in important situations and contexts. For participants, these kinds of daily interactions, which are characterized by a mismatch in communication styles and expectations, negatively impact the perception others have of them.

> That's the other thing. People constantly don't believe what I say, even though I always say what I think. And then at the same time [...] everyone gives me the feedback, I were incredibly naive and would believe everything from anyone. So what now? Am I now a notorious wrong-sayer, or am I naive? It is confusing. Like, also with work and so on, in the past I've always been told I'm incredibly naive. Everyone can constantly take advantage of

> me and I believe their every excuse. And I then always just looked at them like, 'okay?' Wouldn't it be easier if everyone just says what they mean, **especially** at work. Yeah, I mean, ***come on***, *don't make it complicated.* - P5

A possible consequence of repeatedly encountering such uncomfortable and challenging social situations are negative mental health outcomes. On the one hand, some participants spoke about their battle with developing anxieties, and especially dealing with social anxiety. In this regard, they believed that others are judging them negatively and were afraid of how those people might react to the way they approach or engage in things. Subsequently, these participants indicated that they have become scared of interactions and thus, try to rather avoid them. On the other hand, for some participants, the effects of negative social encounters manifested as frustration and feelings of isolation. In particular, they struggled with low levels of acceptance from those around them when, as a result of not suppressing their natural way of being and openly expressing their traits, they become visibly neurodivergent.

> I'm doing much better, when I just don't try to change myself. But I also notice that other people tend to then accept me less, which then just actually is relatively frustrating. - P2

Negative reactions from others also appear in connection with stimming. In this context, participants recounted regularly annoying people in their lives with their stimming behaviors and habits. This tended to involve stims which produce noise, like knocking on a surface or vocal stims, such as humming or beatboxing, but it also includes those that are visually distracting, such as leg bouncing. Thus, on the whole, stimming can be quite problematic when in a space with other people.

> ... when I was sitting in the office and [a colleague] then was like: 'you know what, I'll give you something for your hands to play with, because otherwise you're annoying me.' I don't even know anymore what I did. I think I was tapping around, some sort of rhythm, on the desk or something, and then I got a ball of yarn and was allowed to pick that apart a little bit. [...] I also need something like that to focus. I'm extremely bad at concentrating, when I'm not doing something. Often that just results in bouncing my feet and tapping rhythms and something along those lines, which incredibly annoys my girlfriend, for example. So that is often problematic. - P3

In this regard, others' reactions to stimming can vary in intensity and direction. While with some of the anecdotes told in this context participants were taking such situations with humor, still, others' attitudes towards stimming have potential to create friction in interpersonal relationships. In particular, harmful stims, such as skin picking or lip biting, were met with concern and/or bewilderment at engaging in such unhealthy and

detrimental behavior. However, the reactions that participants received were commonly filled with shock and anger. As such, stimming behavior gets framed predominately negatively through the use of pathologizing language, vehement discouragement and attempts to stop or prevent the neurodivergent individual from stimming. While one can acknowledge that there is (likely) no ill intent with such comments and remarks, they still impart a stigmatizing view on certain (unconscious) behavior, which ultimately leads the neurodivergent individual to connect stimming with a sense of shame.

> ... for me, they have rather negative connotations, because one, for example, that I'm also doing right now, is *skin picking*, so plucking cuticles is my absolute classic. In the past, it was also the lips and eventually my mother said that I shouldn't do that, because then you'll look— so effectively when you do that then you'll look as if you were handicapped. Yeah... - P4

Another point of frustration for participants was other people misunderstanding neurodivergence itself. More specifically speaking, participants struggled with others' preconceived notions of how and what areas of life are affected, as well as, with others reducing neurodivergence to a simple quirk of character, or seeing it as something merely added on to one's personality. However, for participants, their neurodivergence constitutes a package deal that is significant for both identity and how one moves through the world.

> So like, neurodivergent attributes or general attributes, or..? Because that is in fact the problem. I can't just separate my neurodivergent attributes from my attributes, because I'm never not neurodivergent. I'm simply never not neurodivergent. I don't have neurodivergent and not-neurodivergent attributes [...] That is something I like to fight, also a little bit in representation or in conversation with others. Where I say: 'no, no, no. You can't break down my autism into some five things and say: "what if those five weren't there", or something'. **It is holistic**. It is all encompassing. No matter **what** I do, it is autistic because I, as an autist, **do it**. - P5

On the whole, participants were greatly negatively impacted by problems stemming from environmental factors as well as the lack of adequate support. Likewise, they perceived communication breakdowns and mutual misunderstanding as rather challenging and annoying. While a lot of frustration was experienced with other people and their communication habits, participants equally located the problem within themselves. Even outside the context of social interactions, many neurodivergent traits can become sources of frustration. Examples that were mentioned in this regard include struggles with concentration, boredom, forgetfulness, and (sensory) overwhelm. As a result, participants felt that their neurodivergence regularly made supposedly 'easy' things difficult, which ultimately led them to describe neurodivergence as burdensome, at least in some respects. As touched on in the previous theme, characteristics commonly associated with

neurodivergent people's memory can be positive, such as having very in-depth knowledge and remembering details from long ago. However, there equally exists a negative side, as participants reported regularly also experiencing problems with how their memory works at times. In particular, they referenced their tendency to easily forget things, which is further linked to difficulty with short term memory as well as being disorganized, both physically and in their mind. As such, a common experience shared by participants was important information or appointments completely vanishing from one's mind, which in further consequence also resulted in the need to ask again several times. Furthermore, due to this forgetfulness and scatter-braininess it is possible for coping mechanisms to fail, seeing as one has to remember to use coping strategies and tools, such as a calendar.

> I am also known as the scattered type. Like, I am super forgetful, appointments are very difficult to remember. I have a planner, but even with that, I forget to even look inside. So it's— yeah, I'm completely scatterbrained. - P1

The forgetfulness that participants experience also connects to problems with time management in general. As a result of this difficulty with their sense of time and keeping track of it, they frequently found themselves being late or doing things last minute, which in part also relates to the issue of procrastination.

> And then just on the other hand, because of the ADHD, just this— especially at uni that I do a lot at the last moment. - P2

> ... I often extremely drift off, and I'm not so great sometimes at listening. Like, I had all these things and also with— in relationships again and again this: you have to sometimes tell me things three times, I'm incredibly bad with time. All these typical things [...] being late for appointments, all these things. - P3

Although participants viewed hyperfocus and their ability to get things quickly done as an asset, a major trouble mentioned in this regard was the difficulty of getting started. In particular, they described their struggle with motivation and engaging in an activity when not feeling that well. Consequently, these difficulties too lead participants to doing things last minute. Similarly, in spite of the ability to intensely focus on an activity, participants also struggled with concentration and attention. Problems that came up in this context were difficulties with active listening, attention span and staying focused, for example, during lectures. Participants described themselves being often easily distracted due to their mind wandering and eventually completely drifting off, which also meant they were unable to concentrate at all sometimes.

> ... that it's also attention span-wise genuinely difficult that I really just for a whole lecture sit in the lecture and listen without me getting distracted

> somehow. That is truly like: even if I there was nothing around me that could distract me, I would probably still drift off here and there, because it simply is too long. - P2

Yet again, in other cases, participants have ended up paying attention to the 'wrong' thing or something unrelated, that acted as distraction. In some instances, this even resulted in getting completely lost in these things. Possible negative consequences that were brought up by participants in this regard include going off-topic and forgetting what to say or what they wanted to do.

> There were only just again and again these situations — though it got better with age — but there were again and again these situations where I then just in the middle of an exam, for example, I don't know, was distracted by something and then just all of a sudden had no more time because for half an hour I was drawing around or did whatever else. - P3

Equally, boredom was identified as a contributing factor for difficulty with attention, focus and getting things done. Generally speaking, participants found themselves getting bored relatively easily, which tended to result in them having a hard time motivating themselves to engage in an activity or task, for example, at work. To a considerable degree, participants located the source of their frequent boredom in their fast-working mind. In this regard, boredom is also associated with a lack of challenge, which particularly in school environments caused trouble for participants as they noticed their difficulty with attention was exacerbated by simply being underchallenged. Another relevant factor in the context of boredom is that too much sameness or, in other words, lack of new input can lead to feeling bored as well. This makes it difficult to keep up one's enthusiasm for longer periods of time and, thus, to stay motivated. Relatedly, some participants also spoke about being annoyed with their need for sameness, since, despite eventually also leading to feelings of boredom, they had a hard time making a change.

> The only thing that is a little bit negative is that I'm very quickly bored of, for example, of work. There, I have problems with motivating myself and when it's just the same thing for a very long time it's difficult to somehow stay motivated there and stay energetic. - P1

> In general, I kinda have the feeling my brain works faster. [laughs] Which then tho just also again has the problem with boredom. Because particularly at work, I notice that I'm usually faster done than the others, and then I feel bored. - P6

While there are struggles with concentration and sustaining motivation and enthusiasm, at the same time, hyperfocus as well as intense interests can equally have negative aspects

to them. Here, participants reported on their problem with easily becoming too focused on and even obsessed with some subject, to the extent that it (almost) completely takes over their mind. As a result, such intense preoccupation contributes to struggling with one's sense of time, as well as losing track of other responsibilities. Further, participants talked about how they sometimes struggle with having too many different interests simultaneously and thus have difficulty pursuing just one thing at a time. This relates to them generally having a hard time prioritizing or making choices. Likewise, as was discussed in the previous theme, participants reported gaining considerable excitement and enjoyment from new input. However, this need for novelty can also bring stress and overwhelm, specifically as it relates to an internal pressure to be productive. In addition, participants noted a particular struggle with directing focus, as well as with needing to be interested to engage in something (deeply), meaning that it is (more) difficult to get things done that are not particularly interesting, such as school work.

> ... and the other thing is projects. Like, I'm kind of a project person. For a long time now my own tattoo studio was my project and then that was finished, and then the new project had to– the next [one] had to come. And that can, for one thing, also be a little bit burdening, because I very much tend to overwhelm myself with things. - P4

A significant part of participants' frustration with being neurodivergent also centers around executive dysfunction. In other words, they described how they were often struggling with the simplest things, which, on the whole, limited them in their independence to a greater or lesser degree. Furthermore, participants had a tendency to frequently compare themselves with other people in their lives. Through such comparisons, it for them felt like things were much easier for others, while they themselves were having a harder time doing certain things than seemingly everyone else (they knew), even carrying out basic everyday tasks. As a result, participants were regularly frustrated that others could just easily engage in an activity or responsibility and get things done, thus they felt as though others in general had it easier in life. For these reasons, participants reported often feeling the limitations that neurodivergence imposed on their life in this way quite strongly.

> So, the things that cause suffering for me, I would like to — my executive dysfunction — have much better under control. Like, have my everyday life better under control. Because in between established routines, everything is made of chaos. That means, my everyday is not entirely a routine, instead there is one good routine that works and then there is chaos and then there is one good routine that works and then there is chaos. And I can't manage many things. Also in my independence I can't manage a lot of things. The easiest things [I] often [can] not manage. I am very severely limited in this regard. - P5

On the topic of managing one's everyday life, important aspects are also the chaos, as well as the agitation that crop up when things do not go right or according to plan. For many participants, routines and structure are everything, since they give security in a world full of unpredictability and uncertainty. The problem that arises in this context is that one little thing can throw the individual off track. This is because routines, for the most part, are subconscious and just part of how one moves through life; that is, until something goes wrong. As can, for example, be seen in the quote above, participants described how a routine failing leads to chaos in their mind and as such could ruin their day. A further consequence, however, is that this agitation and sense of chaos when something does not go right can also cause a person to need days to recover from a failed routine and things in their everyday life might not work for months. This amplifies the annoyance felt with one's traits and the subjective feeling that one is struggling while everyone else seemed to have it easy. Ultimately, this has lead participants to negatively judge themselves in comparison with others in their lives.

> Of course, some things piss me off, and I notice sometimes how easily people just sit down and do things, for example. - P3

Another point of frustration was the struggle with comorbid mental health conditions, especially anxiety. To a significant extent these are undeniably a result of not having (had) the necessary accommodations and, for some participants, additionally also late diagnosis. In some instances, this is further accompanied by going through periods of extreme exhaustion or worsening of existing anxiety issues. For example, one participant saw their underlying but unaddressed ADHD as a major contributing factor to their panic disorder. Similarly, comorbid mental health struggles played an important role in the context of joy as well. In particular, feelings of anxiety made happy moments rare and resulted in difficulties with experiencing joy. Additionally, negative mental health effects can also develop from, as touched on before, inadvertent comparisons in contexts with other people, such as socializing. Due to the nature of such situations, one's differences generally appear more obvious, which not only leads the neurodivergent individual to become more aware of them but also to interpret them in terms of shortcomings or deficits. This commonly results in feelings of inadequacy and inferiority. In the context of co-occurring conditions, living with multiple neurodivergent conditions can lead to some degree of frustration. The reason is, specifically, found in contradicting symptoms and the resulting conflicting needs, such as in the interplay of Autism and ADHD, as in some cases it can be difficult to fulfill both at the same time. Thus, on the whole, participants felt that neurodivergence, at least in part, was negative as well as burdensome.

> For me, the negative aspect is just that I, well— that I think that a— that just this anxiety disorder, that I have, in large part, not one hundred percent, but in large part has been caused by this ADHD. Or just as— Like, that there is a connection and that it remained untreated for so long or just [that] only the anxiety disorder was treated, and that also not great, to a certain

> extent, so that it just simply took hold and through that it has just a strong negative component for me as well. Because I of course wish I wouldn't have that, or I would have— because that is a great burden for me. - P4

> So for example, especially in the social area, I just notice that I really have serious disadvantages, which also to some extent is a burden for me. - P6

Another major area of frustration for participants pertains to communication and interactions. The culprits in this regard are fundamental differences in social disposition, and the resulting, more or less pronounced, incompatibility with the other's communication style. Specific experiences where participants noticed this mismatch include instances of missing neurotypical communication cues as well as situations in which one did not directly understand what the other person meant, and where in many cases one would figure out the likely intended meaning only long after the fact.

> Nowadays it's just most notably due to the fact that I very often just really miss things, where I, for example, don't notice that something was a joke, or I don't notice that something was criticism that I should have taken, because it simply feels like it's hidden behind three walls, and I then, often only hours later, when I give it some thought, kinda realize then: 'oh, I actually should have done something'. - P2

Further, participants, in this context, brought up how their own communication style and habits could regularly cause troubles when interacting with other people. On the one hand, this pertains to the, often regarded as rude, directness of one's utterances, or put differently, the propensity for saying what one thinks. In this way, the openness or honesty expressed in one's communications often ends up getting perceived as bluntness. This is then also sometimes connected to an inclination toward giving unsolicited advice, which might moreover point to a struggle with impulse control. On the other hand, participants admitted they could at times seem closed off or aloof, and as such, they could also be difficult to get concrete answers from. Additionally contributing to this issue are the aspects of nonverbal communication, such as eye-contact, which potentially facilitate getting perceived as rude or uninterested. Thus, overall, different expectation in social communications and an incompatibility of interaction styles are considerable causes for participants' frustration in situations with other people.

> So, yes, constant communication problems. I am constantly misunderstood. I constantly misunderstand the other people. That is a major challenge and that really is very, very annoying. - P5

As far as social matters are concerned, another area of struggle and frustration revolves around relationships and interpersonal contacts. In this context, participants reported

having difficulty with socializing as well as with connecting with other people (on a deeper level). Consequently, they find themselves having a hard time with establishing and maintaining friendship, which naturally results in having fewer friends overall. This lack of companionship as well as trouble establishing rapport with others can similarly have negative consequences for a person's mental health and well-being. Furthermore, through experiences of struggling significantly with social interaction, feelings of inadequacy and deficiency can be internalized, ultimately leading to the neurodivergent individual becoming harshly judgmental towards themselves.

> ... the older I got, the more difficulty I had with social contacts, finding friends. It just was also in school usually like: I have one good friend. And otherwise I mostly avoided social interactions. - P6

The last area of frustration discussed in this theme focuses on stimming. As per the previous theme, it has largely positive associations and can be seen as an expression of joy. It is not all positive, however, and as discussed earlier, stimming can be problematic in the context of other people. Moreover, though, it can also be problematic for the individual themself, the reason being that some of these behaviors can be quite harmful. Generally speaking, the engagement in self-injurious stims usually is triggered by negative emotional states, like stress or anxiety. As such, these behaviors constitute a type of coping mechanism for participants that may eventually develop into unconscious habits. Examples of harmful stimming given by participants include lip biting, skin picking and nail-biting. Frustration is not only directed at the stims themselves, but also the negative consequences that harmful and injurious behaviors, such as picking at the skin of one's fingers, have on other areas of life.

> ... that I, for example, bite my lip open. I also have a few where I say: 'Oh, they maybe are not quite that healthy for me'. - P2

> ... For me [skin picking] is fairly normal, but just sometimes also a burden, when it just gets too much and when I then just really— when my fingers are just open [wounded] [...] and that's of course also super shitty with disinfectants and just generally also hygienically, I have to quite honestly say. - P4

Overall, participants expressed that living in a neurotypical society as a neurodivergent person could at times be quite challenging, frustrating, and even exhausting. This concerned the struggle of navigating unaccommodating environments, as well as the struggle of dealing with the subsequent mental health challenges, which particularly also include internalized feelings of inadequacy. Through these first two themes, it has become apparent that participants associated neurodivergence in positive as well as negative ways. In reconciling with the fact that there are both positives and negatives, they

worked to change their attitude and viewpoint, which overall allowed them to come to terms with being neurodivergent.

This theme is focused on acceptance and participants coming to terms with their neurodivergence. Further central is how they were eventually able to view neurodivergence as a part of their identity which made them the person they are today. Such an attitude becomes conducive towards letting oneself act freely and without fear in accordance to one's neurotype. Through this journey, understanding that one is not defective but simply needs a different approach than neurotypical people additionally provides a sense of relief. One particular driving force behind the development of positive sentiments towards one's neurodivergent self is finding community as a way to facilitate the exchange with other similar-minded individuals.

The first aspect to be discussed here regards participants' self-perception that neurodivergence is an integral part of themselves and who they are as a person. Constituting an essential factor in the idea they had formed of themselves, many participants stated that they could not imagine themselves without their neurodivergence. A notion that came up in responses was that one's brain seemed to work (completely) differently than those of neurotypical people, and subsequently participants were able to find positivity in naming this difference in specific terms, such as Autism, ADHD, or simply neurodivergence. Even before reaching this understanding, many noted having an early awareness of being different in various ways to others in their lives. Partially, such feelings were also framed in a more negative light, as participants perceived there being something wrong with them.

> In the past as a child or especially as an adolescent, it just was really difficult. Simply because you do just somehow have the feeling something isn't right, but just have no idea what. - P6

Participant recount that being different was normal for them, and, as a result of not having any answers or clear explanation for a long time, came to view themselves as just innately being strange. Here too, significant is not only the personal realization of one's own difference, but also the awareness that other people notice it in the everyday, which then manifests itself in the treatment one receives. Thus, it follows that for participants (the label of) neurodivergence holds significant importance to personal identity since it can provide them with valuable insight into how to best manage their daily experiences and interactions.

> I'd say that it, all in all, is definitely important [for my identity], especially because I just notice in my everyday that I am not like others. It's simply, if it wasn't important to me, [then] other people [would] notice it a lot, and

> with that alone it is already important, because it strongly influences how I move through my everyday life. - P2

When coming to realize what the root cause of one's idiosyncrasies is, this label of neurodivergence also brings relief. In this sense, it is extremely meaningful for participants' self-perception and the reduction of negative self-talk. Further, finding answers in this way and being cognizant of their neurodivergence, allows participants to make the best out of it. This is also due to the newly gained ability to notice and identify situations or areas of life where their neurodivergent way of being has had influence on their behavior and thinking. In other words, neurodivergence serves as an explanation for the hardships in life and, as such, allows the individual to not blame themself for these. Simultaneously, by way of developing better understanding of oneself, the neurodivergent person is additionally enabled to find ways to cope and strategies to accommodate their needs.

> Since [being diagnosed] it just somehow is like, you know, worlds open up, because suddenly just very, very much makes very much sense, or also I notice a lot of things that I didn't notice at all before, like for example, forgetfulness. I am **mega** forgetful, but didn't actually get that at all, I just now notice that kinda. Or, I also kinda noticed within the last just how much I actually forget things. [...] many things are still unclear— or again and again I have these realizations with things in the past, where I now get: 'oh, okay. ADHD could have simply played a role there, that many things didn't come so easy to me'. - P4

For many participants, learning about (their own) neurodivergence thus provided the key to better understanding themselves. This enabled them not only to develop coping strategies, but also to discover new approaches that specifically harness individual strengths to compensate for weak points. As a further consequence, it supports self-actualization and coming into one's identity as a neurodivergent person. While participants originally and on occasion still perceived being neurodivergent as a burden, this understanding and knowledge lead to changes in their perspective as well as in their overall attitude. This helped them realize both the positives of neurodivergence and the positive influence it has on their lives, which for some meant feeling like their difference from the (neurotypical) norm is what made them unique. On the whole, this transformation of attitude also caused a shift in their frame of mind so that participants were now able to recognize and tell themselves, for instance, that it was not their fault or that they were, in fact, not broken.

> At this point, yes [I'm happy being neurodivergent]. Because I just do actually kind of have the feeling that I'm something special with that. But that just also only as of recently, because, like I said, in the past, it rather was a burden for me. - P6

> For me, it's very relieving somehow [...] it takes the blame for my own inadequacy from me. And I can just say: 'yes, my brain is just– my brain just works differently than neurotypical brains' and that actually does feel quite good to be able to say that or to have the awareness and because of that just also treat myself a little more considerately. - P4

Through such ways of thinking and changes in perception, participants are navigating their journey to (self-) acceptance. However, it is not entirely always 'smooth sailing', since reaching this point can be difficult and take time. A common sentiment that participants expressed in this context was not feeling they belonged in neurodivergence. To a large part, this manifested in attitudes around identifying or not identifying with or as neurodivergent and the reasons why they feel this way. On the one hand, participants were acknowledging the privilege they had when it came to how their neurodivergence was and had been treated by their environment and the opportunities they had. For instance, one person realized how ADHD had influenced their school experience in different ways and how lucky they were to have support and fortunate circumstances during those times. On the other hand, sentiments regarding neurodivergence as identity and belonging also translated into what can be referred to as a sort of imposter syndrome. At the base of such feelings was a subjective perception that others faced more significant hardships and were having a harder time in life than oneself. In effect, through comparing struggles, participants were downplaying their own experiences and specifically their personal struggles of being neurodivergent since their own situation did not seem as bad as what other neurodivergent or disabled people were dealing with. The consequence of this kind of thinking is not feeling valid within (the category of) neurodivergence.

> For one thing I find, I at least sometimes kinda have the feeling — how do you describe that — it's somewhat of an *imposter*-syndrome in neurodivergence, which doesn't make much sense, but just kinda feels like that, that is [...] when I talk to people like [neurodivergent colleague], or I don't know, when [...] [Deaf colleague] is also there, then you feel a little bit like: 'yes ok, I do have something, but it's not as bad as the others.' And then you feel a little bit like: 'okay, do I even belong there?' - P3

Similarly, such thinking can also plant a seed of doubt in the individual's mind, which leads them to feel as though the diagnosis was inaccurate and merely given by mistake. Coming into play here again was participants' belief that one's situation was not actually that bad, and that they were rather trying to convince themselves that there was something wrong by exaggeration and insincerity within their descriptions and accounts. Another point that came up in this regard was not presenting with the typical characteristics or 'symptoms' of that neurodivergence, which, in further consequence, also contributed to feeling like one does not belong in the neurodivergent community.

> ... I still *gaslight* myself and think: 'nah, that diagnosis [...] that was for sure an error, I for sure only pretended as if', or I don't know... - P4

What can be helpful in this context is getting into contact with other neurodivergent people, listening to their experiences as well as talking about these struggles around identifying with neurodivergence. Thus, in essence, community can help make the process towards self-acceptance easier and further, as participants have noted, allowed making peace with their difference. To start with, one important aspect that helped participants was finding community in the first place. In particular, learning about the concept of neurodiversity and discovering the neurodivergent community as well as the associated movement were regarded as greatly influential for and beneficial to one's life and self-perception. Further, participants highly appreciated having others to talk to with similar experiences and who understood, seeing as this created a space for giving mutual support and understanding as a result. This might also include venting problems and receiving help with reframing thoughts or situations. Thus, in addition, participants described the positive impact of support from other neurodivergent individuals, since they found a lot of comfort in others understanding their way of doing things and being patient in regard to their struggles as well as potential consequences of these, such as forgetfulness. Accordingly, it can be very healing to have others who 'just get you' and the neurodivergent experience, and as such accept you for who you are and the way you are.

> ... I also then talked extremely much with [my supervisor] about it in the master thesis, because it just was super important to me to have someone who understands my way of working. And because [my supervisor] just with– so for one has ADHD themself and also, well, understands that, it was insanely good because it then just wasn't *weird* when I somehow asked some things four times or also my way of working wasn't discussed that much time-wise, I would say. - P3

The support and understanding that is facilitated by way of community can further provide a sense of belonging. In particular, participants mentioned how connecting with others for them meant not being alone in their struggle. In this sense, they considered talking about their way of being as well as their needs and struggles as extremely helpful, and further noted that it made them feel validated in their experiences. Additionally, having the possibility to engage with like-minded individuals proved greatly beneficial in terms of feeling positively about oneself and being neurodivergent. Therefore, participants overall perceived being part of a community, specifically the neurodivergent community, as a positive influence in their lives.

> ... also the connecting with other people who have [ADHD] and also like a little bit ... that I feel kinda a little bit like a part of something, that I am not all alone with that. That is, I think, the positive thing about it. - P4

Another benefit of such neurodivergent community spaces that participants pointed out as particularly valuable for them was the fun and humor through shared experiences. Here, the neurodivergent community serves as a place for not only talking about lived experience, but also exchanging funny stories and happenings that arise from being a neurodivergent individual in a neurotypical society. For example, one participant took great enjoyment from seeing relatable experiences of misunderstanding the people in one's life. An additional source of amusement mentioned were revelating online post explaining specific aspects of neurodivergence, that, while informative, were particularly praised for their humorous delivery, such as witty writing or acting overly confident. Similarly, social media content with a humorous twist, turning around the existing conventional categories of normal and strange, was brought up by participants as well. In more concrete terms, these postings commonly frame being neurotypical as the disorder, whereas neurodivergent ways of being are positioned as natural and correct. This inverted dichotomy is then further accompanied by, oftentimes exaggerated, expressions of astonishment at neurotypical people's 'strange' behaviors and habits. In this regard, sharing positive traits and talking about similar experiences with others (online) in general were perceived as benefits and strong points of such community spaces, in addition to providing an entertaining way to learn (more) about oneself. Thus, being able to see their natural way of being portrayed in a positive light had a positive impact on self-perception and confidence. As a result, participants expressed that they found joy in being part of the neurodivergent community, seeing relatable content and frequenting positive online spaces.

> You can now in *neurodivergent spaces*, especially online, laugh and talk about [communication troubles with others] very well. That is very helpful, that is incredibly nice, because else you would just constantly think: 'I'm not getting ahead there and that is so hard and that is so stressful' [...] I am also incredibly glad to be part of the *ND community*, because it is great. Actually I have, until recently, my whole life never made use of it. I didn't frequent any online *ND spaces* at all and such. I simply didn't get the idea to. I didn't know at all that it exists. But now the algorithms throw everything at me and that is fantastic. - P5

Further beneficial is the role of these community spaces in enabling participants to obtain advice, which is most often found in online posts by members of the community. This includes tips and tricks helpful with various relatable and shared experiences as well as awkward or unfavorable situations a person might find themselves in, specifically because they are neurodivergent. To a great extent, these pertain to dealing with neurotypical people, and as such participants especially appreciated those offering resources that provide guidance for social interactions as well as explanations for understanding neurotypicals, their communication and behavioral quirks. Help in the context of neurodivergent community spaces can also include asking others for specific advice regarding one's personal situation and circumstances. Generally speaking, positive influence of the

neurodivergent community was noted by participants in terms of simply talking with others about their grievances with normative society. For many, the connection to others as well as access to their experiences and advice are nowadays very often facilitated by online communities and various social media sites. However, in this context, it is equally important not to understate the significance of offline communities and having people to rely on in real life.

> And I think I also wouldn't have ended up in this [...] environment as I now have and that would also be a shame because actually it was, I don't know, a lot of fun for me. And then also by extension now, I think, academically speaking, helped quite well that I have these people and support. So yes, I am glad. - P3

In any case, such community spaces proved to be helpful for finding new ways of managing and coping with living in a neuronormative society. Equally, participants spoke about their individual coping strategies which they had been developing throughout life as neurodivergent individuals to accommodate their own specific needs. For this reason, there is a variety of strategies or approaches that participants used. Such coping mechanisms involved physical things like a planner or strategically leaving an object for a certain task as a visual reminder. Similarly, setting alarms was used as a way to help with forgetfulness and keeping track of time. Other strategies used by some of the participants related to their research strength or in-depth engagement in subject matters, which enabled the (strategic) acquisition of skills and phrases for communicating well. Thus, overall, these participants were taking a research-oriented approach toward managing interpersonal relations and communications. Another helpful avenue for some participants was medication, as it can play vital in managing one's neurodivergent traits. Examples of beneficial effects reported are lower levels of anxiety, better concentration, and generally feeling better overall.

> I kinda have the feeling within the last year [joyful moments] have gotten more [common], maybe because of the ADHD medication, that I just somehow also then – the things that bring me joy— that I have the energy to just also pursue them, you know what I mean? - P4

Besides medication, the use of other kinds of tools was regarded as helpful in allowing participants to feel more comfortable in their lives and in moving through the world. For instance, noise-canceling headphones or sunglasses for coping with and relieving sensory overwhelm. Additionally, participants also mentioned fidget toys or other objects serving that purpose, which is particularly relevant in context of trying to find alternatives to harmful stims and shifting attention to different stimming behavior. The coping mechanisms used by participants also include adopting certain social behaviors and communication strategies one has picked up as a (direct) reaction to manage struggles in interactions with others, particularly neurotypical people.

> I had, and I still also have problems looking people in the eye, in conversation. Which, by now, is fine, because I simply learned to stare at people. [laughs] Yes, sounds weird, but that's how it is. - P6

For those affected by more than one neurodivergent condition, it can further be crucial to seek out and come up with ways to address every resulting struggle or to fulfill the needs of all them. Here, the consideration of traits that might influence each other is an important part of managing, particularly finding balance with contradicting traits, such as in the case of Autism combined with ADHD.

> ... with work I notice, I like when I have a job full of variety, but within the tasks I like having a fixed structure which I can stick to. So that then is kinda the interplay between the two; like, I cannot do the same thing 25-times in a row. But no matter what I do, I need a structure which I can stick to exactly, which I can rely on that it works. - P2

Participants also found it helpful to be open with others about their neurodivergence and the accompanying struggles, as well as needs. In this regard, participants experienced that informing others about struggles has led to some people in their lives making accommodations. Even if these might not work one-hundred percent of the time, participants were still highly appreciative of those persons making the effort to respect their way of being. It should be noted at this point that it can be easier, to some extent, for an individual to talk about specific traits of theirs, such as not being good with time or needing to follow a specific routine, without explicitly bringing up their neurodivergence.

> ... I also only then discussed [being neurodivergent], maybe more with other people. Like, before that it was rather like a– That's maybe quite fascinating. I actually never really brought that up. I didn't just, like, go up to people and say: 'yeah, so by the way I have ADD.' In case, I don't know, because it maybe is important. [...] I never actually have discussed that. I've always just— I simply just made people aware of, maybe like: 'yeah, I'm bad with time.' In my group of friends, we sometimes now put meetings half an hour earlier, and other things. Even then I'm late. But I've never actually talked about it. I now just kinda notice that in the conversation myself. So, I have never thought about it really. - P3

One important step in approaching neurodivergent identity as described by participants was for them to realize that many things in their lives worked differently than what is expected as the norm. For several participants it was about coming to understand that some things simply do not work for them but for others and vice versa. Accepting oneself, for this reason, involves both acknowledging struggles and appreciating strengths, thus seeing that there are both advantages and disadvantages to being neurodivergent. In

this sense, developing such a perspective allows one to take a more neutral stance and come to terms with the fact that it simply is what it is. When being asked how they felt about their neurodivergence, whether they saw it as something positive, negative, or more neutral, one participant replied as follows:

> it's kinda both. So– well, I just am me and I just am neurodivergent. That, like, really is nothing that I somehow would have chosen. That's why– and I also don't, like, find myself awful, rather I do actually feel quite good about myself. That's why I then consequently also feel good about my neurodivergence. But I don't, like, feel good because I'm neurodivergent, rather, I feel good about myself, and I am neurodivergent. So I arguably also feel good about the neurodivergence. - P5

In a way, change in attitude can be understood also as admitting being neurodivergent to oneself. For the individual, this means opening up, in the sense of not trying to hide or suppress traits, while at the same time also stopping to put so much effort in trying to fit in (with neurotypical society). As a result, participants described how they expressly let themselves 'be neurodivergent', thus in effect becoming visibly neurodivergent. In this regard, they expressed feeling better when not masking or trying to change who they were. At this point in their lives, many participants were keen on not concealing their true self, even if that may mean others will notice and potentially treat them differently or even worse. This is further related to efforts of not blaming themselves for their supposed deficiencies and treating themselves more respectfully due to, as was described previously, finally knowing oneself.

> I try to also mask as little as possible, which of course is difficult because you simply just learn that as a child and to then later unlearn that again is just difficult. But I notice [...] I'm doing much better, when I just don't try to change myself. - P2

Letting oneself be (openly) neurodivergent also involved stims and one's attitude towards engaging in stimming behaviors. As seen in the two previous themes, participants associated stimming both in positive and negative ways. However, above all it was just something that happens, that is natural and not always on purpose. Thus, stimming was seen simply as a part of being neurodivergent. Fundamentally, these behaviors fulfill certain purposes, for example, helping with concentration or calming down, while at the same time they are also related to a need for physical movement. Participants described how they found themselves driven to (almost) constantly be in motion, which further lead to their overall fidgetiness as well as to stimming often being subconscious behavior. This can include, among others, jumping, rocking, spinning in circles, heavy gesturing, and playing with any object within reach. In learning more about oneself and neurodivergence, some participants also noticed they were becoming more aware of their stimming behaviors.

> What I also notice more and more are like— just is kinda the urge to move. So, then just the tapping my feet, tapping my toes and just such things, that actually kinda flew under my radar, a long time, that I didn't realize that I did them, I now just am more consciously aware of them. So yes, stimming is a thing. - P4

Overall, participants noted that there could be both positive and negative sides to being neurodivergent, however, in the end it simply is what it is. Therefore, participants all agreed on one thing: neurodivergence made them who they are. It is an inseparable part of their identity, which affected pretty much every aspect of their lives. Consequently, participants came to the conclusion that without neurodivergence they would not be themselves.

> That would simply be a different person. And then the question if I would want to be a different person: 'no?' I do actually like being myself. Like, I think me as not neurodivergent wouldn't exist. My biography would be dif– everything would be different. Everything would be different. Everything would be so different [...] For some time in my life, I just tried to somehow categorize that and see what is what. But I've long since given up on that. That doesn't make any sense. Everything that I do is autistic. That means, if I wasn't autistic, then I wouldn't be me. - P5

In summary, participants on the whole shared a positive attitude regarding neurodivergence. Through changes in perspective and attitude as well as by coming to terms with the fact that they were never not neurodivergent, they were able to reach a point of self-acceptance. Furthermore, participants expressed that, although at times neurodivergence could be a burden, it does get better, especially thanks to finding support in community and learning more about themselves and the concept of neurodivergence.

3.5.2 Video games

In regard to the topic of video games, it was found that for participants, games served a variety of different purposes, which could broadly be clustered around three main ideas. Within the development of the themes, it was observed that some of the presented purposes or motivations seemingly represent directly opposing ideas. However, these do not necessarily contradict, but rather complement each other to result in each participant's own individual player profile. First, the theme 'Freedom: it's in the game' talks about the possibilities offered by video games, and particularly addresses game play activities such as the exploration and discovery of extensive game worlds, and the ability to run free, try out different things, and play without worry. The theme 'Escape to a world of play', on the contrary, is about how games can act as a source of comfort and safety. Here, an emphasis is placed on simplicity, which contributes to creation of relaxing experiences, and further also connects the function of games to provide an escape from

real-life struggles and stresses. In theme 'Now you're playing with control', the ways in which games support self-determination and player agency are discussed. Elements that contribute to this are customization, meaningful choices and alternative approaches. Similarly, aspects of problem-solving also allow the player to feel in control, and further contribute to the mental stimulation that games provide. Overall, what matters most, however, is that video games constitute an important and positive aspect in the lives of participants, since they serve as a source of joy and provide a sense of fulfillment.

Freedom: it's in the game

This theme revolves around the possibilities that games offer their players and the associated experiences of feeling unrestricted, limitless and like anything is possible. A central focus is placed on the availability of multiple play styles and the subsequent ability to try out different things. As a fundamental prerequisite for enabling this type of play is the player's openness to any experience, which in turn allows experimenting to one's heart's content and seeing what one can do. This further connects to an overall notion of doing things unthinkable in real life.

A first way that the concept of freedom appears in the participants' responses is in the form of exploration. Connected to this is the significance of expansive game worlds, which work to elicit a sense of wonder and a feeling of enjoyment in solely wandering around the environment. These kinds of experiences are encompassed in the overall shared notion that all things exploration are fun. Further relevant here is a second, overarching aspect of freedom, which weaves itself through the entire theme, that being the openness facilitated by a game through not offering only one single predetermined gameplay experience. As a result, it is made possible for the player to treat exploration as the goal in playing the game, meaning the focus is placed on the journey rather than the destination or end objective. Here, the latter would correspond to engaging with the game in a way that more so closely aligns with the game's intended play experience, where exploration is rather viewed as secondary (to completing the storyline). In this context, exploring is thus regarded as not an active choice, in the sense that, moving through the game world is mainly just a means to get from A to B, and on that way, one might come across some object of interest, or have to navigate through an area that might then lead to the need to explore. On the contrary, for many of the participants the story and reaching the end goal instead become an afterthought, and as a consequence they find themselves needing to actively remind themselves of the game's original premise. Such sentiment is particularly present in the following quote from P1.

> Legend of Zelda [Breath of the Wild] does [have a story], but there I more or less just *explored*. I focused exclusively on *exploration*. I did play through the story, in the end, but I think for the first 30 hours I only *explored*, and then I thought to myself, 'okay, I could maybe also do that already' - P1

In this way, exploration is set as the (main) focus, at least initially. The allure of the openness, of wide spaces, invites exploration. At the beginning of a game, the player gets placed in an unfamiliar environment, so typically there is an interest in finding out: where am I? What is this place? What are the rules of this world? Naturally, moving around in big open spaces necessitates that the player find orientation in order to enable navigation and gain a sense of what is out there. Thus, one vitally important element of exploration involves observation and familiarization with the environment.

> So I would say first off, the aspect of *exploration* is something I quite like. I like to just look around and get to know my surroundings. That's why I also like, for example, games that have a very detailed background. - P2

> Yes, mostly rather exploring. So with Skyrim in the end, I then just knew where everything was. [laughs] - P6

In essence, a player's self-driven desire for exploration suggests that the player's own curiosity accounts for a bigger motivational factor than a story, goals, or objectives, etc. As such, this relation between the former intrinsic and the latter extrinsic motivation shows a clear distinction in the significance of an internal drive and sense of adventure in comparison to external factors. With games, on the whole, having a lot to offer, this curiosity also relates to both novelty and distraction. In the context of neurodivergence, and especially in regard to ADHD, the topic of attention is particularly of note as it substantially influences gameplay. As an example, several participants recounted easily getting sidetracked.

> So this discovering in a game— *exploration* thing, I find pretty awesome, actually. [...] that you just go to planets and explore them, I really like that. So I would say yes, that is important. It's maybe also a little bit a thing of: you see a thousand new things, and then you run there and are perhaps quickly distracted. - P3

Playing video games in this way constitutes a form of novelty seeking, where exploration notably contributes to satisfying the need for new experiences and stimuli. Exploration is further supported by the (amount of) detail present in the environment, especially as it ties into the game lore and the setting of the story.

> I am also kind of a *sucker* for when something looks like as if there was a long story behind it. I like when something really looks historical, and not in the sense of: it has to look old, but rather in the sense of: there is maybe— it feels like as if there were almost, I don't know, five-, six hundred years of history behind it. - P2

The surroundings of the player character themselves thus constitute a vital element to a game's story-telling. As such, exploration of in-game environments can also prove a useful tool for emotional engagement and delivering stories centered around feelings. Designing the depiction of emotion through the game world in this way allows for exploration and discovery to enable a kind of story narration, that does not rely on actual telling a story through text and dialogue but rather gives the player freedom of coming to understand the story through their (gameplay) experience.

Further significant for participants' understanding of freedom in games is also the exploration of largely empty spaces, particularly as it relates to traveling outer space and discovering different planets, with an emphasis on the vast nothingness of the game world. In this regard, wandering around the 'emptiness' serves two functions. Firstly, it allows players to find their own purpose and what they want to do, in terms of exploring the possibilities as well as what the game has to offer. Secondly, it relates to the previous point of exploration itself becoming the goal, though, in this specific context, the focus is placed on enjoying the stillness and tranquility of such in-game space, which allows players finding peace and feeling at ease.

> Really anything that relates to *exploration* is a lot of fun for me. Just calmly walking across empty planets. That's something that I like. That's why I don't understand the criticism against Starfield, when people say, there is nothing on the planet. ***Yes, that's the point***. *I love it.* [laughs] *Yeah, it's a barren rock. Give me my barren rock.* - P5

Considering the context of neurodivergence, finding such purpose in exploration also connects to an understanding of video games an escape, specifically from the daily stressors of living in a world that is (sensorily) overwhelming and unaccommodating. Such use of play for finding comfort was a significant characteristic of participants play behavior and experiences. Thus, in this way, games act as safe space for these players. This further connects to the topic of neurodivergent struggles, which will, however, be more so discussed in context of the next theme, 'Escape to a world of play'. Here, the emphasis is placed on the freedom of moving through the world without the struggles and barriers that hold one back in real life.

In relation to the keyword 'discovery', the gameplay element of collecting items can also be counted as a part of exploration, where this mechanic serves as an incentive to explore more of the game world. Of particular interest here are easter eggs and hidden content, as they further help to nurture the player's sense of wonder and desire to uncover more of the game world's (unique) features. Additionally, discovery is also understood in the sense of collecting any item that one comes across, and subsequently exploring its uses and potential usefulness. This process further serves as a way through which the player is learning about the game's rules. Given any in-game object, the player is invited to think about its purpose, and in doing so ask themselves questions such as: How can this item be used? What significance does it have in my gameplay as well as in the in-game

universe as a whole? Does this item lead me to explore certain aspects I would not have before? Does it explain possibilities in the game that I was not aware of before?

> On the topic of collecting items: yes, I collect a lot, usually all kinds of nonsense. At least when you [are] on the first playthrough — later on, you then know what you should take with you and what not. [laughs] - P6

In this way, the player is incentivized to try out what the game has to offer. Of particular relevance is participants' conception and treatment of exploration as a gameplay mechanic. Thus, rather than just following a linear predetermined path, they are able to actualize their freedom of how to play the game in terms of how to get to the end goal. The act of making this choice itself, however, constitutes the theme 'Now you're playing with control'.

Discovery has further significance in regard to story and lore. Information that is hidden within the game's audiovisual environment allows players to discover connections and narrative cues through exploration and active engagement with what the game communicates to them. For this reason, participants took great joy in realizing connections and uncovering that there was more to it than first met the eye. Through the possibility of finding secrets concealed within, games spark players' curiosity to explore potential meanings, and to look at the game and its content from different angles by digging deeper beyond what is communicated on the surface level. The goal behind such endeavors is seeing everything that possibly exists within the game and its story, thus getting the full picture.

> I like, for example, also when the music very actively contributes to the storytelling. So, I like games where I theoretically could find out through the music what the story is, if I listen closely enough. - P2

Freedom is particularly connected to open-world games, not only in regard to the exploration of vast game environments, but also in terms of interactions and action possibilities that a game offers. As a result, players are given the freedom of choice regarding play style (preferences) and individual focus. While actively making such choices and player autonomy itself are part of the theme 'Now you're playing with control', here freedom is associated with feelings of empowerment to try things out. In this sense, the notion of exploring is applied in terms of available game mechanics and probing the limitations of the game world and its rules. A game (seemingly) allowing players to do anything, on the one hand, allows players to practically simulate real-life by facilitating (the engagement) in everyday (or close to that) situations.

> ... usually— like particularly with what I play, in those open world games you can effectively do everything anyway. So you can put more focus on

> fighting, put more focus on exploring, sometimes also simply do everyday things. Like with, I don't know, say GTA, for example, there are also these taxi missions where you simply can simulate basically normal life. - P6

On the other hand, however, it also works to blur the line between faithfulness to real life, realism, and doing what you want. The intrinsic desire to run free and play around with opportunity, thus prompts players to take simulation to the extreme (within the bounds of the game's rules). In this context, chaos and shenanigans are central concepts that were associated with the idea of freedom. This includes engaging in silly antics or some kind of mischief, as well as simply fooling around and acting on one's wacky ideas. The overall intent of players is to go wild doing their thing, since within the realms of the game it is fine to just simply try things out.

High value placed on being free to do as one pleases, running around the game world and doing whatever comes to mind or one feels like (doing), all the while without being bound to any particular set task or exact goals which would otherwise act as a perceived restriction on the player.

> What I also quite liked a lot were the Just Cause games, simply because they were just chaos, and you could do what you wanted. Like, kind of the freedom and almost no concrete missions, rather you're just doing some nonsense. - P3

In this sense, video games can be understood as playgrounds, constituting a space which offers freedom from both real-world stresses and constraints, as well as, real-world expectations and standards. For this reason, freedom in games for some participants also coincided with there being no right or wrong behavior, meaning the game will not punish you for whichever option you choose or action you take. This is particularly relevant for in-game interactions and dialogues. Participants appreciated when the game world/its creators allowed them to do anything, including, for example, more unconventional player interaction possibilities, such as not answering, turning around and simply walking away.

> Also, when they don't really have this black-and-white morality in the *stories*. I always don't like it when games punish you for— When you, so to speak, have the choice to act amoral, but then you get punished, somehow kinda from above, by the game developer, because you made the **wrong** choice, right? I want to be able to choose and not guess which choice you want me to make. That is no choice. That is important to me. - P5

Going a step further, participants recounted their interest in and inclination for going beyond rules and probing the bounds of the game's programming and technical environment. In essence, they described a fondness for finding ways to abuse the game mechanics

and essentially break the game. By taking things to the extreme in this way, players set to testing the limits of the game, seeing how far they can take it, in the sense of exploring the border of the possibility space opened by the game. One point particularly emphasized by participants in this discussion was the possibility of seeing what one is able to do when there are no real-world consequences, and thus no need for any concern or worries. In other words, they liked having the freedom of breaking the rules, while also having the sense of security that ultimately whatever happens will only affect the in-game world, meaning the outside world remains entirely unaffected.

> ... that you really can do what you want, without having to worry in any way. Because there are just no consequences. So you are really able to do what you want and in the end, nothing changes in your regular life. - P6

Fundamentally, it therefore boils down to the freedom to play. For participants, it was important that games allowed them to do whatever they set their mind to without feeling like they are somehow limited in their imagination and enjoyment.

> So I love it when games give me the possibility to use very many different approaches for reaching the same goal. Here we are again with the sandboxing, yes. So when I there really— when you can try everything somehow. That's a lot of fun for me. [...] like, let me play. [...]. Let me play, I want to play. [laughs] Give me a sandbox and let me play. [...] just let me do it. And especially in sandbox games, let me just run around the world pretty much invincibly. - P5

Another aspect of freedom and possibility spaces is customization, in the sense of the sheer amount of options a player is given by the game. This further connects to exploration, in that sense that scrolling through menus and cycling through options allows players to see what is possible. Participants expressed that to them, it was fun to just see what options there were and to have freedom in putting something together using the various choices to pick from. Moreover, having many aspects that could be influenced or chosen by the player was seen as highly positive, since games in this way allowed them to do what they wanted.

> So, I also like when it's a very detailed customization, where I really can just do what I want. [...] I also like customizations that just go very in-depth. I also don't like it when I, for example, have only three, four, five different aspects. - P2

Customization itself can take on the role of the main gameplay focus, rather than remaining as more of a setup for the actual gameplay. With games having many options available, creating a player character, designing and choosing an outfit, etc. can suck you in and make you spend a significant amount of time on just that.

> I actually do like doing it. So, with Cyberpunk, you also have very many options, and I do actually like doing it, and then I might also actually sit there for half an hour, an hour and do that. - P1

While this can be a fun experience for most of the participants, at a certain point it may be taking too much away from actual gameplay. Such potentially negative and undesirable side effects of freedom are further discussed in the next theme 'Escape to a world of play'. That being said, freedom is a powerful tool for players. Illustrating this point particularly well is the following example from P5, where the game implements the concept of freedom in such a way that it gives players the power to tinker with the game on a core level.

> In Morrowind, one of the very old Elder Scrolls [games] by Bethesda, you could create your own spells. Completely. Completely design [them]. Everything. Everything that existed in the game you could try to pack into a spell, and they just had a mechanic that allowed you [to do] that. It then calculated how much mana that costs or something. I mean, if you went totally overboard with it, it costs 10 million mana. You can't even have that much mana. But you could design your own spells, completely, and then cast them. That is the best mechanic that I've ever experienced. - P5

Overall, it can be said that for participants, 'freedom' constitutes a significant motivational factor in their video game play habits. In particular, this pertained to the idea of exploration, in terms of using the given action possibilities to their fullest and discovering what the game has to offer. At the same time, games also served participants as an escape and leisure activity, which allowed them to relax and find comfort.

Video games, thus, in many ways functioned as safe spaces, and in this regard, participants also put an emphasis on limitations as positive force.

Escape to a world of play

The main focus of this theme lies on video games' function as a safe space for relaxing and escaping one's real-world stressors. As was discussed in the previous theme, freedom, that is, having various options to choose from, thus capitalizing on opportunity, was seen as generally positive by participants. However, at the same time, an issue that was voiced with choice is overwhelm from having too much freedom and openness. Additionally, a game's intensity in terms of, for instance, gameplay or visuals, as well as psychological overwhelm from prolonged engagement that they experienced while playing were brought up as troublesome. For this reason, this section also discusses factors that help reduce players' cognitive load in addition to qualities that make video games a safe space or place of comfort for participants.

First, participants recounted often feeling overwhelmed by too much openness within a video game. They associated a sense of stress with high complexity of mechanics that granted, in their eyes, an excess of freedom. The reasoning behind this was the tendency of such freedom to lead to uncertainty and a lacking sense of direction due to not knowing what one should do.

> Yes, I do think so [...] because you simply have a lot more options. Although I partially also notice that if I have too many options, then it eventually also becomes less fun again, because I then can't decide what to do. - P6

At the same time, an abundance of options could also lead to participants getting too absorbed in a game or one of the play activities it offers, such as customization. Becoming rather intensely obsessed with and consumed by single gameplay aspects was further connected to the feeling that one is spending time on 'meaningless' things. For these reasons, participants deemed limitations and restriction to be quite positive and helpful.

> What's cool for me is the simplicity. That it's not so, like in an open world game that you can walk in any direction, but rather [...] the possibilities are very limited, and it is very, very simple and that, I have the feeling, is such a limitation that [...] is just positive for me because I would simply be overwhelmed by such other games like those open world things, or I also know that [...] if I were to start with something like that, I would then get so sucked into it that it would yet again go into an uncomfortable direction. - P4

In a video game, it ultimately comes down to the coexistence of freedom, which gives opportunity, and restrictions, which provide players with structure. For many participants, a good balance of the amount of choices and options available to them was thus a main point of discussion and consideration in this context. Essentially, these players are looking for (an appropriate level of) simplicity, which manifests as a tendency to desire fewer customizable elements in favor of predetermined details and predefined aspects. This refers to, for example, the identity and design of the main character as, in this way, the potential for spending hours on creation and configuration, before the actual gameplay has even begun, is avoided.

> ... that you do have options, but not too many options, because, like I said, that overwhelms me. So like that you– it sounds so dumb, but that you are limited in your choices, because I think that is also something where I could then just spend hours on customizing something, and then I don't play at all. And then I think to myself [...] that's somehow again not the point of it for me. In that sense, a few choices are good, and otherwise: constraints. - P4

In this sense, participants showed themselves as proponents of (reasonably) limited possibilities, favoring rather simplistic or straightforward game structures, with only a small number of clearly defined gameplay interactions. An additional element that has a positive impact for participants is a clear storyline. Within a video game, an engaging plot provides structure to the player by guiding them through the game as well as the contents and interactions it has to offer. In other words, a well-structured narrative serves as the golden thread within gameplay.

> ... that there is some kind of continuous main story would be quite convenient, because there are some games where you don't really have that, where you then don't know what you should do. - P6

A game's design developed around the story lends itself to the implementation and realization of a specific gameplay structure, that facilitates progression in this way. This enables the player to more easily find out what to do in terms of expected action and provides a clear path, most often along quests, to follow. Here too, a preference for simplicity among participants becomes apparent. In particular, they appreciated when games only set one or two tasks at a time, as well as supported players in working through the individual steps one after the other when completing missions. For players, following available quests, in essence, constitutes a guided exploration, through which it is made easier to get familiar with and navigate a more complex game environment. In this way, the game's (fundamental) structure helps players to not get lost in the sheer dimension of the possibility space, which was mentioned as a considerable downside of or problem with open world games.

On another note, such an inner game structure as well as its associated play styles can eventually result in a certain kind of monotony of engagement with a game. This further also reveals itself also in the thinking and reflecting about one's gameplay and interaction, which works to shape the mental construct of the gameplay loop.

> So in Cyberpunk [...] I didn't really explore that much. It was more or less like: I get the quest, I complete the quest, I get the quest, I complete the quest and so there's theoretically very many possibilities, where you can then either explore, simply taking a look at the world, or explore and the quests, like, you find very many single quests scattered in the world [...] I more or less just followed that and went through that there. - P1

Likewise, having a specific clearly defined mission or explicit tasks to take on also makes it easier for players to stay motivated, compared to when there is no such thing. At the same time, participants recounted their tendency to stop playing when there are no more clear and obvious things to do in combination with too much openness. This also relates to play phases, a commonly reported phenomenon among participants, where days or weeks of very intense and almost obsessive play would alternate with times of not playing

at all. In some cases, this meant potentially never touching or picking up a certain game again after that. Therefore, easily losing interest and motivation to continue playing was considered an overall problem by participants.

> It's kinda the problem that I lose interest so quickly, or the motivation somehow to continue. [...] I'll play it one day and then maybe also the next or the day after that, where I'm still interested, and then I already forget again, more or less, that it exists. [...] I think it's difficult with games that are very open that I somehow, when I don't obviously see something that I could do, that I then find something– or rather, I think the problem isn't even the theoretically possible, that I am capable of finding something. But it's more like: the game then somehow doesn't interest me. Like it somehow doesn't have a factor that says: okay, in a week, I'll also still remember to play the game. - P1

Besides guiding elements given by the game, factors outside it can also act as a sort of external structure that helps with curtailing obsession and video game use getting too excessive. In this context, participants mentioned how through university or work, it has become possible for them to keeping their gaming in check. Additionally, allowing themselves to have scheduled time for video games worked to prevent losing themselves within play.

> Yes, well by now, also thanks to work, it is kept in check. So it's mostly like, I come home at around 4, sometimes earlier. And then, well from 5, 6 depending on when exactly I'm home. Then just mostly until 10 PM, though I do take a break for dinner. - P6

Partially, such factors were also seen as a hindrance, since they prevented participants from playing as much as they would like to. At the same time, cues external to the game also encompass both physical and psychological reactions which might be elicited through the gameplay experience. These external cues too are used as determining factors for the extent of play and keeping it within an appropriate duration, which is particularly significant in the case of players who tend to get easily frustrated with high difficulty. In connection with this, another area of overwhelm, that to a certain degree also more or less specifically relates to the participants' neurodivergence, was noted. Participants, in this context, expressed that they often got quickly and easily overwhelmed by games and particularly their graphical presentation as well as intense visuals in terms of movement on screen. Such visual overload, which is caused by the presence of excessive graphic effects and visual noise, such as jitter or screen shaking, could frequently lead, among other things, to feelings of sickness, agitation or fidgetiness.

> Let's really get down to the basics, I am very quickly and very easily overwhelmed with what's happening on the screen. And that's why I only play

> games that are quite calm graphics-wise. If there's too much going on, I can't do it. I simply get nauseous and very uncomfortably *stim-y*. - P5

As a result, participants tended to prefer visually calm and simple games, while at the same time they also employed different strategies to try and combat such negative (sensory) experiences while playing. One thing that was regarded as especially helpful in this context were game settings that allowed players to decrease overwhelm and cognitive load by turning off or tuning down superfluous (visual) effects. Alternatively, some participants mentioned sticking to specific genres or specifically choosing games with certain restrictions in mind, i.e. only playing ones that are visually calm.

> I primarily play 2D because I have problems with *motion sickness*. [...] I very much feel sick from everything that has more than two dimensions. - P2

When it comes to graphical settings, participants appreciated having options to adapt the game to their needs. In particular, this meant calming the visual chaos by getting rid of annoying and unnecessary visually communicated information such as head bobbing when walking. Thus, such settings enabled participants to play games that would otherwise have been unplayable for them.

> ... it's nice that we have settings to reduce that. Turning off *camera shake* and all these kinda things. That's super important, **super** important for me. There are games that I just **can** not play, even though I would love to, because they're visually too extreme. - P5

Similarly, participants reported that with some games they could simply not play for long if they were too intense sensory-wise. As such, they were highly grateful for having the choice to reduce sensory demands, which on the whole made games more accessible to various kinds of player groups and some participants also made the observation that such adaptability had been gaining in importance in recent times.

Besides such adjustments of graphic settings, a game's visual style also plays an important part in how sensorily demanding a game is in the first place. Here, participants indicate a preference for simple, cute, cartoonish visuals, and specifically also pixel graphics, which can help to reduce visual load. In this regard, some also indicate preference for 2D games. Another point, besides simplicity and lower sensory demands, pertains to visual interest. Here, participants expressed that they also enjoyed playing games with fun and colorful graphics, stylized art styles or a distinct visual identity simply because they were interesting and nice to look at. Overall, an emphasis was placed on simplicity in visual presentation, however, that did not conversely mean participants wanted the graphics to be as simple as possible.

> So actually not like, as simple as possible, but just not like— so I'm, for example, not at all interested in such a game as, I can only now think of The Witcher [...] you know where like the look is just more or less like: we now try to make it realistic, or something. That interests me less. - P4

It follows that with graphic simplicity, participants' statements boil down to the opinion that a game's visuals should only be as complex as necessary. To them, games with (overly) realistic graphics were on the whole less interesting, and as such they further expressed a dislike for games that were excessively brutal and overly graphic. This is likely also connected to some participants' tendency to stay away from violent play and confrontation in video games, instead preferring to adopt a more pacifist play style. As such, these participants prioritized finding ways to avoid conflict as well as fighting, and overall wanted to approach their game play in a more calm and peaceful manner.

> On the topic of fighting, I usually try to more so sneak around. [laughs] Rather no direct confrontations. And mostly I also try to, if there is any possibility, solve the whole thing peacefully to then fulfill that as well. - P6

These tendencies toward more calm and relaxed play styles further connects the difficulty associated with video games. In particular, as it links to stress experienced because of game play, the topic of difficulty appears in terms of the mental effort required for playing. Participants spoke about regularly feeling frustrated and losing their patience when the games they played were overly difficult and stressful. Further, just as too much difficulty could result in frustration, so could playing for too long at a time. In this way, games conversely end up becoming the source of exhaustion and stress for participants. For this reason, it is crucial for players to know when they should take a break and pay attention to their own upper limit for play duration for the game to still be fun and enjoyable. What helped participants in assessing when they had reached such a point were aforementioned psychological and physical cues. These include headaches, nausea, and becoming fidgety as well as one's current emotional state, for example, feeling agitated.

> And something like that I then play, I'd say, for two to three, maybe four hours, because I notice that that is like the upper limit where I still feel reasonably well [so] that I can maybe also still do something afterward. And especially because I then also notice: at some point I am so frustrated that I would maybe really like to throw my keyboard out the window [...] particularly with difficult games [...] I would say: okay, maybe it is time for a break now. - P2

As touched on before, participants used video games as a coping mechanism and as such viewed them as a way to escape from real-world stresses. The games that fulfilled this purpose for them generally seemed to be characterized by simplicity. In certain cases, this

also meant being slow-paced, but particular importance here was placed on low difficulty. As such, participants indicated that they often preferred the difficulty not being too high and the level of challenge being kept rather low. The reasoning given for this preference was that the point of playing for them was to relax and unwind, and to get away from whatever they had to deal with in their real lives.

> I don't need any *challenge* in a video game. Because [points around] here, here, **here** is the *challenge*. It is everywhere. The whole world is a damn *challenge*. Just let me have my peace and quiet in my video games and come up with something and kinda run around and do some shit that I just feel like doing. I **don't need any stressful *challenge*** with my video games. - P5

This desire for a more limited degree of challenge connects to the previous theme and the idea of freedom. In this context, it particularly refers to the freedom of action in games as well as the freedom from restrictions imposed by real life, because above all the value of games for participants lies in their function as safe spaces. On the one hand, some participants, as touched on before, spoke about turning rather to slow-paced games, which were associated with getting comfortable and relaxing at home. In this case, escape from real-life stresses predominately facilitated through cute, colorful and simple graphics, straightforward interaction, as well as the simulation of everyday activities. Here, engagement with a game was essentially focused around rather mundane activities and a monotonous gameplay structure. As such, these games provided participants a place where they could withdraw from the world and had something to occupy themselves with. This was particularly relevant in rough and stressful times, again highlighting the significance of video games as a coping mechanism.

> During my [secondary school] days, I played a single game a lot. That was like a rhythm game, so that was Osu!. I played that very, very, very, very much. I believe there I have— I believe it's over a thousand hours that I invested in that, and it really is my absolute top game and– because that also was at a time where more or less the whole day I just played that when I wasn't at school. But at the time that also was a coping mechanism for other mental health problems where I more or less simply focused on that so that I don't have to deal with the rest. - P1

At the same time, preferring simple games with lower difficulty did not necessarily mean that these also had to be calm, mundane and slow-paced. For this reason, participants equally also chose to play simple and fast-paced for relaxing and forgetting about daily stressors. In particular, such games were characterized by providing quick and easy gratification and required comparatively low mental effort, as opposed to games where rather physical action and reflexes were in the foreground. Likewise, mentioned in this context were games that are straightforward and easy to understand. As such, the player

is able to jump right into the game and its action without the need for tedious tutorials or reading instructions.

In their function as offering a space for relaxation as well as facilitating peace and quiet, games were further used as a way of taking a break from other activities such as studying. In this regard, participants shared the sentiment that they were, for the most part, playing just for fun and not to be the best.

> So things like Magic [the Gathering] I just play rounds on the side again and again. It can then also sometimes be that I'm studying something or have to do something for uni and then [take a] break by playing a round. [...] I'm also not someone who wants to get extremely good at a game. So I'm not like a, I don't know, typical LOL player who then wants to eventually control their character extremely well, not that. But I find it really cool to create and to see and to play through such situations, I'd say, that then simply work well, that mechanically work well, I totally do that. - P3

Furthermore, it seemed that participants also liked having the change and variety in game pace, which allowed them to find an appropriate balance to maximize relaxation and enjoyment. As such, major motivations for playing games were relaxing one's mind and getting a quick mood boost.

Overall, games provided participants with positive experiences, which also extended to emotional aspects. On the one hand, this pertains to video games that could elicit various emotions in players. Pointed out as particularly significant by participants, in this regard, were games with unique stories that made them fear, laugh, and cry throughout game play, resulting in a rich player experience. On the other hand, nostalgia constituted a substantial motivation for playing. Participants described how games had essentially always been part of their lives, and as such games in general were connected to positive (childhood) memories. In this context, the sentiments participants expressed can be summarized as that they found comfort in familiarity. Further, through their habit of replaying games (many times), they were able to gain a sense of contentment from the familiar and already known. Specifically, when it came to games that they particularly enjoyed and that were very special to them, participants reported that they at least semi-regularly decided to start playing these games again from the very beginning. One particular aspect mentioned in this context was the story as it was considered a decisive factor that made participants want to replay a certain game.

> Games that I particularly like a lot, I play **repeatedly** all the time. Like, for example, this is my fourth Cyberpunk *run*. That is fantastic. Cyberpunk is great. - P5

> Red Dead Redemption I played through twice. Skyrim I've played about [laughs] 15 times or so and Cyberpunk now also for the second time. - P6

The act of replaying a game provides structure in so far as the player already knows the game and what it entails, which means they are able to anticipate what is going to happen. This significantly lowers the required mental load compared to a new game where one needs to first figure out what is going on and how things work. Such a tendency in participants' play behavior also connects to a like for repetitiveness. Further, participants enjoyed games with shorter sections and independent gameplay segments that allowed for more brief gaming sessions. In particular, they indicated a preference for playing individual missions and self-contained runs.

> Well, mostly I try to do play sessions with games that, for example [...] where playing through once maybe doesn't take that long. Just like The Binding of Isaac, where one *runthrough* maybe takes an hour. But you just can unlock a lot of things and because of that the *runthrough* is always new again. - P2

For this reason, participants highly appreciated games that introduced some change in every new playthrough, so that they could enjoy replaying a game they are already familiar with while still having that novelty so that it does not get boring. Here, several participants also spoke about a dislike for overly lengthy and tedious games, as they often did not have the patience for things that require extended period of attention as well as consistent play over a long time. In part, this is also related to problems with memory and keeping interest. Thus, many participants preferred rather short runs and quick playthroughs. Game features that support this kind of engagement were timed challenges and timer-based gameplay modes. Additionally, rogue-like and rogue-lite were two game genres that were specifically mentioned by several participants in this context.

> And what I can say is that I am a big fan of rogue-like and rogue-lite and all games that offer such runs that are self-contained. Yeah, so I'm not such a big fan of long things, because I— maybe also because I lose concentration there a little bit, rather I'm someone who really likes to do such *runs* in games. - P3

Regarding the understanding of video games as a safe space, a connection with participants' preferences regarding playing alone or playing together can also be identified. When it came to playing games together with others, participants predominantly spoke about teaming up with friends and pursuing one and the same goal as a unit. A particular benefit resulting from this was being part of a group which allowed them to engage in a shared hobby and connect with others around a common interest. In this regard, participants' focus was put on the social aspects of gaming, where video games provide a space for socializing, and in some instances so much so that the game actually moves out of the focus.

> so we also talk via a headset and, yeah [...] to a certain extent the game playing is also only secondary, and you just chat. - P6

A further benefit that was brought up was the opportunity of meeting others and establishing friendships, especially being able to do so in real life. Through engaging in games with others, playing together can become part of one's routine. As a result, some participants expressed having much play time for certain games simply because they were playing these with friends as a shared activity or as a way to hang out. Another aspect of enjoying games together was the activity of co-playing. In particular, this involved watching others interacting with a game as well as commenting on the gameplay and what the player should possibly do, which can further also give access to otherwise overwhelming games. For this reason, participants found great joy observing another person's play.

> ... and [friend] played these open world games, among other things. And what I insanely liked doing was watch him, and maybe kinda add my two cents now and again, but to like, watch him, how he does it, what he does, where he goes and such. Just, kinda like a little bit as co-experiencing that in the background. - P4

Although most participants had engaged in at least some gaming with other people, for the most part, they rather seemed to prefer playing alone. One of the reasons for this relates to the challenge and stress associated with social demands. As such, multiplayer games and online gaming were experienced as overwhelming and additionally for some games participants found their communities to be rather toxic, which caused them to avoid multiplayer settings and engaging with other players.

> ... and otherwise, *games* have actually always accompanied me. Well mainly RPGs. All of them RPGs. All– oh what a surprise, the autist is gonna say: all *single player games*. [laughs] [...] everything multiplayer effectively doesn't interest me. I find that incredibly overwhelming. I don't need that. Out there is already overwhelming enough. I don't need to now additionally overwhelm myself with my video games. ***Are you fucking kidding me?!*** Online gaming I don't understand at all. [...] Online? No, no, no. *I don't do that. We don't do that here.* - P5

Another important aspect in this regard is participants' understanding of gaming as a time for oneself. For this reason, a focus was placed on facilitating one's own play style, in the sense of being able to go at one's own tempo and take breaks as one needed. Since playing of video games constituted an important part of personal leisure and free time, participants had a desire to design this aspect of their lives just how they wanted, which included the prioritization of feeling comfortable and relaxed.

> I think, because with these sort of things I then— [...] it is about my free time [...] for me that's something that I like to have for myself alone, because I

> then can do exactly as I want. At the pace that I want. With either breaks or also just no breaks, as I want. And it may well be that that is also connected to my social anxiety, that I just have the feeling, if I do it like how I want, then this could for other people be like so-and-so and so; negative adjectives of your choosing. - P4

On the whole, there were several areas of overwhelm that participants brought up, as well as various aspects and elements that made games more pleasant and enjoyable, as well as, less mentally demanding. As was discussed in the first two themes, participants valued both freedom, in the sense of having various possibilities and options to choose from, and limitations, which provided an environment for simpler and more relaxed gaming. These two concepts are united by their dependence on player autonomy, which further connects to the agency of the player to navigate the scale from openness to restrictions, complexity to simplicity. The emphasis, thus, is placed on the player being in control and enabled to make active and autonomous choices regarding several different aspects, in order to determine their own personal gameplay experience.

Now you're playing with control

This theme centers around the idea of control as it pertains to all the different ways in which the player can influence the game, as well as the relation between sense of agency and the act of making choices in how one plays. Particular emphasis is placed on meaningful choices, having control regarding individual play style and the subsequent gameplay actions that come with that, as a way to actualize self-determination. Further noteworthy is the overall concept of shaping one's own play experience to one's liking. Here customization itself, meaning, making the active choice, is another crucial part of this theme, rather than the diversity of available options discussed previously.

To preface this section, games of any kind require players to take control and make choices. This is how game playing fundamentally works, where to interact with a game is in itself a choice (e.g. turning on the console, inserting a game and picking up the controller) and equally within a game any player controlled action is a choice. Thus, in essence, gameplay is but a long series of choices. Moving between freedom and restriction, the question now is, in what way and to what extent is the player able to make choices beyond a base level defined by the core gameplay loop. This would, for instance, be the ability to walk left and right and to jump in a 2D platforming game. As such, choice is a factor of player autonomy.

First off, an important aspect of control pertains to choosing one's play style. In this regard, 'action' was put forward as the main key word for participants, in the sense of jumping into action, getting straight into the gameplay and making quick progress. This eagerness to be active further extended to the physical aspects of gaming, or in other words, a player's desire for controller action.

> ... because I always rather, I would say, want to perform the physical skills of: I want to do something on the keys, so to speak, and not sit around too much and ponder over whatnot. - P1

An additional element of being in control involves the interplay of skill and in-game action, that is enabled through possibilities of performing moves and interactions within the game world (as the character). Particularly important in this context is the implementation of responsive controls as well as satisfying audiovisual representations of gameplay actions, as those not only facilitate skillful play but also support the player in feeling in control. As such, participants described playing as being extremely fun when aspects such as controls, mechanics or player actions work well and smoothly, and additionally allowed for things like action chaining or combos.

> The relevant thing is that [...] the movement, the hit feedback and all of these *core* elements of a standard shooter game [...] work so well that it is extremely fun to take good, in quotations, actions. Well [...] I at least get extreme *satisfaction* from that [...] In that game you can throw yourself and while throwing, rotate and shoot, for example. And I get immense satisfaction when I somehow manage to, I don't know, set a mine somewhere, jump away, while jumping, rotate myself, shoot something and then that also explodes. So this taking of very good actions in that game is totally fun. - P3

In essence, precise controlling as well as effective and enjoyable feedback support and strengthen player's feeling of agency. A sense of control also relates to the desire for getting into the action, thus, fast-paced gameplay that requires considerably quick player input in order to facilitate player autonomy was quite significant for participants. It further also gives reason to say that, to a significant extent, participants were choosing to play because it simply felt good.

Another context where choice and self-determination become relevant are games that offer multiple ways of reaching the same goal. Participants highly valued being able to, as the player, find their own (unique) way of tackling the challenges presented by the game. This again connects to the idea of choosing one's own playing style, which is then further supported by not feeling restricted by the game or forced to play in a certain predetermined way.

> ... when there are also different possibilities for how you can play certain missions. So like, when you're not, say, given: 'there, for this mission you have to now fight' or something. But when you also just have other options. [...] Although I partially then also do it character-oriented, where I think to myself: okay, how do I want to play this time? And then I just sometimes play differently. - P6

While having different possible ways to reach the same goal, and thus, the subsequent ability to try something one's own way constitute a possibility space, as was described in one of the previous themes, only through the player making use of their agency do these allotted freedoms actually become meaningful. This significance is reflected in participants fondness for changing and experimenting with their approach in general, which further also depends on the complexity within a given game. The implementation of complex mechanics oftentimes goes hand in hand with a need for problem-solving. In particular, puzzle elements and other similar gimmicks being present in a game caters to the participants' affinity for challenging their mind. Thus, through games requiring mental power and pondering, players are able to gain enjoyment from coming up with the solution(s).

> I would say anything that really taxes and challenges my brain a little bit. And really where I, let's say, can engage in problem-solving, but am not bound to a fixed path. - P2

In addition, this type of gameplay allows players the exercise of their creativity. Specifically speaking, engaging with games in this way provides players with an opportunity to train their cognitive flexibility via creative problem-solving and further develop their imagination. This is necessary for the unconventional or outside-the-box thinking involved in searching for alternative approaches or solutions.

When it comes to self-determination and player agency, it is necessary to also consider aspects of difficulty and challenge in games. As stated in the previous theme, participants experienced negative effects when games were too difficult for them. However, they equally voiced their frustration with video games becoming increasingly simplified in an effort to cater more so towards a more casual audience. As a result, such games tended to induce boredom for these participants, as they are then (perceived as) not challenging enough or sufficiently stimulating for the mind. Such impressions can, in part, be explained by lacking complexity as the reason for not having enough control and consequently diminished player agency. This is especially relevant considering that both boredom and a need for distraction were brought up as motivations or reasons for game play.

For some participants, control and self-determination meant playing their video games in unintended ways, which involved finding abuses or using mechanics for unanticipated effects. Furthermore, purposefully playing at the margins of the possibility space, participants were able to leverage and exploit effects of edge case. The driving factor behind engaging in such gameplay activities is the player's curiosity, which pushes them to harness the power of asking "what happens if..?". When taking things to the extreme in this way, the aim of the player are not only the actions with unpredictable outcomes themselves, but the ripple effects and chain reactions that they might bring about.

> you can create somehow just really, really weird *abuses* of mechanics that are actually not intended like that, but work like that [...] The game is just very much designed for things to interlink with each other, and you can do combos that are *crazy* in some cases and that's great though, and I love it, things like that. So when you can twist it so that the things completely complexly interlink and then do really sick things, I also find that great. Like a little bit this *break*ing of a— to a certain degree it is the *break*ing of a game. - P3

The result is acquiring command over 'awesome' and 'ridiculous' combos and game interactions, which subsequently becomes part of a person's gameplay strategy. Self-determination in this context ultimately comes down to utilizing the amount and variety of possibilities presented by the game and meticulously and purposefully selecting those options that facilitate one's individual goals and play styles.

> ... it's also like that, through the game world alone. It just allows you to reply with absolutely *crazy* things. It allows you, simply based on the game world, to really do everything just however you feel like right now. To answer, to not answer, to simply turn around, to leave and so on. The more the game developers allow me to just be a little bit *crazy*, the more I like them. That is important for me. - P5

From another point of view, taking control in a video game also involves aspects of role-playing. Interestingly, participants predominantly described their choice to not represent themselves in the game, but to instead create original characters. Additionally, such conception of gameplay compels players to decide their playing style according to that characterization. For example, in taking a defensive approach a player might prioritize stealth and taking more pacifist actions and options, while turning to offensive play puts a focus on fighting, which then further includes decisions of attacking style or weapons.

> I find character creation generally very important. I am someone who takes quite long for that, [who] puts a lot of time into that. But I am also someone who [...] well I don't create myself, rather I come up with a character and I then play as them. [...] In Starfield, for example [...] I played like some kind of a space 80s guy with big hair and who knows what [...] where I then decided I actually only want to play him in hand-to-hand combat, which is possible in that game, surprisingly [...] I quite like doing something like that ... a lot. - P3

Moreover, participants enjoy trying to create the same character in multiple games, and then in a way continue their story. Such characters hold a special place for players, as they have accompanied them on many adventures through numerous playthroughs

and game universes. Offering players the freedom to customize also means that games become a space for creativity and self-expression. In this sense, control is a prerequisite to experimenting with customization, bringing out individuality, and exploring one's unique style, which subsequently also serves as a form of representing neurodivergence.

> I think all those modern transmog functions are also great, where you can kinda just go wild. Because then I can place a funkily dressed autistic character into some unfitting *settings,* and that always brings me great joy. - P5

Having full control over character customization was seen as important, with particular emphasis being placed on having meaningful choice. In-depth customization can give players very detailed control over not only a character's appearance and aesthetic but also over functional aspects. Customization systems of such a kind are also able to provide a high level of realism in terms of configuring a character's stats.

> ... the armor of the characters was separated as: left glove, right glove. Left forearm protection, right forearm protection. Left upper arm, right upper arm. Shoulder plate, shoulder plate. Chest. And the same thing with the legs. [...] and you actually could also throw together anything from all the armor parts. This means, you could [have] a steel glove on the right and a— **no** glove on the left. Or something. [...] I also find that a little bit realistic somehow. Then I just, well, find the loot; the armor is broken, but the left glove is still fine, I'll just take that with me. - P5

Complex customization that provides a considerable level of detail could lead participants to spending hours on adjusting, fine-tuning, and tinkering. On the one hand, this pertains to clothing and creating outfits, which further relates to fulfilling one's need for novelty and variation. On the other hand, improving a character's stats and abilities becomes an element of strategizing. In addition, optimizing one's gameplay tactic in this way lends itself to creating combos and action chaining possibilities, as well as devising schemes for boosting effectiveness. This is the case not only for playable characters but also applies to, among others, deck building, management and construction simulation, or outpost building.

> In Cult of the Lamb there is this building sim [...] you have like a small village that you have to manage, and there I do have a rough plan, what the village looks like, so to say; here everyone sleeps and here are the fields for food, and you name it. - P1

Thus, through complex and interesting mechanics, the player is able to attain fine-tuned control, supporting their autonomy and agency. A common point that too was deemed

highly important in the context of customization was the ability to change things later on down the line. Here, participants voiced their general dislike for games where one is asked to make a choice at the beginning, and then is stuck with that for the rest of the game. This led to them not feeling in control, thus causing a diminished sense of player autonomy as well as call for allowing players to change their mind.

> Stardew Valley has a character creator that's actually quite *nice*, where you can *cycle* through quite a lot [of options], and you can also still change it afterward. That is also something I always like, when you can put something together somewhere, but you can also still change your mind. - P2

That being said, while overall (character) customization constituted a fun part of gameplay in the participants' eyes, it was at the same time perceived as something nice to have but not absolutely necessary, or rather, to be more specific, other aspects of a game were prioritized, such as, for instance, having a profound story. However, when it comes to story, letting the player make choices provides another way of facilitating self-determination and player autonomy, since in this way they are enabled to take control over their play experience. Particular importance was placed on the ability to make choices that actually influence the game and its story in meaningful ways. As such, player agency and active involvement are crucial to ensure, seeing as participants reported that in some cases, a game's story can feel too narrow and restrictive, thus ultimately seeming not much different to a movie. Further, a relevant consideration in this context is whether a game truly permits own personal decision without expecting specific 'correct' choices, or not. In the latter case, this means that not all available action or response options are seen as 'appropriate' within the game or continue the story. Such game design sabotages player autonomy, and can in further consequence lead to feelings of frustration and anger due to freedom of choice being an illusion. For this reason, participants highly appreciate when video games also included and accepted answer choices and interactions that reflected neurodivergent behavior or more so aligned with their (neurodivergent) way of thinking.

> So I do like when there are as many decisions as possible, when you can influence the *story*. When you really– when also the game gives you the possibility to answer autistically, let's say. - P5

This, in a sense, gives a player the opportunity of answering authentically, and in a way that feels natural, or in other words, 'as oneself'.

Story and self-determination also interact in two additional ways within the context of video games. First, instead of an exclusively explicitly communicated story, participants enjoyed when games gave story hints and clues that allow the player to make sense of and infer (parts of) the story. Through paying attention to context clues, environmental storytelling, and details in the music, players can discover vague, hidden and implicit communication, which lends itself to speculation and theory crafting. Participants also

placed particular emphasis on hints that left room for them to figure things out and on there being no predetermined meanings. Thus, in contrast to the point made previously in the theme 'Freedom: it's in the game', here the focus is on theorizing about the lore to then determining what the story and meanings are by oneself.
Second, some participants also spoke about a fondness for imaging their own stories. In this sense, they enjoyed games which (loosely) defined certain story parameters but left a lot of details up to the player. This relates back to role-playing and assuming the identity of certain (self-created) characters, and as such, participants voiced their passion for the RPG genre in general. Moreover, this conception of story in gameplay is connected to self-determination in so far as these games allow players to exercise their creativity and imagination.

> I actually love sandbox games and I like when they give me a nice frame narrative, but doesn't have to be. I always say: I make my own stories in my head. Give me a sandbox and I'll make my own stories. I always think of that adds on. I got into that habit from the earliest times, because I started with like, those extreme retro-games, that didn't have it graphically yet. Therefore, it was like reading a book. The story is in my head and the couple of pixels on the screen are just kinda— in those early RPGs you had to read everything anyway. And I have actually retained that until today. That's why visuals are not important to me at all, because [...] I imagine my own thing. Because if I want the graphics to be different, then I make them different in my head. *That works quite nicely.* - P5

In both cases, the story is not set in stone and requires collaboration with the player to appear and develop, thus highlighting individuality and player agency, through being an active and crucial part of the narrative. Similarly, player-determined quests and self-set goals provide another way for players to exercise control and self-determination. In deciding which goals to pursue, which tasks to tackle, as well as the priority of activities, participants were able to harness the power of self-motivation through defining the 'win' conditions for themselves.

> When it's easily possible, I think, I'll also sometimes just set my own quests, like for example, I'll now clean up the island and remove all the weeds and pick up all branches. - P1

Setting one's own goals further connects to players taking charge over determining when the game is finished. Participants made use of various in-game conditions and measures to decide when the game was finished, which was not necessarily only completing a game in its entirety. Consequently, there were mixed opinions regarding 100% completion among participants. On one side, two participants generally desired 100% completion with the games they play and attempt to do so, within the realm of their possibilities. This is the

case specifically for games that the person is especially fond of, and where they naturally wanted to unlock and achieve everything. The other four participants did not deem completing a game in its entirety to be all that important. Rather, they reported feeling like one had finished the game once reaching the end of the main storyline. Ultimately, the decisive factor for them was feeling content. Therefore, these participants tended to keep playing as long as there were clearly defined missions or obvious paths to continue to explore. In this context, they then also only choosing to do those achievements that seem interesting or like a fun challenge. Consequently, when these participants felt like there was nothing more to do, they would choose to either disengage or start a new playthrough.

> Well, with Skyrim it was usually from like level 20, when you've then played through a quest line, it then just is somehow like: 'ok, I am now done with that, what do I do next?' There, I often then also stopped with that character and created a new one. - P6 (Q143)

Another reason given by participants which explains this preference was that completion, to a certain extent, was seen as being too much effort. Participants expressed that they simply did not possess the (necessary) patience, while, at least partially, also feeling like it was a waste of time and that there were better ways of spending one's time. In sum, it can be said that participants' sense of accomplishment was determined internally rather than (exclusively) externally, such as through objects or achievements. Still, such extrinsic factors and motivators still played a role for these players. In particular, self-determination for some participants also appeared in chasing goals and seeking challenge in terms of competitive play. Here, matches and battling move into focus, providing the space for a player to prove their gameplay skills by enabling them to go up against others and see how good of a player they are in comparison. Relevant measures and simultaneously motivators in this regard include, among others, the gaining of ranks or the placement in a league, which also constitute aforementioned external factors. That being said, the participants who mentioned engaging in competitive play, on the whole, did not consider themselves to be competitive players. Thus, although they had some competitive play experience, they deemed this rather as being the exception in their general play behavior. Conversely, in some instances participants reported almost feeling like they had taken it too far, since their intense engagement, which led to reaching high ranks or achieving top spots in leagues, required a great deal of effort and time investment.

> I played both Magic [the Gathering] and StarCraft up to '*Challenger*', so up to where you have an actual rank with a number. [With] Magic I was, I don't know, I believe 400-something one time, or 300-something, which means insanely much playing, because there really are many people playing it. And with StarCraft I was, I think, just before '*Challenger*' or maybe we already were '*Challenger*', together with a friend, so *2v2*. Those are like the only

> competitive games that I really played, a lot. Because otherwise I actually have— Yeah, other than that I'm actually not a competitive player. - P3

On the whole, participants talked about taking control in terms of customizing their play experience and expressing themselves within the game. Further, it meant being in charge and determining their own path, and thus participants highly appreciated games that enabled them to come up with their own approach. As such, it is most important to find that balance or happy medium between enough freedom and choices to not feel restricted, and too many options, a lack of structure and feeling overwhelmed. The ultimate goal is for video games to provide neurodivergent individuals with a safe space for joy, self-expression and relaxation, so that every player can design and shape their own journey and gameplay experience.

CHAPTER 4

Game ideas

As part of this thesis project, three concepts for games that involve neurodivergence have been developed. For this purpose, the information gathered through interviews with neurodivergent individuals, as well as the themes developed through the analysis, were used to design game ideas that aim to capture an essence of neurodivergence and highlight the positive aspects and joys. Another significant source of inspiration were games that I, the author, like a lot. The overall goal was to design relatable representations that were embedded in enjoyable game play experiences.

4.1 Ruins of Aurum

The first game is conceptualized as a 3D open world game, which also contains a sandbox element. Played from 3rd person perspective, the game focuses on exploration and building things. The game also features a rather detailed character customization with many options to choose from. While the main gameplay interactions are roaming around the in-game locations and gathering items, they also include an element of combat and fighting. This can even involve the use of weapons such as a sword or bow and arrow.

The game's premise centers around an extinct civilization of 'autistics'. The player is one of their descendants and finds out about this at the start of the game. They were born with a strange birthmark on their wrist and were always told to hide it by their parents, as it has for generations been seen as a curse.

One day, the player learns about a 'strange' and ancient civilization. Through researching, they find out that this civilization was wiped out hundreds of years ago. They decide to travel to the land where this civilization has lived and explore the ruins and abandoned sites. Eventually, they meet a group of explorers who are trying to rebuild the main town with the help of artifacts that they were able to find. These include plans of cities and buildings, books, drawings, and maps. However, progress has been difficult since

they encountered many barriers, doors, and seemingly invisible walls that just will not let them through and explore further. They, however, found a scroll with a seal showing a certain symbol, and they had also seen this very same symbol on locked doors and other parts of the ruins. The player notices that this symbol looks exactly like their birthmark and once they uncover their wrist and hold it to the seal, the scroll opens almost magically. In this way, the group learns that the player is key to realizing their plan of rebuilding the main town and thus asks them to go on a scavenger mission to find any relics, as well as materials for building, while the group sets up a camp and works on clearing the debris, rebuilding, and gathering supplies as well.

The player gets to decide which buildings, and other structures to build and where they should be built, once the plans or blueprints for these become available. This means that they have been found, restored and deciphered by the player and the other members of the group. Essentially, the player gets to build their own playground. Among the relics scattered throughout the game, the player can also find old books and scrolls that inform about the ancient civilization, their history, how they lived and what truly happened to them in the end. Through these writings, the player not only learns more about their ancestors, but also about themself which helps them in understanding themself better. In particular, the lore presented in said books and scrolls would include references to characteristics, traits and habits commonly seen in autistic or otherwise neurodivergent people, such as, for example, stimming. Additionally, the player, through discovering and reading these ancient writings, might be able to learn new actions or abilities which were practiced by the people in the past.

On their explorations, the player might also meet some other explorers that can be invited to the camp to help with building or gathering supplies or offer some other services to the play. Some of them might also give the player quests to find lost items or valuable artifacts and treasure they collect. An additional benefit of this element of the game is that it also makes camp livelier. One potential feature to be included is an in-game time system, so that the player is aware that time is passing. The idea is for the player to not become too absorbed into the gameplay by providing them with a sense of how long they have already played. This connects to one of the negative effects mentioned by neurodivergent people in regard to video game play, which is the problem of losing track of time.

The design of this game is inspired by several other games. The first of these is Minecraft [55] with its prominent element of exploration, especially caves as well as abandoned places or structures such as mineshafts or shipwrecks. Further, the aspect of collecting is implemented through the mechanic of mining and through loot chests, which is related to the idea for gathering materials and blueprints in this game concept. Another source of inspiration is the Hero Mode in Splatoon [88], where players can find text scrolls about the history of the Inkling species, as well as some information on the Octarians (the enemy species) and on the war between the two species. The design of the game world and locations to explore is in part inspired by games such as Mario Odyssey [68], which feature seamless and open gameplay areas, instead of self-contained and replayable

levels that have to be selected, as is the case in the games of the Mario Bros. series [61]. Inspiration also comes from two games mentioned by participants in the interviews. The first of these is Starfield [89], which was praised for its element of exploration and discovery, as well as the mechanic of outpost building. The second game is Just Cause [90], where the freedom and action possibilities, that allowed players to do whatever they wanted, were particularly highly valued. The aspect of finding other explorers through one's expeditions into the ruins and inviting them into the camp is reminiscent of Pikmin 4 [44] where the player has to rescue stranded astronauts and bring them back to the base camp. The element of neurodivergence being regarded as a curse is inspired by Hellblade [84] where the main character's psychosis is likewise framed as a curse. For the idea of this game, instead of being a difference in perception and behavior, neurodivergence is additionally represented with something physical and directly visible. This way, the concept of masking is translated into the act of covering and making sure the literal mask never slips. The intention behind this is to make the concept of masking more graspable or tangible, while at the same time linking the choice to show one's true self to a physical action. One particular note regarding the game's title is that the word 'aurum' used within it references the element gold, since, due to its chemical symbol being 'Au', gold is sometimes used as a symbol for autism[1]. In this case of this game, 'Aurum' is also the name given by the ancient civilization to the land where they lived.

In connection with the interviews, it is predominately the theme of 'Freedom: it's in the game' that was influential for this game idea. Particularly significant are the aspects of openness, as well as being able to going at one's own pace and where one likes. This further links to the fondness for exploration and discovery that was expressed by participants, for example, in terms of just being given their 'barren rock'. As such, the game would provide vast areas to wander and explore, which equally links to the freedom to play and just run around the world doing one's thing highly valued by participants. For this reason, an emphasis is placed on encouraging players to avail themselves of the possibilities of the game, which also plays to participants enjoyment of causing (some) chaos and engaging in shenanigans. In essence, the game aims to facilitate the player in doing what they want without having to worry about any real-life consequences. In part, also the sentiments of self-determination 'now you're playing with control' play a role in the game's design. On the one hand, it features an element of creativity in terms of being able to design and construct the town how one likes. Further, character customization equally falls into this category of gameplay features as a way to control and fit the player avatar to one's likings. On the other hand, it is about controlling one's own narrative. As such, the game would give players a (rough) narrative frame and a somewhat more loosely defined overarching goal. Within that, they then have the freedom to decide their own path and choose what it is in particular that they want to focus on in their game play. One specific point inspired by the interviews regarding this aspect is the implementation of dialogue and interaction options that go against dominant neurotypical social expectations and thus more so reflect neurodivergent ways

[1] https://www.autismbc.ca/blog/advocacy/understanding-red-and-gold-colours-of-autism-acceptance-and-pride/ (accessed on 05.05.2025).

of thinking and interacting. At the same time, the theme of 'The joy in being me' was influential as well, with its discussion on stimming and the enjoyment of certain sensory experiences. Particularly, participants' need for being in motion influenced representation of stimming in this design idea. For this reason, many of the structures and objects the player is (eventually) able to build facilitate jumping around, climbing, swinging, sliding, etc. The intention here is on creating satisfying gameplay actions which are associated with ideas of both freedom and control. Overall, the aspect of being in control and determining one's own play style also connects to the theme of 'Escape to a world of play', where it is about simply being allowed to play and have fun. This is meant in the sense of not wanting or needing any challenge in video games, since they are used as an escape from the real world and its stresses. This further hints at the idea that perhaps neurodivergent players do not necessarily need a goal in the games they play. Thus, while there is the overarching goal of rebuilding the town and restoring its old glory, the player, to a significant degree, has the freedom of deciding what to build, where, and also when. The only potential caveat is that for some characters, it might not be possible to invite them to the camp without the presence of certain buildings or structures. For example, an explorer collecting old books and writings might not want to join the player's team until there is a library in town.

4.2 mission: planet NT

The second game is imagined as a 2D side-scrolling game with platforming elements and enemies to avoid. It further features a stealth mechanic as well as a simple character customization. The player is also able to attack and fight enemies with their weapon, which, because of the game's sci-fi setting, takes the form of a laser blaster.

The game opens with commotion on planet Nuro, intruders at the royal castle. A group of unidentified bandits breaks into the palace, snatches the monarch's prized possession, and flees in their spaceship. The royal guards unable to stop them pant in exhaustion and profusely apologize for their incompetency. The royal scientist Mak is called and is able to identify the intruders as inhabitants of planet NT. The Monarch demands somebody go after them and bring back the stolen belongings, while in the same breath exclaiming fear over the barbaric nature of the planet's inhabitants and the extremely dangerous conditions on the planet, inadvertently scaring everyone. As none of the royal guards are now willing to volunteer, the job is left to the newcomer guard: the player. With the help of Mak's genius and crafty inventions, the player boards a spaceship and the two take off to planet NT. On their mission, the player receives help from Mak, who stays behind in the spaceship and routinely relays information to the player, primarily about the planet's inhabitants, its conditions and what to watch out for. The intent here is first and foremost on teaching the game mechanics, as well as subsequently providing the ability to receive updates on current state of the mission and the next objective. The levels in the game correspond to different areas and places for the player to explore and look for (tracks of) the thieves. Here one of Mak's inventions, a sensor that detects traces of material from their home planet, comes in handy so that the two of them are eventually

able to locate where the stolen goods are. The group of bandits catches wind of someone being after them and decide to set up distractions and fake hideouts, where boss fights take place, to stop the player from finding their top boss's secret lair, where the final boss fight takes place. This is also where the stolen goods are kept. The items that were stolen by the intruders from planet NT are the monarch's crown (golden noise-canceling headphones), scepter (silver and diamond tangle) and royal mantle (purple super soft weighted blanked). As far as the in-game environment is concerned, the game is set to take place on a planet where the conditions are quite harsh. This includes the presence of, among others, bright lights, loud and complex noise, and pungent smells, which appear as in-game enemies. The player also has a laser blaster which works to neutralize the sources of sensory overwhelm and thus provides them with a way to attack and defeat enemies. Additionally, the player must be careful not to be spotted by the planet's civilians, who are present in many of the levels, as they will (eventually) report the player as an alien intruder and authorities will apprehend them, resulting in a Game Over. This element of the game is also related to the 'suspicion meter', a bar that slowly fills up when spotted or when engaging in certain conspicuous behavior and in this way shows the player how much they have caught the attention of the planet's inhabitants. For this reason, the player needs to regularly hide for the suspiciousness to decrease, which relates to the stealth mechanic. The game also features a type of collectible of which a certain amount must be collected, so that the player can explore more regions, or in other words, unlock new levels.

The inspiration behind the game's concept of being an alien astronaut exploring another planet is the idea that some neurodivergent people adopt in order to make sense of their differences to the majority and the troubles experienced in social interactions with others. They use the term 'wrong planet (syndrome)' for referring to this experience of almost feeling like an alien within neurotypical society[2]. At the same time, the intent was to create a game based on a genre of posts frequently shared in neurodivergent spaces online that turn things around, saying, in essence, that neurodivergence is normal and good, while being neurotypical is weird and 'disordered'. In the context of this game, this is realized as the strange and hazardous planet serving as the game's setting. One game that gave significant inspiration is Pikmin 4 [44]. On the one hand, the game's premise and gameplay focus is similarly on exploring a 'strange' planet. On the other hand, the character design for this game idea, specifically that of the main character, is heavily inspired by the cast of characters featured in Pikmin 4, which consists of cute astronaut alien characters wearing space suits. Additionally, for the character representing the player, Pikmin 4 features a simple customization with options to change, among a few other attributes, skin tone, body type, hairstyle and suit color. In terms of gameplay and level structure, games in the Kirby series [91] are an important source of inspiration. Of particular interest are their platforming elements and level design, as well as their cute visuals and character design. These aspects influenced the choice for a more cute and colorful game, and further provide inspiration for the enemy designs. When it comes

[2] https://www.psychologytoday.com/us/blog/the-imprinted-brain/201512/the-aliens-have-landed (accessed on 05.05.2025).

to the way of unlocking new levels and areas to explore, inspiration is taken from Mario Odyssey [68], where the player has to collect Power Moons to supply the airship with enough energy in order to travel to the next place. A similar feature is also found in Pikmin 4 [44] where one has to collect energy to be able to reach farther away locations from a base camp. Either way, the player in this game is able to extend their range of exploration through collecting some kind of material that serves as energy for powering up the spaceship. One design aspect that specifically relates to neurodivergence is the choice of items belonging to the monarch that the player has to retrieve. They are inspired by some of the common tools used by many neurodivergent people to help with sensitivities, allow for stimming or fidgeting, and support their sensory needs.

The main inspiration behind the game's premise was the ability to view neurodivergence in a different light, which is part of the theme 'It is what it is' and in this regard also connects to joy, as well as change of perspective. Particularly, this pertains to participants finding humor in online posts where 'strange' neurotypical behavior and communication are explained in funny ways, as well as in those where situations and experiences are framed from the neurodivergent perspective. To a large degree, this game idea is inspired by the sentiments that define the theme 'Escape to a world of play'. As such, the aim is to keep the design of both graphics and gameplay interactions relatively simple, which led to the decision of creating a 2D platforming game. In particular, the game's concept is focused around the idea of restriction. One aspect to this is providing players with a clear level structure. Since many participants also spoke about being prone to (visual) overwhelm, here the choice was made to go for simple (and cute) graphics. Simultaneously, this relates to the dislike for (overly) brutal and graphic games expressed by participants. Further, an important design consideration to be made is the avoidance of overly intense or unnecessary visual effects, with options to reduce these even more. In addition, there would be the possibility to even completely turn off those effects that are purely part of the visual design and do not contribute to the actual gameplay action and feedback. On the topic of not wanting too much violence in games they play, participants also spoke about stealth, sneaking around and rather avoiding conflict, which would be possible in this game to at least a certain degree. A huge theme in the game's idea is participants' sentiment that "the entire world is a damn challenge", and thus the intention was to create a space where neurodivergent players would now be given the opportunity to fight back and tackle that "challenge". Another possible connection can be made to participants' interest in exploring outer space or other planets, and such, constitutes an aspect of freedom. However, the game as a whole is more so conceptualized around structure and clarity.

4.3 House of Mystery

The third game is envisioned as a top-down RPG that involves puzzle elements and problem-solving. Another of its defining attributes is that it is also a collectathon, which means the main gameplay loop revolves around exploration and discovery in a 2D-world. Among the collectible items featured in the game are equipable badges that give the

player specific abilities, further allowing the player to access certain areas of the in-game world. Another element present in the game are quests as ways to help guide the player on their adventure. The game's visual design is based on pixel art.

The game's premise is as follows: you wake up in the middle of a forest, next to a small house. The door is locked. You have no memory of how you got here, but this place feels strangely familiar. With nothing else to do, you start wandering your surroundings, maybe you'll find something?

Thus, the game starts with the player walking around for a bit, but finding that there is nowhere really to go. They try to enter the house but remember the door is locked. This leads the player to their first quest: find the key to the house. Once inside the house, the player finds their first badge, allowing them to clear a roadblock that prevented further exploration. The player now wanders out, through the forest, into caves, fields, up hills, etc. On the way, they collect keys, badges, and other items, while regularly returning to the house. There they can unlock the doors inside, beyond which are the collection and play rooms where the player can look at, sort, interact, and play with the collected items. Additionally, they are given the possibility to repair or combine item parts in the crafting room, which is also unlocked at some point.

While there is no clear goal apparent to the player at first, the ultimate story goal is to unlock the mysterious door in the basement that leads to a room where they can find the 'wish badge', a one-time use item that grants a person their deepest wish, allowing the player to return home at last. The main player motivation is on solving puzzles and exploring new areas. As such, the game features non-linear progression, backtracking, and a more open level structure. By default, only quests relevant for story progression are displayed, one at a time. These contain the major collectibles, minimum necessary badges and keys, and only include exploration of specific (parts of the) locations. Additional quests can be enabled for specific categories of collectibles to aid with 100% completion. Additionally, the game would provide a kind of assist mode, giving tips and directions, for players who are stuck or just want a more relaxing time playing the game. Along this main story route, the player will come across only a certain percentage, possibly around 60%, of existing collectibles, and puzzle difficulty will remain low to medium. Beyond this (rather predetermined) path, however, there await even more collectibles hidden behind puzzles that get more and more challenging. The design of the in-game collectible items all center around certain themes or categories of (special) interests and activities, such as teddy bears, marbles, dinosaurs, building blocks, crayons and coloring book pages. Partially, these items will be used for hints or puzzles that can reveal new clues. Additionally, the player then has the ability to sort, line up, and arrange collected items and options to play with the (fidget) toys in a variety of game modes. Due to this requiring a switch in mechanic between controlling the character in the game world and interacting with the collected items, this game is conceptualized for touchscreen devices, i.e. tablets or smartphones. In connection with this, puzzles might involve either controlling the player character in the overworld or direct interaction via touch.

Inspiration for the game's idea comes in part from Luigi's Mansion [92], where the main

gameplay focuses on exploration of the house, problem-solving, in this case finding how and what to interact with, and collecting door keys to open up new areas. Similarly, Pokémon HeartGold and SoulSilver [93] also served as inspiration with not only their pixel graphics and top-down perspective but also their element of problem-solving. This includes the gimmicks of the gyms, where the player has to solve puzzles to eventually reach the gym leader, as well as small puzzles found in other areas such as caves or ruins. Another point of inspiration from the Pokémon games is the element of returning to previously inaccessible areas after receiving the needed "Hidden Machine" to discover additional content. One particular feature of interest is the ability to jump in the RPG Mario & Luigi: Superstar Saga [94] which is also played from a top-down perspective but still contain some platforming aspects. This is especially also relevant for the exploration and puzzle element in this game concept, as it opens more options for design and interaction. The idea for the equipable badges is taken from Super Mario Bros. Wonder [95] and its Ability Badges, to offer new actions possibilities within the platforming. The general concept of the collectathon is inspired by games such as Banjo-Kazooie [96] that feature a variety of collectibles that, among other functions, also provide access to further areas of the game, making them necessary to progress.

The idea for this game speaks first and foremost to the theme 'Now you're in control', which relates to participants' enjoyment of challenging their brain and engaging in problem-solving. For this reason, the in-game world is filled with riddles and puzzle gimmicks. In this way, this game concept relates to the understanding and use of video games as mental stimulation. Further, as far as the puzzle element is concerned, the game would provide a certain degree of openness for trying different things, thus allowing for multiple possible solutions, which would in part be facilitated by the badge idea. This connects to another point made by participants in the context of self-determination, which is that they appreciated when there were multiple ways to reach the same goal and when they were able to use their own approach, meaning they could figure out the 'correct' solution themselves. At the same time, this game idea also contains elements corresponding to the theme 'Escape to a world of play', since, for the most part, the game is envisioned as slow-paced and, at the base level, would offer a rather relaxing play experience. One factor that particularly contributes to this is a somewhat lower level of difficulty. Thus, while puzzles along the main story path are intended to be rather easy they would still be challenging, just not frustratingly so. However, if a player wants to play through the game in its entirety, discovering all the content it has to offer, puzzles and problem-solving tasks become increasingly challenging and tough to solve. This aspect of the game concept was introduced in relation to specifically the participants who expressed that they liked to aim for 100% completion, if possible. In this regard, the design idea also connects back to the themes of control and self-determination. One further aspect in the context of comfort and orientation in games is structure, which in this case would be facilitated by the quests present in the game. Through providing a sense of security, a task structure and clear goals aim to help players avoid feeling lost or overwhelmed. In addition, since the game's focus is on collecting and puzzle solving, there also is not really any violence present in the game. Lastly, the game features

stimming and fidget toys, which not only connects to relaxation and comfort in video games, but equally relates to the joy found in stimming. In particular, since the game is conceptualized to be played on a tablet or smartphone, it would make use of visual, auditory and haptic feedback which serve as possibilities for stimming.

CHAPTER 5

Discussion

Through the interviews with neurodivergent individuals, it has become apparent that personal stance toward one's own neurodivergence can be quite complex and is influenced by several different factors. These could on the whole be identified as following along three themes, which were developed during the analysis.

The first category of sentiments deal with the frustrations and challenges that neurodivergent individuals face in their everyday lives due to being neurodivergent. In this regard, participants' answers fit with an understanding that both external and internal factors contribute to their experience of neurodivergence and thus align with a framing as disability, as established at the beginning of this thesis. On the whole, a majority of the struggles stemmed from social contexts, as one area of frequent struggle for neurodivergent people is communication and interaction, particularly with those who are neurotypical. The effects of the double empathy problem [19] could be very much seen in various aspects in the present study.

In particular, these revolve around the concept of misunderstanding, which appeared in three ways. First, the neurodivergent people in this study struggled with being misunderstood and misinterpreted by others in their lives. This is a quite common experience as it has been established that neurodivergent people, on the one hand, struggle with relating to others and getting across what they mean, on the other hand, feel that others do not seem to 'get' them. As such, they frequently encounter misunderstandings and are often met with annoyance [18]. Participants here similarly described the level of frustration and annoyance they received from the people in their lives. The second way refers to misunderstanding others and missing certain communication cues. Neurodivergent individuals in this study spoke about regularly failing to pick up on the other person's intentions, and finding it difficult to know what the other expected from them. These equally resulted in frustration and put a strain on relationships. For the most part, these misunderstandings arise due to, what the participants considered to be, a lack of clear communication. Within these two contexts of misunderstanding, one can rather

easily see the double empathy problem at play, as differences in social disposition and expectations between interaction partners result in difficulty with understanding the other as well as their way of interacting. This is particularly prominent in communications with neurotypical people [19].

Third, the phenomenon of others misunderstanding also extends to neurodivergence itself. First and foremost, this involves misunderstanding traits, such as distractibility, honesty or forgetfulness. As a result, neurodivergent individuals are often seen as not caring [18], less friendly, and less trustworthy [31]. To a certain extent the source of such impressions can simultaneously be traced back to a lack of expected social behaviors, like eye contact or approaching others [20], for which the neurodivergent individuals in this study had developed some coping strategies. However, some of these might not lead to much more favorable perceptions, such as when a person goes from not making any eye contact to instead staring at the interaction partner.

Beside struggles that arise out of social contexts and interactions with others, neurodivergence itself can have negative consequences for a person. In this regard, participants spoke of their struggle with executive dysfunction, a trait commonly observed in neurodivergent people [20], as well as their related difficulty with everyday things and tasks that are supposed to be easy. Consequently, it seemed to them like they had a much harder time in life than others.

One interesting phenomenon that was actually brought up by one of the participants is that of 'imposter syndrome'. Through this, several other instances about such feelings could be identified. In the literature, it comes up in the context of masking, specifically in the sense of pretending to be a properly 'functioning' and responsible human or adult, while struggling on the inside [18]. In the present study, this notion of imposter syndrome presented itself somewhat differently. Here, it more so pertained to a sense that one is pretending that the experienced symptoms and struggles are more intense than they actually are. As such, there was a feeling of doubt and belief that one's diagnosis was not actually valid. Further, participants also viewed it as an attempt to convince themselves that there was something wrong rather than taking responsibility for one's shortcomings. At the same time, the neurodivergent people in this study also spoke about feeling like they did not belong in the category of neurodivergence or in disability spaces, because others have it worse. In this sense, they were downplaying their own experiences and struggles, as these did not seem to be as much of an issue as what other neurodivergent or disabled persons deal with. Another closely related point was not presenting with the typical 'symptoms' of that neurodivergence. Both of these aspects resulted in participants not (always) feeling valid in neurodivergence. As such, participants' sentiments in the context of pretending and imposter syndrome predominately revolved around whether they were allowed, by their own measures and standards, to identify as neurodivergent.

When it comes to the strengths associated with neurodivergence, generally attributes such as high creativity, great attention to detail [11], hyperfocus [35], and hyperfixations [18] come up in the literature. In the context of the present study, it was found that positives and strengths particularly also relate to a strong fascination with topics of

interest that allowed them to gain very detailed and in-depth knowledge. Sharing the information acquired in this way also worked to impress and surprise others, which had positive effects in social interactions and building relationships with others. Additionally, engagement allowed them to focus very intensely on the activity, which was associated with feelings of excitement and joy. This ability to focus very intently was also perceived as positive in other areas of life such as productivity, which pertains to, for example, finishing schoolwork and assignments (significantly) faster than their peers or being eager to tackle projects and task at work. These experiences further connected to a sense that one's mind works faster than that of other people. As such, several participants spoke about being able to learn very quickly and having great long term memory.

Another related positive aspect brought up by participants was their tendency to seek novelty and challenge. For them, stimulating their mind gave them great satisfaction and happiness, which further also is an instance of neurodivergent people experiencing joy as a direct result of their neurodivergence. For this reason, participants' overall perspective on neurodivergence was that there were both positive and negative sides to neurodivergence. However, neurodivergence ultimately affects every aspect of life, and thus it makes an individual who they are. All participants agreed that neurodivergence was an important part of their identity, as it made them the person they are and without it, they would not be themselves. Such sentiments seem to be rather widespread among those individuals who have learned about the concepts of neurodiversity and neurodivergence. Both participants in studies [18] and neurodivergent researchers themselves [10, 38, 37] saw it as an integral part of themselves and the way they interacted with their environment.

This further connects to how participants in the present study felt about the topic of masking and hiding one's neurodivergent traits. In the literature, masking is mainly described as a coping mechanism for living in an unaccommodating world [33], and as such constitutes efforts to seem 'normal'. One particular reason for engaging in masking are the social expectations of what disability looks like, which leads many to being disbelieved when they try to open up about being neurodivergent or otherwise disabled [3]. Further, since this coping strategy takes a lot of effort and energy [18], it is often accompanied by negative consequences for one's mental health and sense of identity [2]. In particular, masking can lead to anxiety, depression, stress, reduced well-being and even feeling suicidal [8], thus many wish that others understood how much effort they had to put in on a daily basis [3]. In this study, some of the participants also talked about putting effort into learning neurotypical social skills and trying to fit in, which proved to be more or less successful, yet in either case required significant energy to maintain. Generally speaking, masking, in this way, is perceived as an exhausting but necessary act, because the alternative often does not yield much better results either. Many people, including the participants of the present study, experience being treated differently once people know about their disability status [25], and are often even faced with not being taken seriously, being invalidated, or just being considered lazy [18]. This naturally leads to negative effects on mental health, well-being, and self-esteem as well [8], which participants also briefly touched on.

It was further found in the present study that for neurodivergent individuals it can oftentimes be easier to describe the specific ways in which they are affected instead of explicitly saying 'neurodivergence' or naming their 'condition'. This is because bringing up neurodivergence in this way tends to get taken more seriously [18]. Much more significantly and interestingly, for participants in this study, a change in attitude towards their own neurodivergence rather came along with a sense that they did not want to hide their true selves that much anymore, particularly also because masking is exhausting. In understanding neurodivergence as something positive and as just a natural variation, participants felt like they did not want to put in so much energy into fitting in anymore, even if that meant others might treat them differently or worse, since they themselves had learned to treat themselves better and with more consideration.

Going back specifically to the question of how neurodivergent persons experience neurodivergent joy, the topic of stimming is highly relevant. As a way to self-regulate, particularly to calm down when experiencing (sensory) overwhelm or intense emotions [10], stimming is a shared trait of neurodivergent people. Consequently, this aspect of neurodivergence was part of all themes, thus it was associated with feelings of frustration, joy and indifference. The overarching sentiment, however, was one of acceptance, since stimming was experienced as something that just happened. Being both natural and not always done purposefully, it was perceived as simply one part of being neurodivergent. Through learning more about neurodivergence and thus about themselves, the participants in this study became more aware and accepting of their own stimming. This further relates to the point of not masking and letting oneself be openly neurodivergent.

As far as the main purposes of stimming are concerned, it was found that it helps with concentration and calming down, thus it was necessary to their everyday lives and well-being. In general, stimming was seen as a response to an inherent need for physical movement, thus participants reported overall fidgeting a lot, particularly since it often was a subconscious behavior. At the same time, stimming can also be understood as a form of expression of both negative and positive emotions [10]. Therefore, particularly interesting in this context were not only personal experience and feelings about own stimming behavior, but also those of the other people in their lives. In the present study, it was possible to gain some insights into how stimming is perceived by other people, and what reactions neurodivergent people are met with in this regard. A common occurrence described by participants in this context was annoying others with their stimming behaviors and habits. Since these were commonly perceived as noisy or visually distracting, stimming could be quite problematic. Moreover, when it comes to harmful stims, although they typically were met with concern, this was almost exclusively expressed as shock, anger and through harsh remarks. Such negative reactions stigmatize oftentimes unconscious behavior, that is merely a coping mechanism. This approach is generally less useful for getting rid of the injurious behavior, and rather merely associates stimming with negative feelings and shame. These harmful stimming behaviors typically already carry negative connotations for the person themselves, since they cause pain and injuries. However, because they are triggered by negative emotions, anxiety, and

stress, this coping mechanism can easily turn into an unconscious habit. The result is frustration both at the stims themselves and at the negative consequence for other areas of life.

While there were negative feelings associated with stimming, participants in the current study more so spoke about and highlighted the joys of stimming. For them, satisfaction gained from certain sensory experiences was the main focus, and specifically, they exhibited a tendency for physical and movement-based stims. Another interesting shared commonality was a connection to musicality that appears in many of stimming habits, which include singing, dancing, humming, beatboxing, and tapping rhythms. These stims essentially also constitute a form of expression. On the whole, there therefore exists a connection between stimming and emotions for neurodivergent people. The participants of this study, for the most part, actually linked their stimming to joy specifically. As such, it seemed that happiness and fun encouraged and amplified stimming behavior, which then became much more frequent and intense. Thus, it can be said that in the case of neurodivergence, positive feelings are strongly connected to fidgetiness. Such a connection can in part also explain why neurodivergent people are often perceived, by both themselves and others, as being too much, overly emotional and excitable, as well as overall quite intense [18]. This is similarly related to the phenomenon of annoying others with one's stimming.

Another aspect of joy for neurodivergent people is seeing things differently than other people. Generally speaking, those who are neurodivergent enjoy the way they perceive and interact with the world [18]. On the one hand, the participants in this study spoke about finding joy in different things than most others, and being able to appreciate even the small things. On the other hand, creativity as well as outside-the-box thinking are commonly regarded as notable strengths of neurodivergent people [11, 10]. In the context of this study, participants associated their way of perceiving and processing with unconventional thinking, which allowed them to come up with creative and novel ideas, some of which were perhaps also a little bit weird. Further, curiosity, imaginativeness, as well as preserving some sense of childlike wonder were said to contribute to this creativity, thus these attributes were seen as a particular strong point and advantage of being neurodivergent in the context of the present study.

When it comes to the discussion of video games and neurodivergence, it is particularly important to consider how a person's neurotype contributes to certain habits and effects of playing games. First, regarding play behavior, several studies point out that neurodivergence presented a possible risk factor for problematic gaming behavior [46]. This includes both aggression [72] and excessive play, which takes away from other activities or responsibilities [24]. In the current study, participants did not really speak about experiencing any violent or aggressive behavior as a result of gaming. However, one participant mentioned there being times when the level of frustration with a game could rise to such a point that they felt like, for example, throwing their keyboard. While this does allude to destructive behavior, these thoughts did not result in action. Instead, this feeling was seen as an indication to step away from the game and take a break. Thus,

such thoughts of violence rather served a regulating function for this person. At the same time, this also connects to the higher susceptibility of neurodivergent individuals to experiencing frustration, and thus feeling agitated and irritated, which could even extend beyond the actual game play duration [72]. Likely due to a higher base level of exhaustion and stress [32], neurodivergent people on the whole have a lower threshold for frustration. Indeed, participants talked about, at times, getting easily frustrated when playing video games. The reasons, in particular, were a level of difficulty that was too high and made the play experience stressful, as well as a game not allowing the player to act freely and play how they want to.

This further relates to how it seems as though neurodivergence increases the likelihood for compulsive play. It has been said that neurodivergent players feel like playing video games leads to obsession, addiction and neglecting other activities. In this sense, they often almost feel obligated to play [24, 73]. Although this last point specifically did not come up in participants' statements in the present study, they did talk about the negative ramifications they experienced from getting obsessed with a game. In particular, they referred to getting absorbed in certain activities, such as for example character customization, where having many different options and aspects to customize can lead players to spend a lot of time on this activity. Since this way they are not actually even playing the game, participants then also felt like they were engaging in meaningless things and just wasting time. However, here, rather than taking away from other responsibilities, participants found that it took away from the actual gameplay. Another relevant point in this context is that neurodivergence is understood as a vulnerability to negative effects of video game play [14], which relates to a proneness toward negative mental health outcomes in general [10, 23]. However, much of the research presenting such results tends to take on a medical view, uses pathologizing language and relies on an understanding of neurodivergent conditions as deficits (see e.g. [74, 75]). Thus, looking at this issue from a different angle, one can come to the conclusion that this relationship between neurodivergence and video games is not one of cause and effect. Rather, neurodivergent people, who are already more prone to experiencing mental health struggles, use video game play as a way to cope with these problems [46]. This is also what was noticed in the present study, since video games were in part also used as a coping mechanism and as an escape from real world stressors. As such, participants recounted relying on games during hard and stressful times to manage difficult feelings and regulate their emotions.

In relation to the understanding of video games as a safe space and an escape, their benefit of supporting well-being, especially psychological, becomes apparent [24, 72, 46, 77, 2]. This function of game play connects to the reasons and benefits of video game use in the neurodivergent population, and further, is also closely related to the joys and fun that these players gain from playing games. Generally speaking, a major factor that motivates play is fulfilling the psychological needs which are not adequately met in everyday life [46, 45]. In previous studies this particularly pertains to being beneficial in the social dimension, where video games act as a shared interest and support neurodivergent individuals in social interactions and managing relationships through engaging in a

shared activity [78, 24]. Although some participants in the present study also touched on the joys of playing together (as a team) and having this space as a social facilitator, this aspect was not of particular importance in the sample. This makes for an interesting discrepancy, which possibly suggests that for neurodivergent people, video games have significance beyond ameliorating 'deficits' as identified from the outside. Therefore, the participants in this study expressed rather having a preference for single-player games and keeping video games for themselves, especially since video game play constituted a valuable part of their leisure and time to unwind from the stressors of living in a neuronormative society. As such, it was incredibly important to participants that they could be in charge of how they wanted to spend this time for themselves, which possibly also connects to their experience of the world as very intense and unpredictable.

What constituted reasons to play in the present study was more so focused around three themes that were identified in the analysis. The first area of motivation revolves around the idea of freedom as it is enabled by games and the possibility spaces they open up in this way. The second group of reasons for game play deals with the structure, comfort and feeling of safety that video games provide. The third theme of factors, that motivate play, concerns the amount of control that games give players, as well as how this supports their self-determination and allows them to exercise their agency. In this context, some connections to the three basic psychological needs of autonomy, competence and relatedness [45] can be drawn. Regarding the need for autonomy, an importance is placed on having freedom of action [45] which in this study relates to the theme of freedom. Further, autonomy also involves perceiving one's actions as voluntary and resonating with oneself, which helps a person feel in control [46]. This aspect is more so part of the theme focused on self-determination, as participants here particularly emphasized the significance of feeling their actions actually mattered. In general, autonomy in games is facilitated by choices and options [46], a point that was particularly stressed and relevant for participants in the present study in terms of having meaningful choices and options that supported their individual play style. In other words, they were keen on being able to take control of their own play experience. The second psychological need, competence, revolves around having control over the outcome [45], which helps an individual feel useful, skilled and knowledgeable. The fulfillment of this need is generally facilitated by in-game challenges [46]. This very much aligns with the theme of control and self-determination, particularly when it comes to games that allow players to challenge their minds and engage in problem-solving. In this context, participants further also associated challenges in games with creativity, experimenting, trying different approaches and coming up with alternative solutions. Lastly, the need for relatedness, which mostly focuses around connection with others, giving sense of belonging [47]. This did not very much come up for discussion in the study, as was already touched on before. Thus, it is likely the case that neurodivergent players do not prioritize social needs in their gaming behaviors and preferences, or perhaps even necessarily view games as a way to fulfill this need. Alternatively, it is also thinkable that this need might not be that strongly pronounced in the first place, at least in the sample analyzed in this study.

Coming back to an understanding of games as an escape, in this context video games most notably serve as a coping strategy for distress resulting from living in a normative society. Three areas of distress, which neurodivergent or otherwise disabled persons seek to ameliorate through playing games, have been identified in the research. These are: obstacles and difficulties in real life due to inaccessibility [25, 77], stigma and discrimination [25], and feelings of isolation, loneliness, and anxiety [24, 76]. In the present study, these could be seen to apply to participants in the following ways. As touched on before, the social component was relatively weakly present in this sample, thus the use of video games to cope with isolation and loneliness in particular is likely less relevant. Gaming by oneself can also contain an element of social connection in terms of interactions with NPCs, however, this too was not very much mentioned in the interviews. In a similar way, stigma and discrimination were not addressed in the context of video games, but they were quite significant in participants' experiences and feelings around their neurodivergence, as described above. Consequently, participants deemed the most important function of games for coping with distress to be that they provided an escape from real-life obstacles and difficulties. In this context, some specifically emphasized that they did not want or need to have challenge in a game and that real life was already challenging enough. Thus, rather than stressing themselves out, they wanted to be able to relax when playing games. This aspect of participants' play preferences belongs to the theme around comfort and safety in video games, and relates to how their structures and mechanics can work to support specific neurodivergent needs. For example, a common struggle is executive dysfunction, which results in a need for structure [20]. Here, video games can play an important role in the lives of neurodivergent people, since they are, on the whole, more predictable and controllable than real-life situations or (social) activities. Further, they tend to provide rather clear information and instructions, as well as regular rewards, which also works to affirm players in their actions [24]. In the case of the present study, participants appreciated storylines and quests for guiding the player's movement and exploration of the game world as this helps them to not get lost, as well as straightforward gameplay and clear objectives that make it possible to jump right into the action.

Another positive and beneficial element that comes up in the literature are storylines. Particularly, since they support and contribute to immersion, stories can enhance the effectiveness of video games as an escape. As such, playing games can be likened to reading a book, although their interactivity allows for telling more in-depth stories [24]. In the context of this study the storylines in games were not really seen in terms of providing an escape and immersion in a world different to one's own, however, the topic of stories did appear in two ways. First, a game's story was described by participants as giving guidance and a structure that helps to not feel lost in a game, particularly one that is open world. Second, the topic of stories appeared in the context of theory-crafting and inferring lore through a story, given partially only as hints or allusions. Here, a connection to participants' need for mental stimulation and enjoyment of problem-solving can be identified, in the sense that the player has to fit the 'puzzle pieces' laid out by the game together by themselves in order to make sense of the game world and lore. Thus,

stories in games were beneficial to participants in a different way than what has been shown in prior research, that is, they are more so relevant in terms of self-determination and agency.

When it comes to the topic of stories, participants also spoke about their fondness for creating their own stories. In this regard, the question of how neurodivergent players express themselves and their identity in video games also becomes relevant. On the one hand, this relates to role-playing and creating one's own original character. For some, this even involved playing as the same character across different games and universes as a way to continue their story. While not explicitly brought up in the present study, role-playing also connects to elements of fantasy and immersion. As such, video games allow a player not only to explore different worlds, but also to assume the role of the hero through which they are able to perceive themself as important, noticed and liked [24, 25]. On the other hand, creating one's own stories is also strongly linked to creativity, which in the present study was associated with both themes of freedom and possibilities, and control and self-determination. Here, video games not only allowed participants to exercise their imagination and engage in creative expression, but they also gave participants the space to do it, with the possibilities and choices they offer.

Generally speaking, creativity is closely related to the need for autonomy, which in this context games can satisfy by placing the player in the role of the creator, allowing them to build things and create 'stories' [24]. Further, this aspect also connects to customization, which was identified in the present study as predominantly belonging to the theme of being in control and taking agency. In particular, participants emphasized the importance of making an active choice and being able to determine even the details, which in essence allowed them to tailor the play experience to their preferences and likings. Customization, on the whole, is regarded by neurodivergent players as an enjoyable activity, that enables them to exercise their imagination while being supported by the video game's framework and structures [47, 24]. Such game features that enable and support creative expression also contribute to relatability for neurodivergent players, as these get to create their own representation.

Another point relating to self-expression revolves around freedom of action and self-determination, particularly as it pertains to (social) interactions within the game. In this context, participants were keen on having various response options in dialogues, including those that reflect neurodivergent ways of thinking and processing. Moreover, they stressed that the player should not be punished for selecting such possibly more so unconventional options, and instead the game should value them as equal to other more normative choices. These two points connect to the power of video games to give neurodivergent people the freedom to express themselves, and, especially in the case of dialogue options, the freedom to be who they are, which is particularly meaningful as that often is not accepted or tolerated in their real lives. In this regard, it is also possible to easily identify the value of games as entertainment as one of the most significant reasons for play [24], which here specifically appears in relation to the themes of freedom and self-determination. In the present study, the fun and joys of video game play predominantly revolved around the

ability to run free and experiment with the offered possibilities, as well as taking control and keeping one's mind stimulated. Overall, games, in this way, can help neurodivergent people increase their self-esteem by making them feel competent and skilled [72].

Relatedly, for many neurodivergent people, video games also serve as time-fillers and as cures for boredom, that allowed them to feel productive when having nothing else to do [24]. These functions of games were not really addressed all that much per se, only, there was one participant who spoke about playing a little bit on the side while studying, which essentially also served as taking a break. Boredom as such was not brought up, however, participants did mention a need for distraction as one of the many motivations to play. Perhaps because video games are regarded as a leisure activity and provide a form of entertainment, their value for filling time and fighting boredom exists implicitly. Thus, it is likely that among neurodivergent people, at least those who took part in the present study, video games might also be used inadvertently for these purposes, as that is what hobbies and interests are fundamentally for.

Further, it has been pointed out in the research that neurodivergent people have a tendency to dislike first-person shooters and violence in video games [24]. While not specifically talking about a dislike for FPS games, participants in this study did indicate a dislike for overly violent and graphic games, which are often characteristics that go hand in hand with the FPS genre. Additionally, they expressed that, to some extent, they rather try to take a more peaceful approach and thus, also engage in stealth play. In general, however, the connection seems to rather be a focus on freedom to do as one likes, exploring and trying things out, and simply enjoying the interaction possibilities the game gives, which perhaps also explains a rather low interest in the shooter genre. In this regard, neurodivergent people instead are said to prefer games with fantasy elements [24]. This statement seems to at least partially apply to participants in this study, specifically regarding their fondness for games in the role-playing genre, as these often contain elements of fantasy. Another related and particularly relevant aspect in the context of freedom is the possibility for doing things that are difficult or impossible in real life. Further, this also connects to the benefit of not having to worry about the consequences, and thus being free to play, which essentially amounts to a combination of both fantasy and adventure within the game.

The most important overarching point, however, is that video games are neither inherently bad nor good. For the participants in the present study, the positive sides significantly outweighed the negative aspects they experienced in connection with video games. As such, the actual usage habits are the determining factor in the effect that video games have on a person. Thus, rather than neurodivergence inherently posing a risk factor, games on the whole seem to bring great benefits to neurodivergent people's lives. Pointed out as important in this context in the literature as well is that, since the consequences depend on context, individual player and how they engage with video games, it is important to raise players' awareness about healthy versus unhealthy gaming habits. Additionally, an emphasis is placed on learning how to play for reaping the benefits while avoiding any negative effects [46, 24]. For this reason, it appears that the interaction between video

games and neurodivergence is potentially highly misunderstood, and negative effects exaggerated.

One particularly important factor that also contributes to how games might affect neurodivergent individuals is accessibility. When it comes to accessibility considerations specifically designed for neurodivergence, they predominantly focus on sensory sensitivities and the accompanying proneness to overwhelm, that makes neurodivergent players more likely to experience headaches or eye strain when playing video games. For this reason, many rather avoid games that are played from the first-person perspective and those using motion controls [24]. In the present study, participants similarly spoke about experiencing overwhelm from video games' visuals. In particular, this concerned excessive movement on the screen, camera shake as well as other intense visual effects, which for participants caused nausea, in addition to feelings of discomfort, agitation and fidgetiness. For some of the participants, this not only lead to a preference for 2D games, but even the decision to completely stay away from games that involve 3D elements. At the same time, participants also specifically point out the necessity for access settings and options to adapt the game to fit their sensitivities and needs. As such, the neurodivergent people in this study highly appreciate when games offered possibilities to tone down their intensity.

Two further topics in regard to neurodivergence and video games are games made *for* neurodivergent people and games made *about* neurodivergent people. Both of these prompted important considerations for designing representations of neurodivergence myself as part of this thesis project. First, when it comes to games specifically made *for* neurodivergent people, these are predominantly serious games with a focus on intervention, cure, or therapy, and being educational. As a result, these games for the most part rather neglect aspects of fun and play, thus they often fail to create an enjoyable player experience [1]. Consequently, this was not a point that came up in the participant interviews. Since games with these kinds of intentions and goals constitute the main understanding of video games for neurodivergent people, the present thesis project aimed to design concepts for games that purely serve as entertainment. Further, the games described in this thesis are predominantly targeted at neurodivergent player audiences, although not exclusively so, as other types of players would likely also be able to enjoy them. While the central focus was on creating relatable experiences and highlighting that neurodivergence is its own valid way of being, the intent was equally to simply create fun play experiences. In this regard, they also stand in contrast to many of the existing games that include neurodivergence. Constituting the second topic in relation to neurodivergence and video games, games *about* neurodivergence will be discussed alongside the game concepts laid out in this thesis. This discussion further seeks to address the questions of how specific characteristics or positive aspects of neurodivergence can be translated into game mechanics and design, and how neurodivergent experiences can be neutrally represented in video games.

To start off, each game idea is predominantly associated with one of the themes, since these themes respectively represent clusters of preferences, likes, activities, interactions and play habits. Taking participants' individual dislikes, sensitivities and experiences of

overwhelm when playing video games into consideration, the intent here was also to offer rather specific games in order to support these accessibility needs in different ways. That being said, each of the themes is present in all games to at least a small degree. The first game, for example, has a particular focus on exploration and discovery in an open world setting, however, its mechanic of building and designing the town puts players in control of essentially creating their own 'playground'. One reason for this is that the themes overlap in such a way that certain game features can be interpreted in different ways, and thus serve multiple purposes for players. For instance, character customization can be understood as offering players the freedom to design their own avatar and express their creativity. At the same time, it can be viewed in terms of having control over who one plays as and being able to determine aspects of the game by oneself. This perhaps can also be associated with a sense of comfort, since character customization can allow players to play as a familiar character in an otherwise unknown game.

A particular point of inspiration was also the observation that current depictions of neurodivergence mostly either frame it negatively and make neurodivergent individuals seem pitiable in order to elicit feelings of sympathy [3, 23] or have a rather serious and dark tone [43]. In both cases, but more so in the former, games can take on a more educational tone that seeks to give players an understanding of what neurodivergence is. The focus on providing insight into struggles and hardships, which is commonly attempted to be achieved through simulation and letting the player experience 'symptoms', such as sensory overload or hallucinations, practically first-hand. The goal in this regard is that players come to see the 'harsh reality' of living with neurodivergence. For this reason, the intention with the game concepts presented in this thesis was to essentially understand neurodivergence more so as a theme used to inspire the design of various game elements, rather than trying to explain neurodivergence, in order to create varied representations that highlight different aspects and joys of being neurodivergent.

Further, as opposed to creating a game that has educational value in terms of helping neurodivergent people learn coping skills and ways to interact in a neurotypical society [2], the focus here is on games that are fun and understood as entertainment. Thus, the games are in principle about neurodivergence, however a more accurate way of describing would be that they take inspiration from the lived experiences of neurodivergent people. As such, they are conceptualized as a way to find relatability and recognize oneself in the character, that is neither focused on the shared struggles nor the sense that one still needs to adapt to neuronormative society, even if neurodivergence itself is framed as a natural way of being within the game. These game ideas aim at presenting a different narrative of neurodivergent experiences and simultaneously also showcase and 'celebrate' neurodivergent joy. As such, video games can be understood as a tool which allows exploring and representing neurodivergent experiences that are different to the mainstream and stereotyped portrayals of neurodivergence (see also [6]).

The overall goal was for the element of neurodivergence to be more subtle, and to design a game that does not (solely) focus 'experiencing' the neurodivergent condition or directly explaining how it works. Instead, players should come into contact with

neurodivergence while engaging in enjoyable game play and fun activities, in the sense that neurodivergence is not just a part of, but is woven into the fabric of the game, its setting and lore.

CHAPTER 6

Conclusion

This master thesis aimed to explore the representation of neurodivergence in video games and present concepts for games that depict neurodivergent experiences in a relatable way and with a focus on the joys and positive sides.

For this purpose, a theoretical foundation for understanding the concepts of both neurodiversity and neurodivergence, as well as their history and use, was first established. An important step, in this regard, was framing neurodivergence in relation to different models of disability, where it was determined that social factors as well as innate differences in perception and cognition contribute to the experience of neurodivergence as a disability. Further, since the term 'neurodivergence' in fact encompasses a wide variety of different experiences and 'conditions', neurodivergence, as it is used within the context of this thesis, was defined as specifically referring to autism and ADHD.

Since the development of concepts for games constituted a very important part of this thesis project, factors that might be relevant when it comes to designing play experiences were explored as well. Particularly relevant here was the notion of the basic psychological needs for autonomy, competence and relatedness, as well as the ways in which these can be satisfied by video games. This relates to aspects of motivation and creating positive player experiences, which involved the discussion of elements such as in-game challenges and rewards. Further, as one major focus was on the representation of neurodivergent people, aspects of game characters as well as possibilities of customization were also looked at. Additionally, in this regard, the concepts of immersion and presence, as well as an understanding of how emotions can be communicated and elicited via games, were also discussed as they were deemed to be highly relevant for relatability.

A significant part of this thesis was dedicated to providing an understanding of how neurodivergence fits into the context of video games. Here, the discussion touched on play habits and behaviors, how neurodivergence can be a vulnerability when it comes to negative consequences for mental health as well as the benefits that video games bring

neurodivergent individuals in terms of psychological and physical well-being. Further, the thesis also addressed games that are specifically targeted at neurodivergent people and how these are mostly rather problematic since they prioritize 'educational' value and a use for intervention, cure, and therapy, while neglecting to create fun and enjoyable game play experiences. Another aspect discussed in this context was how games work to reinforce biases and social norms, specifically through a lack of diverse characters and very stereotypical depictions. One particularly important element in this context was an exploration of existing representation of neurodivergence in video games. Here, the analysis also drew on research regarding the representation of marginalized identities in general, particularly disability. As such, this part of the thesis explored types of games and approaches used to represent neurodivergence. It was found that a majority of games covering this topic, framed neurodivergence in a negative light and only focused on struggles and hardships. With many of these games, the intention is to 'explain' neurodivergence and get players to sympathize with the pitiable neurodivergent character. Even in cases where neurodivergence was not framed as a 'horrible disorder', the games still tended to take on a more serious or 'dark' tone.

The thesis further presented the results of the study conducted as part of this project, which consisted of interviews with neurodivergent people. These were split into two parts; one for neurodivergence, which revolved around experiences, attitudes and joys of being neurodivergent, and the other for games, which focused on preferences, likes and play styles. In total there were six participants, who were between the ages of 23 and 41, and had autism or ADHD. A reflexive thematic analysis was conducted, which led to the development of six themes. The first three of these concerned the topic of neurodivergence, while the other three dealt with the topic of video games.
When it comes to neurodivergence, first the theme 'The joy in being me' revolved around the aspects and traits that participants liked about being neurodivergent. Mentioned in this regard were their deep interests, intense focus, creativity, and imagination, as well as stimming. In contrast to this, the theme 'Sometimes it's not so fun' dealt with the struggles and frustrations that participants experienced in relation to being neurodivergent. It touched on both external factors, such as a lack of understanding from others and unaccommodating environments, and internal factors, like forgetfulness or executive dysfunction. The theme 'It is what it is' lastly explored thoughts and experiences around acceptance, coming to terms with being neurodivergent, and understanding neurodivergence as an integral part of themselves that made them who they are. A particular factor that supported participants in this process was finding community.
In the context of video games, the theme 'Freedom: it's in the game' focused around the possibility spaces opened by video games that allow for exploration, experimentation and discovery, and running free, which made participants feel like anything is possible. The theme 'Escape to a world of play' addressed the comfort that participants found in playing video games and the ways in which they allowed these players to relax and escape their real world stresses and struggles. In this regard, a focus was placed on simplicity and games providing them with structure. Finally, the theme 'Now you're playing with control' discussed how games enabled participants to feel in control and allowed them

to determine their play experience through various possibilities and options. This also involved being enabled to make meaningful choices and challenge one's mind through problem-solving and finding alternative approaches.

Based on these interviews and themes, three concepts for games that represent neurodivergence were developed. The goal with these design ideas was to create games for neurodivergent people and about neurodivergence that present it in a more positive way and highlight joy. Moreover, the intention also was to design game ideas where neurodivergence is not the main focus of the game or its narrative, and rather appears in a more subtle way. In this regard, they rather employed neurodivergence as a theme that inspired and shaped the design of settings, activities, and mechanics.

The first game, called 'Ruins of Aurum', focuses around exploring the ruins of an extinct civilization, discovering old artifacts and gathering supplies to rebuild one of the historic towns. The player has the freedom to roam around the game world and the control over the buildings and structures that make up the rebuilt town. Neurodivergence is represented in the game as the identity of the protagonist, the unique characteristic of the extinct civilization, as well as the reason for its destruction. Through finding the artifacts left behind, the player learns more about the ancient civilization's history and way of life, and in this way also about themself and their idiosyncrasies.

In the second game, 'mission: planet NT', the player takes the role of an alien astronaut and goes on a mission to another planet in order to retrieve the valuable items that were stolen from their home planet by inhabitants of that other planet. The main gameplay consists of traveling to different locations on that planet, collecting items as fuel for the spaceship, and fighting enemies and bosses. For the most part, this game idea was inspired by the theme of comfort and safety, and as such was designed to offer a simple level structure, clearly defined objectives and straightforward gameplay interactions. At the same time, it also contains some element of control with, for example, the creation and customization of the player avatar. As far as the representation of neurodivergence is concerned, the inspiration behind the setting and premise of playing an alien character draws on the experience, common among neurodivergent individuals, of feeling very different from other people in one's life, almost as if they were aliens from a different planet. Furthermore, the game idea also sought to represent differences in sensory processing and the accompanying sensitivities many neurodivergent people experience. In particular, the things that often cause sensory overwhelm in real life are depicted as the enemies in the game that the player has to fight. Thus, in a sense, the game constitutes a way to tackle the everyday challenges that typically come with neurodivergence.

The third game 'House of Mystery' begins with the player waking up in the middle of a forest and next to a mysterious, but somehow familiar looking, house that appears to hide quite a few secrets within it. Over the course of the game, the player ventures out into the world, solves puzzles, and collects various items, including keys, that unlock new areas in the house, and badges that open up new paths within the game world. A defining characteristic of this game is its openness, in terms of both the game world and the possibilities to solve the puzzles within it. As a result, the game features a

non-linear structure that puts a focus on self-determination and allowing the player to decide where to go, what to explore and which approach to take, while still providing a sense of structure through quests and hints that help the player to not feel lost. The aspect of neurodivergence is more subtle than in the previous two game ideas. Specifically, it involved two aspects. On the one hand, the puzzle element is intended to cater to some of the strengths and joys associated with neurodivergence. These are the fondness for problem-solving and challenging one's mind, and creativity as well as the ability to come up with, potentially more unconventional, solutions. On the other hand, the game also aimed to represent the joy in collecting and fidgeting with various items, and as such provides players with the opportunity to stim.

Through the analysis, it was established that the game ideas developed in this thesis project are different to existing games for and about neurodivergent people. In particular, this is because the developed game concepts more so use neurodivergence as inspiration for the design of setting, narrative, gameplay interactions, and objects within the game, instead of attempting to explain neurodivergence or elicit empathy in players. This point also connects to the most significant discrepancy that was found, which is that within the game concepts the focus was to offer joyful and fun play experiences, while existing games tend to take on either a negative or serious tone. For neurodivergent people, as well as disabled persons in general, representation matters significantly, as the existing depictions have an immense influence on how these individuals get to perceive and understand themselves and their identity. Thus, the aim was to portray neurodivergence accurately, respectfully and, most importantly, in a relatable way.

The research presented in this thesis is also not without its limitations. Most notably, the number of participants in the study was relatively small, thus the insights are limited to only a few select perspectives and experiences of neurodivergence. Further, the characteristics and personal background of the participants naturally also had a significant influence on the results that were found. In particular, this concerns the fact that the study was conducted with participants who live in a Western European country and generally have access to therapy, diagnosis, and medication. Thus, in this regard, it is important to acknowledge the privileged position of the neurodivergent people involved in the creation of this thesis, which also includes its author. Another considerable limitation is that it was not possible, within the scope of this thesis project, to develop any of the presented concepts into an actual game. This means that the designs were not reviewed and verified with neurodivergent individuals, thus, it as yet remains unclear how enjoyable and relatable these representations truly are.

For this reason, one possible subject for future work would be to develop such a game and actually test it with neurodivergence individuals. Another research avenue could involve taking a participatory design approach to co-design representations of neurodivergence with those who are neurodivergent. In this way, neurodivergent people are provided with the opportunity to give more active input, which also serves as valuable feedback for previously developed game concepts. In general, the lack of research on neurodivergence in video games means that there is a need to establish the specific considerations that

should be made when designing a game that seeks to represent neurodivergent people and their experiences.

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