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Miniature Mindfulness: Finding Spiritual Flow with Warhammer 40,000 Models

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Abstract: Warhammer 40,000 (40k) is the world's most popular miniature wargame. The game is played with miniatures (small-scale figures made of hard plastic or other materials), which have usually been painted by each individual player. These player–painters typically spend hours in deep concentration painting the models. Drawing on interviews and journal entries from a six-month participant study of 14 painters, this paper explores whether miniature painters achieve a flow state, whether this creates a greater feeling of mindfulness, and how painting impacts their overall mental health. Results from this study indicate that miniature painting is meditative, meaningful, and positive for the participants' mental health. Using the definition of flow outlined in Mihaly Csikszentmihalyi's book *Optimal Experience: Psychological Studies of Flow in Consciousness* (1988), flow is a state of pleasure had when an individual concentrates on a specific task. Csikszentmihalyi, from his research on flow, notes that this state of mind involves both immersion and a sense of transcendence, where the individual temporarily loses a sense of self. This sense of loss of self was explored with an increased attention to the feeling of the body, and situated cognition has been further explored to understand how this connects to painting. While flow is regularly applied to videogame studies, less work has been carried out on this flow state during activities like miniature painting.

Keywords: cognition; flow; religion; Warhammer 40,000; miniature; painting; gaming

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1. Introduction

Warhammer 40,000 (40k) is a miniature wargame produced by the UK company Games Workshop. First published in 1987, 40k is now played by an estimated 3.5–5 million individuals worldwide (Jones and Kelling 2022). The game and the broader fandom has multiple nodes of engagement including (and not limited to) the following: painting, and then separately playing with, the small plastic figures that comprise the core game and hobby; reading official literature released by Games Workshop's publishing arm the Black Library; watching official animations, lore, and other video content through Warhammer TV; engaging with similar work from unaffiliated content creators on sites such as YouTube and Twitch; engaging in online conversations about the game or its universe on forums such as Reddit; or by visiting one of the 500 brick and mortar Warhammer stores globally. This diversity and range of engagement, alongside the fact that most individuals engage with multiple of these nodes, has created a cohort of players and fans that are incredibly active and invested in the franchise. Once a relatively niche hobby and setting, 40k has begun moving more confidently into the mainstream, with Games Workshop announcing a deal with Amazon for a 40k series at the end of 2022 (Warhammer Community 2022).

As the popularity of the setting has grown, it has expanded and diversified, creating a multi-media universe both physically and imaginatively. The content footprint of 40k is overwhelming due to its nearly 50-year history and its sprawling and frequently revised lore. This lore, inspired by many popular fantasy and science fiction tropes, as well as a range of historical and cultural settings, make it fertile ground for the study of the political, social, religious, and historical content within the game world. From a sociological perspective, the potential value the hobby gives the players both individually and socially is just as rich. Specifically, this paper is interested in whether the painting of 40k miniatures creates a sense of flow and, if it does, what effect this has on an individual's cognition and state of mind. In Chapter 2 of *Optimal Experience*, Csikszentmihalyi demonstrates the limitations of studying human behaviour in a clinical setting and highlights the advantage of studying people when they are "involved in their normal lives in real ecological settings" (1988, p. 15). As well as documenting real settings, research needs to focus on moments and times when individuals are performing activities which are fun, relaxing, and creative to demonstrate the depth of human experience. It is in these points of relaxation that flow can be characterised. The concept of flow state is relatively well known within popular psychology discourses, but the way to locate, monitor, and categorise it is far more difficult. This paper (and associated research) is part of a larger research project focused on 40k and started with the goal of discovering if, in a six-month period, 40k painters entered a flow state. After initial conversations revealed that they appeared to be entering flow, the focus of the research broadened to explore what conditions best supported flow, what the experience of this flow felt like, and what impact it may have on the individual's wellbeing. This paper will, firstly, introduce the methodologies used. Then, secondly, it will examine participant responses using a criterion of flow based on Csikszentmihalyi's work that has been supplemented with an increased focus on the body and embodied cognition. Thirdly, this paper will situate this research against critiques of flow states and studies such as that of Soderman's *Against Flow* (2021). Finally, this paper will offer further discussion on the way painting has positively impacted the participants' lives and the ways in which the wider hobby of 40k can and does promote positive mental health for those that engage with it.

2. The Study and Methodology

2.1. Participants

Due to the length of this study, a small sample was chosen with the aim of selecting individuals who could commit to the full six-month research period. The project asked for participants to take part in three interviews spread across the research period and to keep a painting journal during this time. Members of the study were recruited via various Warhammer hobby Facebook groups and were additionally screened based on the average time they spent painting each week, needing a minimum of at least two hours a week. From this initial recruitment, 14 participants took part in the study, with 9 attending all interview sessions due to various timing clashes and other commitments. Participants were from Europe, North America, and Australia. On average, participants painted 3–4 days a week (being more likely to paint for 4 days a week than for 3) and averaged 2 h per session (see Table 1). The average total painting hours per week was just over 8 h per week. Participants have been kept anonymous, and key identification signifiers have been removed. In this paper, individual participant results have been designated the following letters to differentiate each. 'P' represents the participant number, 'I' the interview number, and 'J' the journal entry number (as well as the date the journal took place). The study was advertised as a study on flow and painting of Warhammer miniatures and, as such, a

self-selection bias could be at play. This small-scale project, however, was intended from the outset to be exploratory and qualitative.

Table 1. Frequency and duration of painting sessions.

Participant	Painting Sessions per Week	Duration of Painting Session
1	2–3 days	1–2 h
2	7 days	2 h
3	4–5 days	3–4 h
4	2–3 days	3–6 h
5	3 days	1–1.5 h
6	2 days	2 h
7	6–7 days	2 h
8	2 days	0.5–1 h
9	4 days	3–5 h
10	4–5 days	1–2 h
11	4 days	2 h
12	3–4 days	2–3 h
13	3 days	2 h
14	4 days	4 h

2.2. Procedures

To understand flow as a repeatable and ongoing experience, the project was divided into three interview sessions held via Zoom over a six-month period. One interview session was held in November 2023, and the remaining two were held in January and April 2024. Participants were asked to keep a painting journal throughout the project period and to write at least one journal entry prior to each interview (although they were encouraged to write more). On average, participants wrote 3 entries before each interview, with some writing as many as 6 or 7. The focus and substance of these journal entries was left entirely up to the participant. Some wrote almost poetic haikus of their painting process, while others used it like a true reflective journal. Journaling was considered an important addition to the interviews, as it enabled real-time reflections on the feeling of painting as it was happening rather than only relying on reflections after the fact.

Each interview lasted 25–30 min and were semi-structured around criteria of flow (based on Csikszentmihalyi's work). Additionally, questions were asked more generally about the hobby and painting practice, with a strong emphasis on the feeling of the body and the experience of flow. Key questions included the following:

- Did they (the participants) feel a loss of time when painting?
- Was the goal of their painting the experience or the finished product?
- Did their skills match the difficulty of the painting?
- What was their perception and feel of the body during the activity?
- What, if any, was the sense of fulfilment gained during the activity?
- What is the specific role of creativity?
- Questions on religious belief and religion generally.
- And a general exploration of what potential flow feels like.

As the interviews developed, questions on engagement with 40k lore, the conditions of flow, and the role the hobby has on the painters' mental health were also added and discussed. These interviews were conducted using a Socratic–hermeneutic 'Interpre-viewing' style, as outlined by Dr. Christine Sorrell Dinkins, as this technique allows for flexibility and freedom for interviewees to speak of subjective experiences (Dinkins 2005). This method enabled a true dialogue between interviewer and interviewee, so rapport and trust were built over time.

3. What Is a Flow State?

The phenomenon of flow is not unique to 40k hobbyists and has been identified across a variety of different hobbies and activities. Even people from widely different cultural and religious groups can identify and recognise flow (Csikszentmihalyi 1988, p. 30). The aim of this study is to explore whether 40k hobbyists achieved flow in the same way as those other activities and, more importantly, the impact this has on the hobbyist's cognitive state.

For Csikszentmihalyi, flow activities are those which are sought out often, but which are not easily accounted for by reductionist psychology. When your stomach rumbles, you get food. If you need to go to the bathroom, generally speaking, you go and find one. However, we also have the ability to forgo these basic needs to fulfil other tasks we deem more urgent. The self can direct one's attention to a specific point of focus. For Csikszentmihalyi, many of these activities seem counterproductive, as they do not necessarily gain the individual any power, money, or prestige. Instead, they are activities that can be performed for their own sake—to enter flow.

The qualities of flow chosen for this study were based on Csikszentmihalyi's work, specifically *Optimal Experience: Psychological Studies of Flow in Consciousness* (1988). The criteria used by Seger and Potts in their paper 'Personality Correlates of Psychological Flow States in Videogame Play' was also used as a point of reference (Seger and Potts 2012). Finally, as new qualities of flow emerged through the interviews, these were also included and expanded upon. While there were similarities around how flow felt and was experienced amongst participants, there were also differences, demonstrating a need for a larger-scale project to explore flow in miniature painting in a more general sense in future studies.

Embodied Cognition and Flow

Incorporating embodied cognition into a study centred on flow states not only makes sense conceptually, but also helps us understand the individuals' experiences of an activity (in this case miniature painting) in relation to their cognition, and why flow might be such a positive state. Although the definition of embodied cognition is quite contested, generally it is reflective of a separation from a more functionalist account of cognition that tends to favour the brain internally over the role of the body (Newen 2018, p. 4). Put more simply, traditional cognitive science considers the mind and activity like a computer, receiving input(s) and then, as a result, outputting a specific action or actions. As our understanding on the complexities of cognition have expanded, so too has the need for a framework of cognition that incorporates the environment, outside contexts, and the body as it moves around space, and how these factors impact how we think and feel. Sometimes, this is called situated cognition, or 4E cognition (referring to embodied, embedded, enacted, or extended).

The difference presented by embodied cognition is not just in the way cognition can be understood, but also in how it can be studied. Indeed, 4E cognition favours experiments that investigate social interactions and how we move about in space, rather than more rule-governed cognition tests like the playing of chess or other rational-focused tasks (Newen 2018, p. 5). Miniature painting is an embodied experience. This study, as such, incorporates not only how flow feels, but also how the body itself is used and perceived during this activity. This approach has its own difficulties, however, as it is often much harder to measure. If one tries to test 4E cognition in a lab setting, the person is removed from their natural environment. Conversely, if the participant is in their natural environment, it is hard to isolate the different modes of cognition. This 'motley crew' critique warns that, if a 4E research approach is taken, "we lose our scientific-methodical access to the phenomena we are interested in as cognition researchers", and that it is so difficult to isolate each

component in this idea of cognition as to be functionally impossible (Casper and Artese 2023, p. 3). Despite these critiques, given that immersivity, embodiment, and how one is situated are vital to flow, the value of an embodied approach to cognition when attempting to understand the subjective experiences of the painters in this study seems obvious.

A common methodology when studying 4E cognition is the use of phenomenological methods. Casper and Artese, for example, talk about the importance of training their study participants to suspend their own beliefs and analyses from their true perception so that, when asked to describe them later, they are better able to accurately document their experiences (Casper and Artese, p. 6). In a similar vein, participants in this study were asked to use the journal to record their most immediate perceptions of painting so that this could lead the discussion after, rather than all accounts of painting happening in a context where this immediacy might no longer be present. When understanding embodied cognition—and flow can be considered a part of this—it is important to incorporate, where possible, Gallagher's meshed architecture. This method helps us to not fall back onto a functionalist understanding of cognition (2021). To this end, we should consider the following question: when someone enters flow state, are they cognitively going offline, or are they feeling something akin to an instruction manual? Is a skilled cricket player, when facing a delivery, barely noticing the ball, as habits and skills gained over years of practice take over, or are they instead feeling "move here, look there, swing your arm"? Gallagher would argue that both are occurring. Typically, we might assume that, after mastering the basics, that as the painter enters flow, they effortlessly move from shading to highlighting to adding basing materials with minimal "top-down" processing (Gallagher 2021, p. 357). This idea is echoed by Hubert Dreyfus, who says that, during a performance, the expert exists in "the flow", where no cognition is used that could take them out of the performance (2007, p. 373). If everything is going well, nothing should interrupt this state. However, as Sutton et al. argues, performance, even if it looks mindless, is not. As they state,

> "An elite cricketer, for example, with less than half a second to execute an ambitious cover drive to a hard ball honing directly in at 140 km/h, draws not only on smoothly-practised strokeplay, but somehow also on experience of playing *this* fast bowler in *these* conditions, and on dynamically-updated awareness of the current state of the match and of the opposition's deployments, to thread an elegant shot with extraordinary precision through a slim gap in the field. It's fast enough to be a reflex, yet it is *perfectly* context-sensitive. This kind of context-sensitivity, we suggest, requires some forms of mindedness." (Sutton et al. 2011, p. 80)

Thinking more of these mindless actions as habits, they, like the cricketer, do not mean a lack of thinking altogether. When habits start, perception does not stop (Sutton et al. 2011, p. 88). Even if we barely think about locking the door after we leave home, we are still thinking of which key it is, aiming for it, turning the lock, and walking through the door—movements and thoughts that need our attention, even if our minds are elsewhere. In this, too, we can easily adjust as needed, catching a paper under our arm, even if we had not practised this version many times before, demonstrating the ability to adapt and change. If we believe that all responses that involve habit or memory are "fast and fluid" vs. "slow, conscious decision-making", and see everyday habits as "mindless", we risk, as Sutton et al. notes,

> "entrenching the core intellectualist (and pseudo-Cartesian) dichotomy, even if reversing the values attached to its twin poles. If the intellectualist privileges slow, controlled, effortful planning, and sees cognitively-permeable, verbalizable conscious thought as the root of skilful action, the anti-intellectualist over-reaction

> is to privilege fast, effortless, intuitive and entirely non-cognitive responses which are merely the slip side of the same dichotomy" (Sutton et al. 2011, p. 90)

When asked about their experiences, the responses of participants from this study support Sutton et al.'s idea of a complex interaction occurring between mind and body during activities such as miniature painting. Flow states, thus, appear to be neither one nor the other, but a combination of both of these polarities. While it goes beyond the scope of this study, more work clearly needs to be carried out to further explore the nature of the interaction that is occurring between mind and body while in a flow state.

4. Seven Criteria of Flow

4.1. Losing Track of Time

Csikszentmihalyi notes that a common quality of flow is a "distorted sense of time" in which several hours can feel like minutes (1988, p. 33). Time being distorted is also an indicator and a marker that reflects that the painter has entered a special time or zone, interrupted mostly by external forces. In this zone, time is distorted, and the individuals are just there, focused on their hands and the model they are painting. Time also seems to be an important factor for reaching flow, with participants noting that, in longer painting sessions, they were more likely to reach flow than during shorter sessions.

For the cohort of painters, time was not only difficult to describe, but, during particularly fruitful painting sessions, felt like it disappeared completely. Participants felt that they lost track of time regularly and described time as something that was always sliding away from them. In one journal entry, one participant described initially starting some light touch-ups on a particular model and noticed that "time slowly began to slip from me". The only sensation that broke them out of this zone was the need to change the water (used to clean the brush), and that they were being broken out of what "only can be described as flow" (P3.J1.16.11.23). In another entry later in the month, this same participant starts their entry with, "Once again, I have painted way longer than I was anticipating" (P3.J1.26.11.23), indicating that the quality of timelessness is both useful and frustrating depending on the context. Time is something that not only slips away, but that is also forgotten, with one participant remembering looking up from a painting session and saying, "oh god, I've been doing this for an hour?" (P6.I1). For Participant 7, they noted one session where they began painting at 10 pm after their partner had gone to bed, starting to feel a little sleepy and deciding to work on one last detail, and suddenly realising it was now 2 am (P7.I1). In Participant 7's journal, they start their session at 4:15 pm. At 6:14 pm, they write again, stating that they were not "meaning to paint for so long", getting in a groove (P7.J2.20.1.24). Timelessness is a significant quality of flow, as it is becoming increasingly difficult in contemporary society to avoid the passing of time, as the strain on it is often so demanding. The indicator of loss of time, when combined with the other qualities of flow, indicates a special temporal zone where the painter can be completely present.

Time is also described as being "weird" and distorted. Participant 6 finds that time is distorted when painting, stating, "last night, I think I said, I had only been painting for an hour and a half, but when I kind of put everything down, I was like, Oh, crap, it's gonna be really late. And then it was only like 9:30" (P6.I2). This is particularly felt when participants are in flow. Participant 4, when asked if they ever lost track of time, said they did "All the time". On reflection, they described sort of snapping out of their painting session four to five hours later and thinking, "I've painted like, massive units of troops. And I'm just like, I don't even know how I sort of did that I just went into a bit of a zone, you know?" (P4.I1). The feeling of time not passing is linked and connected to this feeling that the painting session exists in a special bubble, demarcated from normal or "real life" (P6.I3)—a bubble

that is "really calming" where the painter no longer has to worry about "paying attention to outside stuff" (P6.I3).

This bubble is not only described as creating a calming space or a space where time is distorted, but also a bubble of complete concentration where outside distractions, personal problems, and noises are tuned out. Csikszentmihalyi describes this point of an activity where "concentration focuses on what needs to be done" (1988, p. 34). During this point in the activity, thoughts that are deemed irrelevant are no longer able to penetrate, and even judgements of others seem to disappear (1988, p. 34). While this can happen in many activities such as playing the violin or hiking, miniature painting, by its very small-scale nature, is all-consuming, with participants commenting that they are unable to really do anything else during the activity except play music or TV shows they have already seen before. Games Workshop miniatures are generally from 28 mm to 32 mm in scale, with fine details that require not only a skilled hand, but also that the painter's eyes are always on the model. When asked how this activity compares to others like reading or watching film, it was described as active, while the other activities are more passive. When comparing painting to reading, Participant 1 stated that reading felt less active and engaging, due in part to the fine motor skills needed in the hands (P1.I1). When comparing the experience to mindfulness, Participant 3 found painting even more potent, as it is "giving my mind something to focus on. And it's a little bit easier to get into that state and to relax a little bit" (P3.P1). Similarly, Participant 6 notes that they struggle with meditation because they feel like they need to be busy physically with doing something at the same time, and painting allows them to do that (P6.I1). For Participant 4, the difference between painting and reading or watching a show is analogous to watching a game versus playing a game, with painting being more akin to the latter (P4.I1). In addition, the nature of the immersion, the variation in each model, and the lore-building that occurs surrounding the model all help to create this zone. While the painting exists in this zone for the participants, it is important to note that their connections and engagement with various elements of the lore, gameplay, and media mean that their experiences are varied and dynamic. The effect of the painting session, which I will further expand on in the section on mental health, means that this zone (among other things) enables a sense of escapism from the outside world.

While in the zone, participants tend to tune out external noise, where even people talking to them "becomes a background noise", a ringing in the ear where they are not paying attention (P2.I2). During interviews, participants regularly talked of playing music while painting specifically music relevant to 40k lore. Individuals painting the Imperium might listen to ambient gothic (P3.J1.I6.11.23) or liturgical chants (P5.I2), while a participant painting Necrons[1] might listen to mechanical soundtracks (P14.I2). While it is common for painters to listen to themed music, many also chose to listen to 40k lore podcasts during their painting sessions. But even in these periods of concentration and tuning in, these background noises tend to "fade away" as the participant focuses on the model and enters flow (P3.J1.23.11.23). This zone seems to contain all the focus, with Participant 6 stating, "It's got so much of my focus. I can't pay attention to outside things" (P6.I2). The zone can be so strong that sometimes people do not hear their partner calling them from another room (P7.I1). Participant 14, in their second interview, tells a story of their partner getting mad that they had forgotten to say goodnight to their daughter who, apparently, during a painting session, had come into the room, said goodnight, and left having been ignored. They note, "I didn't observe her. I didn't see her or hear her, even though she stood right next to me. And then when I was done painting, I came into the living room and my [partner] said, why the fuck did you ignore us?" (P14.I2). In this state of extreme hyper-focus, they lose track of time and outside distractions—even important ones.

In one journal session, Participant 9 describes an interruption while in this zone, noting that, "Nothing wakes you up better than a scalpel stab right under your fingernail. I was super calm. In the zone. . .But a shrieking jolt of pain that went thru my hand brought me back up to this-world consciousness" (P9.J2.1.1.2024). There seems to be a difference between the real world and the time spent in the painting zone. To summarise, time within the activity of painting 40k miniatures is something that stops and is distorted and ignored during periods of strong focus. This focus is correlated with a decrease in awareness or care for outside influences and distractions. The zone is something that feels different and distinct to everyday life.

4.2. Goal Is Not the Destination

For most painters interviewed, miniature painting provides the organised structure and clear objectives needed to facilitate flow, but is also so rewarding that the experience of painting can become more important than the finished miniature itself. On the dimensions of the flow experience, Csikszentmihalyi states that, for an activity to promote flow, it needs to strike a balance between having "clear goals" with easy-to-understand feedback (1988, p. 32). The miniatures, while complex and requiring a high level of skill, can be tailored to the painter's relevant experience (this will be further addressed in criteria 3). Compared to a blank canvas, these painters have box art for reference, as well as specific Games Workshop paints and tools to help painters match their skill level with the difficulty of each task. Advice and feedback from members of the community, both online and in person, also provide guidance. While the hobby is structured, there is still a lot of space for creative feedback from the painter on the model. While clear goals are important for activities to engender flow, as a painter becomes more experienced, the goals become less important, and the focus is re-shifted to the experience itself. Csikszentmihalyi describes this as being where "consciousness is in harmony" and the activity is "intrinsically rewarding" (1988, p. 24). The goals are there really to allow for the experience of flow to happen. While this was true for a lot of participants, many still stated that the finished product of the miniature was an important factor. It was also noted that participants felt they entered flow more easily once they had become more experienced and skilled at painting, as it allowed for their worries and anxieties on the basics of painting to disappear; from personal experience, it is difficult to enter flow in the beginning when all you are worried about is painting the parts you want to paint, and not swabbing already painted legs when you actually want to paint someone's cloak. Participant 7 describes how they can get into flow more now than when they started because "it's becoming more muscle memory to me", where they think less about what they are doing and can just grab what they need without a major interruption in concentration. Similarly, Participant 8 notes that, when they started painting as a kid, they do not remember getting into flow, as they were focusing more on trying to achieve certain things and stressing about that, rather than the painting itself (P8.I2). For Participant 10, the more they paint, the more they enjoy it and feel that "painting isn't a means to an end. It's the end itself", with the playing of the models being a happy byproduct of the process (P10.I1).

The war game of 40k is regularly played in a Warhammer store, with the miniatures bought and painted beforehand. This means that you have people that paint to play and people that play to paint, or people that only paint and never play at all. Most of the painters interviewed had painted since they were teenagers and had mastered a lot of the basic painting skills required of the hobby by the time they were interviewed for this study. This means that they were able to enter flow and generally focus more on the experience. Participant 1 says they have a large collection of unpainted miniatures (often referred to as a 'pile of shame' within the hobby). They paint for the experience, and do not care

how long it takes and draw on the hobby when they are "in that sort of relaxed mindset" (P1.I1). In their journal entry, Participant 3 identifies as painting for painting's sake, or where the act of painting is the important goal of the activity. They state, "I love getting lost in the paints and the models. It provides me with a profound sense of peace and comfort" (P3.J1.16.11.23). Participant 5 similarly acknowledges that they paint for the painting itself; while the feeling of completion is important, the experience is more so (P5.I2).

For Participant 2, the specific painting goal is what is important to motivate them to start the painting, which then, in turn, allows them to get into the painting, demonstrating the importance of both the goal and the experience (P2.I2). Similarly, when asked the same question, Participant 6 paints both to complete goals and for the experience. The feeling of a finished model and having something tangible at the end is important. They note, "say I spent 150 h playing a computer game, but I haven't got anything at the end of that" (P6.I2). The craft element and physicality, as well as a "real, tangible achievement", is important (P6.I2). For some painters, the relative importance of both the painting and the finished product changes. In the beginning, Participant 13 feels like they painted for the experience; starting with a new project made them feel inspired and excited. As the painting continues, it can feel more like a chore, and they need goals to get it finished (P13.I2). The activity of painting miniatures for Participant 7 makes them feel more relaxed, but they do not normally start the activity with the state of relaxation as their motivation. Instead, they will have a specific painting goal in mind, and the result is that, after a long session, they feel mentally "very relaxed. . .I can focus on them a lot better" (P7.I1). Goals are also more important for Participant 12; they describe the experience of painting as being therapeutic, but, surprisingly, not particularly enjoyable (P12.I2). They note that the part of the painting process they find most enjoyable is the end product, where they can share it with people, express themselves as an artist, and feel something that "sort of feeds my soul, so to speak, right?" (P12.I2). For many of the participants, both the goals and the experience of painting (and the flow that comes with it) are important. The goal can be used at the start to create the urge to paint and allow for the experience to take over, or the goal can be more of a focus towards the end to finish a miniature that is becoming less enjoyable. Having a tangible and physical model that can be displayed, played in a game, shared on social media, and held is an important feature of the hobby. This physicality and social aspect of the painting creates other benefits of the hobby that extend outside of the painting itself and will briefly be explored further in this article. While many of the painters agreed on occasion, they painted for the experience of flow itself; in this, they depart slightly from Csikszentmihalyi and place more value on goals. However, I am sure many athletes and musicians similarly find goals important, whether it is scoring a home run or learning a particularly hard concerto. By understanding the role of goals for motivation, a more expansive understanding of flow can be explored.

4.3. Difficulty Matched with Skill Level

An important feature of an activity that best engenders flow is one where the skill of the individual is matched with the difficulty of the task (Csikszentmihalyi 1988, p. 30). An activity needs to have the ability to increase in difficulty, allowing for the person's skills to develop and grow. In the experiences of the participants, they noted that they feel their skills match the challenges they are facing. The painting of miniatures in terms of skills on display has a large range. This can range from simple base coats and shading all the way to non-metallic metal (NMM), a difficult technique popular amongst skilled painters, where you paint using a variation in shading and highlights so that the model appears to be metallic (i.e. using whites, greys, and blacks rather than steel to paint a steel sword). There are multiple painting competitions both locally and globally, with the preeminent

competitions such as the Crystal Brush and Golden Demon being demonstrative of just how high the skill ceiling within the hobby is. If a painter started the hobby trying to do NMM before learning the basics, not only would they be frustrated, but their ability to enter flow would become a lot harder. The painting of 40k miniatures is particularly conducive to both variation in terms of difficulty, but also by providing resources for people to develop and build on their skills. During interviews, participants like it when they are faced with challenges because it makes it more interesting and allows them to experiment and test new things (P1.I1 and P1.J1.23/11/23) and helps them find new solutions to complex problems (P2.I1). While the urge to improve was often a motivating force, it could also hinder flow and enjoyment of painting due to the pressure it created. Participant 5 stated that they missed being an amateur in the hobby because, as their skills have developed, it provided a level of pressure that can "dilute the joy" of the hobby (P5.I1). This has resulted in a shift away from awards or trying to be the best painter to trying to just enjoy the hobby for what it is. Similarly, Participant 7 notes that, in the beginning, they were seeing more drastic differences in skill where they felt a feeling of "complete awe" at the process. But as these skills developed, that progress became less pronounced and, while there is still excitement, they must push themselves more, whether this is through working on more intricate details or looking at social media for inspiration to get that same feeling (P7.I2). Seeing their individual growth of progress can also create a sense of satisfaction, a visual demonstration of how one's painting skill has developed over time. This, in turn, can add a sense of motivation and inspiration, with Participant 14 stating, "It really has been a steep learning curve and when I focus on getting better and taking my time, it sure does help!" (P14.J2.2.2.24).

Participant 2 reflects on the importance of challenging yourself to avoid the hobby becoming monotonous. They note that they have painted hundreds of space marines (a common model in the range), but now are enjoying different models where they can try new techniques like weathering or highlighting that keeps the hobby "exciting to go to every day" (P2.I2). Switching to different projects also helps break up the monotony, cycling through batch painting[2] a specific unit and an intricate character model (P2.I2). Participant 4 tends not to even think about challenging themselves and instead tries to come up with ideas instead, even if it means no longer sticking to their original plan, making everything as hard as possible (P4.I1). Making things purposefully difficult enables them to enjoy the hobby more because they feel it builds their confidence, even if takes longer (P4.I2). Within the hobby, there are a range of different YouTube channels and Twitch streamers that provide both inspiration for basic skills to try, as well as ones that offer guidance for those wanting to advance their skills. In their second interview, Participant 3 said that they followed a content creator's tutorial in order to improve their skills in painting object source lighting (OSL), a technique which uses highlighting and thinned down paint applied as glazes to create the appearance that light is emanating from a source within the model, for example, LED or fluorescent lighting, glowing runes, or a plasma pistol (P3.I2). When asked how the painting might feel without these challenges, they stated that they would feel "stagnant", "complacent", and that adding new skills "pushes your brain into the flow state a little bit more, because you're just so involved in the process itself" (P3.I2). Participants try to gradually increase the difficulty, first identifying something new to try and then slowly experimenting, often using intermediary steps, to work their way up to it. Participant 2, for example, wanted to try using oil paints rather than the more standard acrylic ones, and experimented with enamel paints first as an increment towards this goal (P2.I2). Content creators can be good sources of inspiration and support during these experimentations, but can also overwhelm people, resulting in painters feeling intimidated and reluctant to try more advanced techniques (P6.I2). Despite such anxieties, Participant 6

feels that you need to practice at painting if you want to improve, noting that, "because I want to get better at something, I recognize that I have to spend time actually, I have to dedicate time to doing it" (P6.I3).

Most of the cohort of painters in this study felt they reached a good balance between trying new things and their skills, resulting in a good environment for entering the flow state. Participant 8 states that there were only a few times in their hobby experience where they felt like they tried a new skill that was completely out of their comfort zone, and instead they focus on "incremental improvements" (P8.I2). Participants also noted that having the right equipment and tools are also important in feeling equipped to tackle any new challenges (P9.I2). Additionally, the painter's mindset going into the painting session can also determine how certain challenges are perceived and whether they add to or detract from the enjoyment of the hobby and their ability to enter flow. Participant 6 states, when asked if they feel equipped to deal with challenges, that it "depends on stuff going on in my life". Reflecting that after an especially frustrating day at work, they had felt less able to handle new challenges while painting (P6.I1). For flow to be achieved during a task, Csikszentmihalyi states that challenges are important, but should grow with the individuals' skills of the task. This observation was reflected in the interviews and demonstrates that when this balance was reached, participants found it easier to enter flow. I do think however, that the importance placed by participants on their mindset before beginning a painting session and/or entering flow is especially significant and demonstrates the need to view flow not as something that occurs instantly, but which requires the right environment and a connection between mind and body.

4.4. Embodiment and Physicality

A key factor of flow is when focus is perfectly connected to a person's awareness (Csikszentmihalyi 1988, p. 32). In this moment, a person no longer perceives themselves in the same way, and they are only focused on the task at hand. The self is still there, but one has become less worried about *what* they are doing and is instead focused on the *act* of doing. In this moment, in painting 40k miniatures (which is sometimes relaxing, sometimes enjoyable, and sometimes frustrating), the focus becomes the hands and the model—the physical body, an extension of that task. Extended cognition, one of the 4Es, argues that certain objects, when used, become part of the cognitive process. The more we use a tool, such as a smartphone for example, the more it becomes a key component of our thinking (Kiverstein 2018). This extended cognition is reflected in the study, where individuals feel that their awareness is extended to their brush and the model. Related to this feeling is a dissolving or transcendence of the ego. In these moments, participants sometimes forget other basic needs like food, water, or their physical discomfort. As part of the interviews, I asked participants how they felt about their bodies, but also specifically if they ever felt like they were floating or lighter than normal. In Seger and Pott's study on flow states and personalities in videogames, they also added a question on unusual physical sensations like floating as a foil item, as these are not typically associated with flow (2012, p. 109). I included this question, as I was also interested in the way the body was felt by the participants. In his chapter on Japanese motorcycle gangs, Ikuya Sato noted that participants of his study felt like their body "moves instinctively" and automatically, not needing any thought (1988). Participants within this study echoed these feelings with Participant 2, stating that "I lose track of my corporeal form sometimes. And all I am is two hands. Painting." (P2.I1).

Similarly, Participant 3 feels like all their senses except sight are "numbed out", and everything is lost—they no longer feel like themselves, and instead they said they "didn't even register that I was sitting and just kind of felt like I was there" (P3.I2). In their journal,

they extrapolated, saying that, in the feeling of flow, they "feel very connected to the process of painting and my brain seems to just glide from step to step…It's a very meditative, calming feeling that brings a lot of peace—something I desperately crave" (P3.J2.28.1.24). In a journal entry, Participant 7 states that now they know what paints to choose, the rest is simply muscle memory, where the more they were in the zone, "the less I thought and the more I just felt it. Painting models is becoming that way for me. I'm not thinking about things too much anymore, I'm just doing" (P7.J2.27.1.24). In this space, action and awareness are united, where the "only things that exists in the world is the paint, the brush, and the model" (P7.J2.20.1.24). It is common for participants to forget to eat and drink (P8.I2) (P2.I2) and forget back pain (P12.I2) (P4.I3). In an anecdote from Participant 5, they stated that the only way they knew time had passed was feeling suddenly hot from the lamp in front of them, which had gradually been warming their body over hours (P5.I3). The feeling and needs of the body become less of a priority as the focus on the painting becomes absolute. When asked about floating, Participant 6 disagreed, but did acknowledge that when painting, other than the occasional neck pain like others have mentioned, they have no real awareness of their body, and are no longer thinking of the physical self, but just painting (P6.I3).

In answering if they feel lighter in their body, Participant 8 describes a habit of preparing for painting in a systematic way to almost signify the entering into the painting and to prepare for the flow state. They describe this as a ritual, in which they methodically wet the paintbrush and dry it on their leg, checking the point of the brush and beginning. This "ritualized physicality" in turn involves their body, giving it an action to prepare (P8.I3). After this description and talking briefly about similar habits of artists in other contexts getting ready to do work, I asked if they felt lighter, and they replied it was almost the opposite, a heavier "gravity feeling" where there is an increased hyper-awareness to the chair and a stillness in which "of the 27 hand muscles in your arm and hand, you know, it's probably only two or three of them that just kind of twitching at a time", which creates an almost meditative and enforced stillness in the body (P8.I3). They liken this to yoga or meditation in which an individual needs to breathe into this physical heaviness, a hyper-awareness of their surroundings (P8.I3). Similarly, Participant 10 does not feel a floating sensation, but does acknowledge a decrease in awareness of the body, in which all the attention is now going towards the hand, the grip on the brush, and the model (P10.I3).

Due to this extending outside the scope of this study, I will only briefly describe what I am calling 'physicality'. The physicality of the hobby refers to both the physicality of the models themselves and the painters during flow as well as, to a lesser extent, the physical Warhammer and hobby stores. Unlike many other flow inducing activities such as playing videogames, playing an instrument, or running, miniature painters receive a finished physical product for their time and effort, a feature that seems to be an important element. To a lesser extent being able to visit physical Warhammer and hobby stores also plays an important role. Indeed, these stores add to the general enjoyment of the hobby by creating a greater sense of community and providing relatively safe spaces to learn and receive feedback (as noted previously, immediate feedback is an important factor in the qualities of flow). When asked about buying habits, Participant 4 says that they feel a stronger sense of accomplishment when they can hold the model in their hand, as opposed to playing online (P4.I3). The models are appealing because of the tactile nature of them: they can be felt, touched, and held. For Participant 10, having physical stores is incredibly important for their sense of self and connection to a community. The physical stores act as a space where they can leave all their troubles at the door as soon as they step in and know that "everyone in there is there for the same reason" (P10.I1). There is also an almost childlike nostalgic element for some, where the miniatures bring back memories

of being a child and seeing models for the first time, but being unable at the time to really start the hobby. Participant 10, in their journal, nicely sums up the appeal of miniature painting: "Play a video game and there is nothing to show for it but paint a miniature and voila! Tangible proof of your work and (hopefully) game time to look forward to" (P10.J1.24.11.23). Physicality and embodiment matter for painters, but in different ways. Participants stated less of an increased awareness of their own physical self and instead emphasised an increased awareness of the physical nature of the model. This erasure of the feeling of the body demonstrates the oneness of mind and body, or embodied cognition. The feeling of flow is so immersive that the body is felt to a lesser extent. If the body was felt, this sensation was not a lightness or airiness, but rather a heaviness, locating awareness into the physical self.

4.5. Fulfilment and Accomplishment

When the equilibrium between the complexity of the task and the skills required is reached, a greater sense of accomplishment can be felt by participants. In a cross-culture study of flow over 3 years, Massimini et al. noted that, within the category of "Skills", an increase in complexity resulted both in a sense of enjoyment as well as accomplishment (1988). In the study, a Turin student felt a sense of pleasure at overcoming the learning of challenging information, a student practising German felt they were "rewarded for having been successful" after putting in effort, and an ex-addict felt a sense of completion when studying (1988, p. 73). In the painting of 40k miniatures, this sense of accomplishment and fulfilment is also connected to quick and immediate feedback. A model is quick to show the painter if they have made a mistake, displaying such errors visually, and is, for similar reasons, rewarding for them to finish. In flow, "irrelevant thoughts" and worries disappear, but in painting, in moments when people are unable to get into flow, it can be their own self-criticism that works as a barrier. Many of the painters described themselves as perfectionists and felt pressure to be better, and this impacted both their enjoyment of the hobby generally and their ability to enter a flow state. Participant 1 says they feel a sense of accomplishment, but only when things are going well, because it is "something I always pick on" (P1.I1). For Participant 2, seeing the finished model makes them proud, feeling, "I feel at the end of the day. . .all I can think of is Wow, I did that. That was me. . .a huge sense of fulfilment" (P2.I2). This sense of fulfilment can come at different stages of the process, but is most normally found at the end stage, when the model is complete. Participant 5 describes the feeling of finishing as "tremendous" where they feel, "Man, I did this. This looks great" (P5.I2). When playing with the models, having a painted army also feels fulfilling, as it is both a key component of the immersion in gameplay, as well as occasionally being a strict rule (with the use of unpainted models being banned or penalised in certain gameplay contexts) (P6.I2). At the end of a journal entry, Participant 9 reflects that, after finishing a model, "That sensation of accomplishment is really important. It helps you move on to the next batch" (P9.J2.10.12.2023).

As Csikszentmihalyi notes, moments of "self-consciousness, or the worry we so often have about how we appear in the eyes of others, also disappears for the same reason" (1988, p. 34). This was true for most participants; when asked if they felt judged, they would say no, and yet regularly talked about judging themselves. When asked about whether they were worried about the opinions of others, Participant 4 disagreed, saying that while they do post now and then on social media, it is just for them and less for the gratification of others (P4.I2). When asked about self-judgement, they stated they can sometimes be harsh on themselves, because they feel they can do better (P4.I3). Participant 13 states feeling constantly inspired by others' creativity, to the point they sometimes jump from idea to idea, resulting in a block on their own creativity (P13.I2). Participant 2 says

they only really feel judged by themselves, identifying as an artist where they are their own "worst critic", but do not really feel judged by others when playing on the tabletop (P2.I2). Most painters describe sharing images of their models to social media or displaying them in store as positive, with Participant 3 stating "I got some good feedback from some Facebook groups", which felt good to them (P3.J1.27.11.23). A sense of accomplishment and fulfilment can be felt both throughout painting and at the end with the finished model. While often participants did not feel judged by others, they did often hold themselves to high standards.

4.6. Feeling of Flow

This section is dedicated to the actual feeling of flow itself, something that can be difficult to describe for participants. As Csikszentmihalyi notes in *Optimal Experience*, flow is an important phenomenon because whether the study is of Japanese biker gangs, writers, or a range of other hobbies and work environments, similar subjective feelings and terms are found to describe flow. In the interviews, I asked participants both what the feeling of flow felt like, how they felt before and after flow, as well as whether *not* feeling flow might impact how they enjoyed the hobby. In the chapter on flow and biocultural evolution by Massimini et al., the question was brought up about how the experience felt was coded by the term "Positive Mood" and reflected a general feeling of wellbeing (1988, p. 72). Examples of terms used in their sample included "peaceful", "serene", and "happy". Similar adjectives were found in this study. Participant 1 describes the sensation of flow as a combination of relaxing and focusing, where it is "active enough that it sort of hones you", drawing your attention to something constructive (P1.I1). Participant 2 describes the feeling as "catharsis", where their "mortal shell" can be ignored and where the only thing that matters is putting paint on plastic (P2.I1). In terms of thought, they say it is varied, sometimes resulting in profound thoughts and other times resulting in an absence where they only exist in the moment—they "just exist within that bubble" (P2.I2).

Getting into flow, however, is talked of as not always happening instantly, but as needing occasional preparation and effort. Getting to this, Participant 2 talks about needing to "practice to get there" and needing a certain level of experience before they were able to enter flow (P2.I2). For Participant 3, everything else fades away—even the pain of uncomfortable glasses, where the only thing they are doing is watching the model: "I feel like I'm more like just watching the model. You know, I'm watching it. And as I'm painting, I'm watching it come to life more and more" (P3.I1). In the journal entry prior to the interview, they state, "When I know what I'm doing, I feel like I can be in almost like a trance, watching the paint go over the plastic. It's a very calming feeling—being completely and utterly in the zone" (P3.J1.26.11.23). This act of creation is also important for Participant 5, who describes this feeling as "art, creativity, perseverance, joy, frustration. Like, just like creating something, you're obviously not making the miniature. But you're putting your creative lens on it saying I could make this do this, or I want it to look like this" (P5.I1). The feeling of flow is described as a trance, cathartic, and joyful.

4.7. Creativity

Creativity is an important aspect of flow studies and something that Csikszentmihalyi explores in his work. His book *Creativity Flow and the Psychology of Discovery and Innovation* from 1996 studied a group of creative and successful people to understand the ideal spaces for creativity. His work specifically tried to highlight the "genuine joy" of creative experiences rather than the general methods of debunking and exposing creativity, as if it is something purely scientific (Csikszentmihalyi 1996, p. 20). While creativity is not a requirement of flow, it is often explored in conjunction with flow, and, as such, was

something I wanted to include in this study. Like flow, creativity involves an ability to "reproduce that system within his or her mind"; it is a skill that needs to be learned (1996, p. 47). A key feature for Csikszentmihalyi's study was that individuals felt "bliss" and enjoyed creating something for the sake of it. This was something I came across with the experience of flow: for some, that the feeling of flow mattered more than the miniature that was being painted (1996, p. 75). From the interviews with painters, I discovered that painting gave individuals a chance to be creative, something that they were not always able to achieve in their everyday life. For Participant 2, they did not consider themselves a creative person until they started the hobby of miniature painting. They felt competent and that they could accomplish something, in contrast to previous hobbies (P2.I1). The 3D quality of the model was also appealing, as it added a further dimension that people did not necessarily feel on pen and paper: the ability to "convey what I want to convey" (P4.I1). For Participant 7, for their day-to-day life, "this is where all my creativity is coming out" (P7.I1). Working their day job in sales, they often do technical work and engage with clients and have very little ability to express themselves artistically. The confidence gained from painting miniatures has encouraged them to scale up and consider larger models.

The ability to express oneself creatively was something that differentiated the experience of flow from hyper-fixation. The qualities of hyper-fixation include increased concentration and focus, often at the expense of one's surroundings. From a quick glance, this can look like flow. In the interview, I included a question on the difference in flow and hyper-fixation to gauge how respondents felt about the distinction, or if there even was one. For Participant 5, when asked how painting compared to a particularly strong focus on a problem at work, they said that they "don't get to be, like, artistic or creative at work" (P5.I13). The specific ability to really envision something and choose the colour scheme is something that really excited them and helps them get more into the flow state. They feel that their "creative part" of their brain does not get "activated a whole lot anymore" (P5.I3). A key mark of differentiation in the study between hyper-fixation and flow was the importance of creativity in the latter.

5. Problems with Flow

The quality and attribute of flow, while mostly positive for participants, should also be viewed in the relevant context. Namely that Games Workshop, the company that sells the paints and models, is a business and assumably knows that their products have addictive qualities. As an individual paints and experiences flow as an enjoyable experience, they can continue to consume more: buy a book from The Black Library to read more about their models, buy a new shade of red paint that matches the box art perfectly, or buy new brushes, new rule books, and a variety of other consumable goods. Games Workshop not only releases new models at a prodigious rate, but often heavily incentivises players to buy the latest models to stay up to date both when they play the game and for their painting. As Soderman notes in his work *Against Flow*, not everything about flow is innocent. In his work, Soderman cautions scholars not to forget the fact that Csikszentmihalyi developed his flow theory as a counterpoint to Marxist theory (Soderman 2021, p. 6). As Soderman notes, Csikszentmihalyi, when confronted with the difficulties of a modern Western democratic society, hoped that flow might offer a new way for modern workers to cope with the world (or at least feel less uncomfortable) without resorting to revolution or Marxist visions of worker solidarity (Soderman 2021, p. 6). Flow is often used by businesses, most notably the video game industry, to make their games as addictive as possible so people continue to spend money (Soderman 2021). These addictive qualities of the hobby were confirmed in interviews, with Participant 5 stating "I don't know when I'm going to be able to get this thing ever again. So, I might as well get it now" (P5.I2). Participant 6 talks of buying

a particular model, making a mistake in building it, and then saying, rather jokingly, "So now I have justification to buy another knight. . .It's like an addiction. Yeah. And then I'll stop, I promise" (P6.I3). Language within the hobby alludes to these qualities with phrases like "pile of shame", referring to a pile of unpainted models, or "plastic crack", referring to how addictive the hobby can be, being used both seriously and with tongue-in-cheek. Soderman's critique is that flow can be isolating and focuses only on the individual, helping people to ignore the real problems underpinning society and their communities. While flow in the painting of miniatures can certainly be addictive and is largely performed in isolation from others, the overall communal aspect of the hobby more generally does seem to alleviate some of his concerns.

6. Flow, Mental Health, and Meaningful Experiences

Results from this study have indicated that, at least for some of those in the cohort, painting miniatures enables a flow state that improves their feelings of anxiety and promotes positive mental health. While this study cannot say unequivocally that painting Warhammer 40,000 promotes positive mental health, the results do indicate that, at least for some, it can have this effect. Nor does this study claim this only occurs with this specific hobby. More work and study to enlarge the number of participants would better validate these early findings on how 40k interacts with participants' wellbeing. In such a scaled-up study, a strong focus on the role of community would need to be included, as this was a large factor that improved mental health wellbeing. Participant 2 noted, in their first interview, that they "have pretty severe anxiety", but through painting, they can receive help with it. They describe feeling a loss of their sense of self and can focus, feeling calm and zooming into what is in front of them. They state, "It's just this colour goes here. This colour goes here. This process this step in the process, and that's all I'm focused on" (P2.I1). When asked further about whether the hobby has overall improved their mental health, they said "incredibly", commenting on how the hobby more generally has also provided them with a strong sense of community. They also use the hobby to engage with their two daughters: "we spend time together painting Warhammer. We'll sit down and I'll give them a little crypt ghoul, and they'll paint it. And it doesn't matter what it looks like. . .And it is still just a blast just to have that time together" (P2.I1). While painting is often performed alone, 40k is also a very social hobby. Many of the participants interviewed started the hobby when they were children themselves, with the models having a strong feeling of nostalgia. Participant 2 is continuing that tradition and using it to spend time with their children as well as managing their mental health.

Participant 1 meanwhile feels about 10–15% better after a painting session, feeling a sense of achievement and of accomplishing something. In a journal, they describe that, before painting, they felt restless and wanted to do something "active", and after, felt a sense of enjoyment, especially in the building phase of the models. They state, "After painting, I felt like I had used my time suitably for something engaging but not 'active'" (P1.J1. 15/11/23). Participant 2 stated that if they start a session feeling anxious, they "genuinely come out of it feeling better. . .less anxious, my brain feels clearer" (P2.I1). Participant 3 purposefully paints at night, as it helps them calm down, go to sleep, and helps them relax after a long day (P3.I1). They stated in a journal entry that, "I mostly felt a sense of calm and focus during my painting session today" (P3.J1.26.11.23). In a journal session, they talk of a painting session where they were in an "incredibly low state mentally" prior. They state that "Painting is a great way to deal with these emotions. I can get lost in the project at hand and watch as these little creatures become more what I envision them to be. My mind focuses less and less on trying to keep itself in survival mode and instead can intently focus to make sure all the recesses of these Tyranid models are painted correctly" (P3.J2.26.12.23).

Painting miniatures can become a refuge from external pressures and stresses, giving the painter a feeling of control and concentration that they cannot always obtain in their everyday lives. When asked about what the hobby means to them, Participant 2 states that "this hobby has probably saved my life more times than I can count" (P2.I1). In a journal entry, they also reflect on a difficult period of their life where they had been withdrawn from a school programme, as well as dealing with personal issues. After a painting session where they painted some heavy weapon team, it "left me feeling alright, got my brain off things going on which was nice" (P2.J1.13.11.23). Journaling throughout the study was useful in gauging how participants felt before and after. Being asked to record before and after a session, participants often felt less stressed after the session.

For Participant 5, painting is a way to release tension from a difficult and stressful job. They say, "it's an outlet for me to kind of think about things that I can't talk about people talk with people. . .I can paint, think about these things just kind of wash them away as I'm doing my work" (P5.I1). In addition to this, Participant 5 suffers from bad back pain and, in journal entries, will often start by mentioning the pain in their back, but after, normally forget it is there. For example, from one journal entry they said the following: "Back had REALLY been bothering me, Listened to basketball podcasts... Mostly forgot about my back pain!" (P5.J1.11.11.23). In interviews, a key focus was also what happened to daily stress during a painting session: was it mulled over and resolved, or did people forget about it entirely? When asked this question, Participant 7 said that the stress of the day is still present during the session, but it "almost goes to like my subconscious", where it sits in the back of their head. They still think during the painting session and might feel clearer after. They state that they do not find new answers to work problems; for example, they do feel like they have "a little bit of clarity" and less stress than before. (P7.I2). When asked about their feelings before and after, Participant 8 stated that it depends on what they were able to get done. Thinking on this further, they felt that it matters less what they achieve; they state, "Actually, if I've not got lots of things done. Because I think well, I painted for half an hour. That's what I got done. It doesn't matter what, what I did in that time, what I'm choosing to do is explore that part of my artistic sensibilities". They are happy to have a specific time and space for a "safe environment" where they can just feel calm and safe. They set a timer to enable them to really involve themselves in the task and "use mindfulness" to bookmark the process (P8.I1).

Both escapism from the real world, as well as supporting positive mental health, are used to describe the feeling of flow. For Participant 4, it enables them to take a break from "what's going on in the world" (P4.I1). Participant 6 describes the feeling as "therapeutic", helping them with their chronic depression, likening the hobby to "mindfulness", and stated that they enjoy learning new things (P6.I1). The feeling of painting, and flow for some, depends on what stage the project is at, with Participant 7 feeling more optimism at the start of a hobby project while it is still new. Once they do get into that feeling though, it feels like "peaceful comfort" (P7.I1). The feeling is also immediate, due to practice and having a dedicated setup. Participant 8 notes that they do feel more relaxed after painting, but that this feeling can also depend on everyday things that are happening in their work and life outside of the hobby. But often the practice is "immersive", where painting "mentally transports" them away from their problems (P8.I2). This feeling of flow is like a "kind of a very, very, very small journey that you make, you know, that is over for me is overwhelmingly calming, and is very settling, I wouldn't give it any more magic than that. But it's just a very, it's like you just retreat for a short amount of time" (P8.I2).

While this paper has not spent too much time on the community aspect of the hobby, it is important to note that this also clearly had a large impact on participants' mental health. On reflecting on the benefit of the hobby, Participant 3 spoke both to the role it has had on

their mental health more generally and how it helped them form a good group of friends. Reflecting on their university experience, they noted that, during that period, they focused so much on their study, they did not form many friends. Warhammer, however, was the first time they met a community where they felt that "they just wanted to spend time with me" and that those connections did not feel transactional. They stated, "I've gained, you know, community out of it, you know, just a really core group of friends who just enjoy, they do not want anything for me, other than to just spend time with me, which feels really good" (P3.I1). Participant 8 describes the hobby as being a "consistent force of good" in their life and that they are grateful for the positive people they have met through the hobby who have been supportive and become lifelong friends (P8.I1). In a journal entry, they commented that they have a lot of mental health issues to deal with and that they believe the hobby is as good as other forms of art therapy (P3.J2.26.12.23). While painting can help with mental health, it is important to note that, on some occasions, it can also be a barrier to painting in the first place. For example, in a journal entry, Participant 5 states that, due to two days of stress at work, they felt unmotivated to paint (P5.J2.20.12.23). Despite this, they still describe the hobby overall as "kind of like therapy" (P6.I2). Painting miniatures is often described by participants as something more than just a hobby; it is a way to destress at the end of a busy day, a way to manage anxiety and depression, and a space to form new friendships and connections.

7. Flow, Religion, and Cognition

This study has demonstrated, at least for those participants involved, that the painting of miniatures creates the experience of flow which, in turn, supports an increase in cognitive awareness and relaxation. Participants talk of the hobby improving their mental health, decreasing feelings of anxiety and depression, creating a strong sense of community, and being an important and mostly positive part of their lives. In addition, the miniatures themselves offer painters a complex religious, social, and political fictional universe that supports further engagement and creativity in the range of possible media engagements. This immersion includes over 500 official books, official animated series, 67 video games, popular game YouTubers, online forums, and more than 500 physical Warhammer stores around the world. The results from interviews demonstrate that, for most participants in the study, 40k takes up a large and significant part of their lives. From stories of saving their lives, shared activities between parent and children, recognising the delivery box coming from Games Workshop from the smell, and the hours upon hours spent each week painting, the hobby is not just a game, but something more significant. I have explored these explicit religious aspects in more detail in other papers on religion and 40k. Reflective of this broader research, Participant 3 exemplifies a more explicit example of religious meaning. They identify as a Mormon and purposefully use their modelling to reflect on the meaning of God and the nature of creation and creating, and modifies their models to incorporate Mormon symbolism. They do this also in the poses of the models, for example, replicating the angel Moroni with a trumpet. They state,

> "I feel like I've got a really healthy relationship with my religion and especially because it is a high demand religion, much like, you know, the Imperial truth is in Warhammer. . .But, you know, because I've got a healthy relationship with my religion, and I, you know, I, I really like having some of that iconography in there. And it's also kind of like, I'm satirizing the satire, because it's, you know, supposed to be the Catholic Church or Church of England. . .and instead of imbuing, like inherently Catholic or Anglican iconography or, you know, I guess like aesthetics, I instead do Mormon aesthetics, because it's, again, a very

> similar, you know, centralized hierarchy power structure like the Imperial truth and Imperial churches. It's just my take on it, which I think it's fun". (P3.I1)

Participant 3, however, is not just connected with their religion through the poses of the models, but the act of creation. They stated,

> "And I, specifically the creation ex nihilo. Like I like, look, when I'm painting a model, like, I'm not creating something out of nothing, I'm organizing the matter, I'm organizing the plastic, much like, how we're taught, God has organized the universe and stuff. So, there is this like connection. And so like, I feel like God, but it's like, you know, it makes me appreciate a little bit more, this thought process that like, this stuff is created" (P3.I1)

The artistic expression within the models allows them to imbue in the Imperial faction (which is modelled heavily from Catholic symbolism and iconography) with Mormon symbols, a satirical expression of their beliefs. While Participant 3 was an outlier in terms of having strong religious beliefs (that were, at least, communicated to me), it is interesting to see the ways in which the hobby supports their beliefs. While it may not be considered religious in a traditional sense, as a point of meaning-making and component of reference, it could be thought of as such. This paper does not want to prove that it is religious, but rather show that flow is occurring, and the positive impact this can have on cognition. Further studies outside of the scope of this paper are needed to explore the deeper connections between religion and 40k players, or even religious themes in games (both digital and analogue), and their potential impact on flow.

8. Conclusions

Warhammer 40k is an expansive hobby with a range of engagement nodes. Through long form interviews and journal entries, participants demonstrated that they enter flow as described by Csikszentmihalyi. Participants lose track of time and forget outside distractions, paint just for the sake of it, feel that their skills match the difficulty of the task in front of them, and feel a strong sense of accomplishment and fulfilment when finished. In addition, participants indicated that the hobby is a good outlet for creativity and often enables them to feel more grounded and present. From exploring flow, what was made evident was that, at least for those interviewed, the role the hobby can have on improving positive cognition states through supporting a sense of relaxation, escapism, and demarcated space. Understanding the role, experience, and nature of flow is useful not only so we can better incorporate it into our lives, but also extend our knowledge of cognition, a cognition that is embodied. Given the busy demands of modern life, rarely do our bodies and mind feel like they are working in unison. Hobbies that require (for one reason or another) the physical presence and engagement of the body in concert with the mind (that is enmeshed architecturally) should, then, be encouraged.

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Notes

[1] A mechanical faction within 40k lore.

[2] Batch painting is a common method of painting large numbers of models at once by painting the same step across multiple models and working step by step. For example, painting 30 cloaks green, followed by 30 swords silver, then 30 pairs of boots brown, etc.

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