

**Flow During the Outbreak of COVID-19 in Germany: An Interview Study on the
Changes of Flow Experiences During Long-Term Isolation**

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Abstract

Flow has been found to be experienced rarely in daily life. Still, flow experiences have been shown to increase well-being. During the worldwide outbreak of COVID-19 these flow experiences might have changed. Therefore, the current study investigated how flow was experienced during the long-term isolation due to the pandemic. Semi-structured interviews were conducted with four female Germans. A coding scheme was developed capturing the flow experiences before the isolation as well as the flow experiences during the isolation. It was found that flow experiences mostly changed negatively during the time of the isolation. Mainly, missing social interaction and constant thoughts and worrying about the pandemic seemed to have contributed to a decrease of flow experiences. However, some increases in flow experiences were perceived as well, mainly due to more free time or increased gratitude about certain activities. In addition, a stabilization of flow experiences within long-term isolation was found. Moreover, flow experiences seemed to have a great value for well-being before the isolation and the negative change of flow experiences was indicated as contributing to a decrease in well-being, which demands for further research. As flow was found to contribute to well-being, an interruption of flow experiences needs to be prevented.

Keywords: flow, COVID-19, well-being, isolation, long-term isolation, missing social interaction, worry

People often know when they experienced *flow*. This term is regularly used but it is not clear what people actually refer to when talking about flow (Engeser, 2012). The concept of flow was established by Csikszentmihalyi in 1975. The author described flow as an experience in which an individual acts with total involvement. The action demands no conscious intervention because it feels as if one flows from one moment to the next (Seligman & Csikszentmihalyi, 2014). The individual feels in control of the situation and there is no real distinction between the acting individual and the environment as well as between stimulus and response and past, present, and future.

Three preconditions enhance the likelihood to experience flow (Csikszentmihalyi, 2014; Seligman & Csikszentmihalyi, 2014). First, flow occurs more frequently when the individual has a clear set of goals for the activity he or she is engaging with. These goals enable the individual to have a clear direction and purpose in mind. Moreover, their value is to structure the experience by placing the attention on the activity itself rather than only paying attention to achieving the goal, which is essential to experience flow. Second, to experience flow during a certain activity, the perceived challenges of the activity and the skills from the individual need to be balanced (Csikszentmihalyi, 2014; Seligman & Csikszentmihalyi, 2014). Thus, if perceived challenges of an activity match the skills of the individual, flow is likely to occur. But, if challenges are greater than the skills available, the individual might become anxious. Also, when the challenges are too small and the skills exceed them, the individual relaxes to such an extent that he or she might become bored. Finally, the last criterion refers to clear and immediate feedback (Csikszentmihalyi, 2014; Seligman & Csikszentmihalyi, 2014). This has the purpose of removing any doubts about what to do next, because negative feedback enables the individuals to adjust his or her actions and positive feedback supports to maintain the current action.

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Besides these preconditions for experiencing flow, there are also some characteristics which are experienced during the flow activity itself (Csikszentmihalyi, 2014; Engeser, 2012; Seligman & Csikszentmihalyi, 2014). First, the individual is aware of his or her actions but does not pay attention to this awareness itself during flow. Rather the individual is centring attention on a limited stimulus, indicating a high degree of concentration, which is a second characteristic. As one's whole attention is placed on a certain activity, it might elicit the feeling that everything else is cut off. Therefore, everything besides a current flow activity is considered as aspects that do not relate to the flow experience (Csikszentmihalyi, 2014; Engeser, 2012; Seligman & Csikszentmihalyi, 2014). Third, individuals report a loss of their self-consciousness during flow experiences. Possible considerations concerning the self, become irrelevant. The fourth characteristic is the feeling of control. To experience flow, a person needs to feel in control of the activity itself as well as to the demands of the environment in which the activity is taking place. As a fifth characteristic, coherent, noncontradictory demands for action and clear, unambiguous feedback are mentioned. Finally, flow is autotelic in nature, which means that it has no demands for external goals or rewards (Csikszentmihalyi, 2014; Engeser, 2012; Seligman & Csikszentmihalyi, 2014). Matching the mentioned criteria, individuals can experience flow in various ways, which can lead to positive consequences.

Bohlmeijer and Hulsberg (2018) state that positive living is characterized by the ability to perceive joy in everyday life. As the experiences of flow contribute to this ability, they highlight the positive consequences of a flow experience. Moreover, a growing body of research showed that flow contributes to happiness and well-being (e.g. Fan, Hou, S., & Lin, Y., 2019; Ilies et al., 2017; Kawalya et al., 2019; Keyes, 2002; Lyubomirsky, 2011; Seligman & Csikszentmihalyi, 2014; Tsaur, Yen, & Hsiao, 2013). Positive consequences of flow experiences were also found in qualitative studies which explored humans' individual

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perceptions of flow (e.g. Jackson, 1992; Meeks, et al., 2018). For example, the study of Meeks et al. (2018) showed that during flow activities feeling no sense of time and being absorbed from oneself and one's thoughts as well as being in the present moment were perceptions of participants. Furthermore, Jackson (1992) found that despite being highly concentrated, individuals described this focus as effortless. Finally, flow is experienced as highly enjoyable as well as special and valuable memory. However, no research, whether qualitative or quantitative, has been conducted so far about how flow is experienced during crisis situations. Flow could be highly limited when the above-mentioned criteria cannot be met, and the resulting positive consequences cannot be established by flow anymore. This was especially relevant since the outbreak of COVID-19 as the following long-term isolation put large strains on individuals.

The outbreak of the virus SARS-CoV-2 influenced people's daily life. The novel corona virus SARS-CoV-2 can lead to the disease COVID-19 (World Health Organization, 2020a). It firstly occurred in China in 2019 and spread worldwide. In order to slow down the ever-increasing infection rates, many countries set restrictions as a full lockdown. Also, in Germany, people were asked to stay at home as much as they could and isolate themselves. Thus, it had a big influence on the population: restaurants, public places, playgrounds, schools, universities, and several shops except grocery stores were closed (World Health Organization, 2020b). The restrictions had an effect on daily life, but there were also other consequences. The large constraints due to the outbreak of COVID-19 had a large impact on people's mental well-being (Bao et al., 2020; Killgore et al., 2020; Xiang et al., 2020). The effects on mental health included a fear to spread the virus as well as the consequences of quarantine and social isolation such as boredom and loneliness. The isolation was one main factor resulting out of the restrictions and might influence well-being negatively. However, findings from prior studies are contradictory on whether isolation has positive or negative

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consequences on mental health. A study by Robertson et al. (2004) examined the consequences of quarantine during the outbreak of SARS 2003. The quarantined participants reported to feel fear, lack of control, anger, and frustration. Additionally, other studies reported an increased rate of depression, suicide, and dementia resulting out of social isolation and loneliness (Kaparounaki et al., 2020; Leigh-Hunt et al., 2017). Contrasting to these negative consequences, the study by Kaparounaki et al. (2020) revealed positive consequences, such as a higher quality of sleep, while Wang et al. (2011) did not find any consequences of the quarantine. So, contrasting results were reported with regards to mental health symptoms, which illustrates a need for further research, specified on the pandemic of COVID-19.

Yet, it is unknown how flow experiences change during isolation and whether these changes benefit or hinder individuals' well-being. Therefore, the aim of the current study is to explore individual perceptions of flow experiences and how these changed during the long-term isolation caused by the pandemic by conducting semi-structured interviews during the outbreak of COVID-19.

Materials

Study Design

A qualitative and exploratory study design was conducted. Four semi-structured interviews with open ended questions were executed. Mainly, each interview was analysed in form of a case study. Additionally, a content analysis was conducted in the end, in order to show allocations of the codes. The interviews were conducted in April 2020. Before the data was collected, the study was ethically approved by the ethics committee of the University of Twente (approval number: 200337). Moreover, the participants gave informed consent and were aware that their results were reported anonymously.

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Participants

Participants were recruited via purposive sampling. In order to make it a homogenous sample, inclusion criteria were the female gender as well as the educational level of at least a bachelor's degree. The final sample consisted of four women aged between 22 to 33, with a mean age of 28. Although participants were living in different areas in Germany (North-Rhine-Westphalia and Hesse), all participants were confronted with the same sanctions due to the outbreak of COVID-19. Hence, similarity regarding the situational context between participants was given. Further, all participant had to stay at home due to the outbreak of COVID-19. Consequently, most participants (P1, P3, P4) conducted home-office. Participant 2 stopped working at her part time job, which she could not conduct from home and was taking care of her children. Additionally, all participants perceived the same degree of social isolation, because they only had direct social contact to the people of their own household. All women of the sample experienced this level of isolation since four to five weeks at the time of the interview.

Data Collection

The data collection took place over a period of one week. Due to the restrictions to stay at home, interviews were conducted via Skype. The participants were asked to ensure that they were not interrupted during the interview. All interviews were recorded with the recording app of Microsoft suitable for Windows 10 (version 1909).

After explaining the purpose of the study, the interview started with a short exercise, in order to set a positive atmosphere as a basis. The participants were asked to search for a recent photo on their smartphones in which they felt high well-being and to shortly explain the scene. Following, the interviewer explained the concept of flow. In case the participant indicated to understand the concept, a set of fixed questions as well as follow-up questions about flow and its influence on the participants mood and well-being were asked (e.g. "Can

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you name typical flow experiences for you?”). Afterwards, the flow experiences during the long-term isolation were discussed. The participants were asked about their current level of isolation, because this could differ for the participant and could be an important information for later analysis. Next, a general question was asked to each participant, namely: “Has the current isolation an influence on your flow experiences?”. Afterwards, follow-up questions about flow experiences during the isolation were asked (e.g. “How does the influence on your flow experiences due to the isolation look like?”). Further, individual aspects the participants reported were explored in depth by asking more questions. For instance, to explore an interruption in flow experiences in depth, it was discussed what might have caused this negative change in their flow experiences. A whole interview guide can be found in the Appendix.

After finishing the data collection, the interviews were verbatim transcribed and saved for research purposes. The recordings were destroyed after the transcription process ended. The length of the interviews ranged from 28 minutes to 36 minutes, with a mean length of 32 minutes.

Analysis

The analysis followed on basis of the German interview transcripts. Quotes used in the results section were translated into English. For the case descriptions, each interview was analysed separately. The participants’ flow experiences and afterwards flow experiences during isolation were explored in depth. Resulting, certain differences became visible and explanations, reasons, or thoughts about possible changes were analysed. The changed flow experiences were also covered in the coding scheme in the end. For the coding process, the transcripts were analysed with Atlas.ti 8.0. The transcripts were read to obtain a general overview of topics, which were relevant for answering the research question. Next, topics that were of importance and relevant were taken into consideration again more carefully in order

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to deepen analysis further. Hereby, the unit of analyses was per sentence. The approach was inductive. Thus, the codes were derived from the interviews. A coding scheme was established to categorize the answers of the participants. For doing this, different themes were recognized and grouped together where suitable. Moreover, it was checked whether some topics needed to be specified through using sub codes. Different versions of the coding scheme were discussed with other researchers, in order to capture different perspectives (Smith, 2009). That way the coding scheme was restructured several times, so that it seemed logical for all persons besides the researcher of the current study.

Resulting, a final coding scheme has been developed, which captures the main aspects of all interviews (Table 1). The interviews were again analysed using the final coding scheme, in order to check whether all codes were captured, and individual perception of each participant were analysed in depth. The frequencies describe the amount of times, sentences of the participant were coded with the corresponding code.

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Table 1*Coding Scheme*

| Codes | Description | Examples |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flow experience | Flow experiences which participants perceive generally, also their description of flow experiences, how they feel and perceive the experience, before the outbreak of COVID-19 and the resulting isolation started | <p>“The rest of the world does not matter during these experiences”</p> <p>“In my opinion, when having the same interests as another person, you get together into the flow even more quickly”</p> <p>“I definitely have this experience during work. If you worked on a topic and you realize ‘wow this is working really good now’ then you are in flow”</p> |
| Flow experiences during isolation | The flow experiences during the isolation are described, the sub codes specify how these experiences are perceived during isolation | |
| Interrupted | Flow experiences are interrupted during the time of the isolation, activities which were flow experiences before are described as interrupted | <p>“I don’t get into flow experiences anymore”</p> <p>“Because the thoughts about the virus are in my mind all the time [...] that distracts the flow experience”</p> |
| Increased | Flow experiences increase during the time of the isolation, participant explains/discusses the increase, mentions reasons or strategies for increase | <p>“I would say I have even more flow experiences at the moment”</p> <p>“During sports or running for instance I even enjoy the activity more at the moment. I appreciate it even more that I am outside and can go running.”</p> |
| Stable | Flow experiences are similar compared to before the isolation, they are stable, also stability occurs again, flow experiences reoccur during isolation, also strategies people integrate to achieve the stability and flow again | <p>“The longer I am in this quarantine the more rituals I develop again and the more flow I experience again.”</p> <p>“While playing the piano and at work the experiences are the same.”</p> |

Results

The results first present the description of the case studies for each of the four participants. Second, an overview of the content analysis is given.

Participant 1

Context

Participant 1 is a female, 22-year-old Psychology student who was conducting her master thesis during the time of the interview. At that time, she was living together with her family (mother, father, brother). Additionally, she often stayed at the apartment of her boyfriend. Due to the outbreak of COVID-19 and the resulting isolation, her family as well as her boyfriend were her closest and only contact persons. She had to postpone her current internship and thus was working on her thesis exclusively. This is something which she could execute from home completely.

She reported that the crisis was influencing her quite heavily, especially because she could not continue her internship. In detail, she explained that the isolation was only affecting her mentally, but she did not “have to worry about bills”. However, living together with her family helped her during the isolation. The aspect of not living alone is especially striking for her because she used to live alone until a few months before the isolation.

Generally, the participant was quite talkative and considered her answers well. Also, she gave her own interpretations concerning the situation. Thus, she did not give the answers right away, rather she added evaluations of certain facets, like first adding that one aspect is “interesting” and then explaining the aspect.

Flow experiences

Starting with the flow experiences before the isolation, the participant mentioned to experience flow while running together with her mother, during her daily routines while studying for university, and generally when she is out with friends at festivals for instance.

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Talking about flow in detail, the participant reflected that a social component is quite important to her when experiencing flow. She explained: “it is easier for me to let go of my thoughts when another person is with me during the activity”. In contrast, she recognized that when she is going for a run alone, she experiences the activity not as a flow activity. Moreover, the participant thinks flow experiences have an influence on her high well-being. She stated: “I recognize that I am more unsatisfied with less flow activities.” She reflected having more energy through more flow experiences, which in turn increases her level of well-being.

Changes in Flow Experiences During Isolation

Considering the flow experiences during isolation the participant neither mentioned having stable flow experiences nor an increase of flow experiences during the isolation. In contrast, she mentioned to perceive her flow experiences as interrupted. As, the participant reflected a lot, she mentioned some reasons, for the interrupted flow experiences. The main interrupting factor were constant thoughts and worries about the virus, which hindered her from being completely absorbed by an activity in order to experience flow. For instance, during her usual flow activity running with her mother, she did not get into flow anymore. She explained that even during this activity social distancing was so present, that she could not let go of her thoughts. “When there are other walkers, children, or whatever, I immediately think about keeping the distance, should I stay on the path or walk at the field to keep enough distance?”. So, the topic was always present in the participant’s mind, which distracted her from her usual flow activities. Similarly, her daily routines, in which she used to experience flow changed during isolation. She indicated being able to follow these routines partly, but not to such an extent that she achieved a flow state. Here, the ever-raising thoughts about the isolation and pandemic were caused by her increased smartphone usage at that moment. She explained that during the pauses she looked at her smartphone and there were

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news coming in all the time. Thus, attention was paid to new information around the topic of COVID-19.

Additionally, the participant wanted to start horse-riding again, since she used to experience flow during this activity. However, all horse-riding schools were closed during the isolation. Besides this closed setting for experiencing flow, having less social contact due to the isolation supported the interruptions of flow experiences. The participant reflected missing social contact as an interrupting factor for flow because she indicated to experience more flow together with other people. However, as social contact was very restricted at the time of the interview, activities like going out with friends was not an option to experience flow.

Generally, the participant had more free time at the time of the interview. This is one aspect, which the participant reflected as interrupting her in her flow experiences while working on her master thesis. She thinks that she had too much time for working on her master thesis during the isolation. She felt that with this amount of time, her current work put too few demands at her. This motivated her to make more pauses and thus she was not getting into the flow. So, to experience flow she also needed to perceive a certain amount of demands within the situation that is put on her.

When reflecting about the influences of the interruptions on her flow experiences during isolation, she stated that her mood was affected by it. Especially, at the beginning of the isolation, the changes, including the interrupted flow experiences, had a larger effect on her mood. At the time of the interview, she perceived a positive development of this aspect as the isolation did not affect her mood that much anymore. However, this is still analysed as an interruption and not a stabilisation of the flow experiences because she does not mention to experience flow again, rather she got used to the interruptions.

Participant 2***Context***

The participant is a female, 31-year old master absolvent, who was on parent leave during the time of the interview and stopped her part-time job for that time because she could not conduct home office. She has two children aged one and three years. As she already spent a lot of time at home before the isolation with her children, she indicated that the isolation had not such a large influence on her. The difference during the isolation was, that her whole family, so including her husband, who was working from home due to the outbreak, were even more at home now.

The participant was motivated to formulate her answers during the interview in detail. She also took pauses to thoroughly think about her answers. Additionally, she asked if she could add things to an answer later when she remembered another aspect she wanted to mention. Thus, all in all she had a really professional and structured style while answering the questions.

Flow Experiences

The participant talked about different flow experiences. One activity she mentioned in this context is sewing. She explained the activity in detail: “The aspect that you forget everything around you! This is what I feel during sewing. [...] I forget everything, even to drink or eat something”. Additionally, she feels some kind of tension and excitement during this activity, because she is highly focused. At the same time, she explained she feels like having more energy than during other activities.

Another flow activity, which the participant addressed is playing with her children. In moments like these “the rest of the world is blended out” for her. Thus, a social component is also important for her during flow activities. She compared the flow activity of sewing with that of playing with the children. According to her, the first one is more creative and

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intellectual activity with a lot of thinking about the work itself, while the second one is more affective and she is not thinking about the next steps, but rather about the children's reactions. Besides these flow activities the participant also stated one flow activity, which was especially present during the time of the interview or generally when spring started. Namely, gardening, which is one of the activities that changed during isolation and will be addressed below.

Finally, the participant addressed that flow activities have a positive influence on her mood and high well-being. She explained: "I can still live from these activities two days afterwards". Thus, the positive feelings she gets from the flow activity are so intense that she still feels them afterwards for a longer time. Additionally, the participant addressed the importance of social contact with her children for flow experiences.

Changes in Flow Experiences During Isolation

While the participant mentioned increases in flow experiences, she did not talk about interrupted flow experiences at all. This participant perceived the flow experience of gardening during the isolation as increased or more intense. She explained the increase in her flow experiences with two reasons. First, she had more time for doing such activities because her usual commitments were restricted at that moment due to the outbreak of COVID-19. For instance, the participant is really active in the local group for climate protection. The group could not meet during that time. Normally, the participant was thinking about the next project of this group all the time and also worries a lot about the topic. However, during isolation the participant felt like this topic was not that present for her, because she did not have to think about the next meeting already: "It is easier for me now to be present in the moment", which in turn makes it easier for her to experience flow.

Additionally, the participant mentioned a second reason why she experienced more flow during the isolation. The circumstances for experiencing flow changed for the participant

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due to her husband working from home at that time. Thus, he took care of the children more often. Therefore, she indicated being “undisturbed” more often while gardening, which increased the amount of flow experiences for her.

Another broad aspect, which she addressed several times, is that she consciously avoided different media during the isolation. For instance, this is especially the case during the isolation as her children were at home full days. So, she did not have to be reachable on her smartphone because of them. Therefore, she had the option to avoid her smartphone in order to be less interrupted during activities. She described: “When I maybe got into a flow then there is the smartphone ringing again or something”. Additionally, she started to filter information by the daily news, because this is something, she used to do in her spare time in which she could experience flow. So, by avoiding these interruptions she was able to increase her flow experiences.

Participant 3

Context

Participant three is a 27-year-old female master student. At the time of the interview she was conducting her master thesis and simultaneously working in a marketing department. She has been working there since finishing her bachelor’s degree a couple of years before. Concerning the status of isolation, the participant was partly isolated since she had contact with an infected person of COVID-19. After two weeks she had contact with her parents again. Moreover, the participant was working from home completely. However, this is not related to the isolation as she always worked from home. Therefore, she is used to working from home for her job and on her master thesis. Thus, she indicated that the influence of the crisis was relatively small on her. Additionally, she stated that at the time of the interview she was already used to the situation and thus her mood was not heavily influenced by the crisis anymore.

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The participant had a quite theoretical way of answering. For instance, when addressing her current knowledge about the concept flow, she talked about the authors from whom she knew the concept beforehand. Also, she thought about which experiences can be categorized as flow experiences following the definition of the flow concept. Moreover, the participant was enthusiastic and talkative.

Flow Experiences

Starting with the flow experiences before the isolation, the participant addressed this topic in detail. As a first flow experience, she mentioned playing the piano. She explained that when she recognizes that a piece of music is especially challenging, she takes time to practice it. If she then manages to play it, she has the feeling of getting into a “state of floating” and this is something which she interprets as a flow experience. Explaining this state in detail she said: “I have the feeling like the time is running [...] and I do not perceive anything around me anymore, but I am rather really focused.” She also addressed the influence of that without further questioning: “That really provokes happiness in me”.

Furthermore, she mentioned having flow experiences at work. Again, she mentioned that the experience has to be connected with a challenge. She also added good conversations or discussions as moments in which she experiences flow. She explained this as follows: “Because I have the feeling that it is really demanding and both parties have good arguments, or both have good knowledge about the topic and are really interested”. Further, she added: “Then it is sometimes actually as if one is talking in rage and somehow doesn’t realise how long one has been talking to each other already”. She reflected this as a “total enrichment” and that she feels happy due to the good conversation. Addressing the social component of this, she evaluated that she is getting more quickly into flow when other people are involved within a certain activity. Also, she added that these flow experiences are more intense then and more enduring for her.

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Moreover, she mentioned physical exercising as an activity in which she experiences flow. Here, it is important for her to set a goal which she wants to achieve. She explained that also while running, being in nature adds to her flow experiences and that she can really “switch off her mind” during running. Additionally, she said: “I am happy when I ran a certain number of kilometres, which I wanted to run. It is a physical acknowledgement and entails a challenge.” So, physical activity has the potential to arouse flow experiences for the participant, but it has to be challenging to some extent. Besides being challenged, which she mentioned for each flow activity, the participant also addressed the influence on well-being of each flow activity several times. She mentioned that flow experiences have a positive influence on her mood and high well-being.

Changes in Flow Experiences During Isolation

Continuing with the flow experiences during isolation, the participant addressed her flow experiences as being interrupted most frequently. She explained her flow activities during the isolation as follows: “Although I was outside exercising, my thoughts were circling around the topic corona and the current situation. Thus, I could not perceive these experiences unfiltered and enjoy them”. Here, it can be seen during her usual flow activity, her thoughts were distracted by the topic COVID-19. This is something she mentioned several other times.

Concerning the importance of social interaction in flow activities she addressed that the missing social interaction had a large influence on her flow experiences during the isolation. She specified: “I would say that in situations in which I am alone the current thoughts are more present, but in situations in which I have social contacts it is easier for me to let go of these thoughts.” However, since the social interaction is “on another level” at the moment, she evaluated this as having a large influence.

With regards to the negative influence of the isolation, she referred to the general decrease of the flow activities. Moreover, she mentioned several times that besides this

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decrease, her mood is generally influenced by the situation. She pointed out that there are other factors of the current situation, which have a large influence on her mood. Still, the fact that she generally perceived a decrease in flow experiences shows that her negative mood might be a factor which also interrupted her flow experiences.

Besides the interruptions, the participant did mention to perceive an increase in flow experiences once. In detail, she explained that she experienced flow during running and being outside more intense during the isolation. This derived from her gratefulness for still being allowed to go outside during the time of isolation in Germany.

Finally, the participant indicated to experience stability in her flow experiences, comparing the times before and during the isolation. She stated the isolation has “no big influence” on her flow experiences. She described: “While playing the piano it is actually the same and nothing really changed because of that. At work it is actually the same”. However, talking in depth about the flow experiences during the isolation, the mentioned interruptions became visible. Thus, reflecting on the aspects of stability of her flow experiences, these might have been first impressions of the participant, that there is no big influence.

Additionally, a development was reported by the participant, which was analysed as a stabilisation of the flow experienced. Talking about the small influence of the isolation on her flow experiences, the participant said: “A few weeks ago, I would have evaluated this differently.” Hence, at the time of the interview the participant already felt a development of her flow experiences during the isolation, since at that time point, the restrictions were already present for about five weeks. She said: “It has a remarkably smaller influence than at the beginning”. In detail, she explained that she stopped worrying too much about the situation because she cannot change it anyways. Moreover, she mentioned to regain some of her flow activities over the course of the isolation so far. For instance, she explained that although she perceived an increase in flow experiences during physical exercise, a few weeks before, she

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experienced exercising differently. Thus, she regained this flow experience by worrying less during flow activities now.

Participant 4

Context

Participant 4 is a 33-year-old master absolvent who is working as a primary school teacher. Due to the outbreak of COVID-19, schools have been closed for several weeks in Germany at the time of the interview. Thus, her everyday life changed completely. This especially influences her because she is an ambitious teacher, who loves her work. She usually starts a lot of new creative projects with her pupils and is interested in helping them to develop the best way possible.

During the interview it was obvious that the participant was interested in the topic. Although she never heard of the concept flow before, she reflected a lot. The participant was so enthusiastic to reveal much information, that sometimes the context had to be taken back to flow again by the interviewer. In the end, she also pointed out that she perceived the interview as valuable for her own personal life at the time of the interview.

Flow Experiences

Starting with the flow experiences before the isolation, the participant talked about them in much detail. First, she mentioned to experience flow “at work more often than during private life”. Generally, when talking about flow she referred to times when everything works well and is running smooth in her life. Thus, she explained that her flow experiences can be stretched over some time as for instance routines over a whole weekend. Routines and fixed structures in everyday life are something which she pointed out as flow experiences. She also mentioned several times that she needs to know what to expect next in order to perceive flow. This is also something she mentioned to experience while physically exercising. Thus, she is also able to perceive flow during work outs, for instance when she is going to the gym and

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participating in sports courses. Within the context of physical exercise, she explained the results of this further: “It is somehow soothing. I don’t have to think a lot. I can let go in these moments”.

During flow activities she pointed out the importance of social interaction. She often referred to her partner and that they are experiencing flow together a lot. She added: “I feel that having the same interests is important. Then you can get into flow together really quickly”. Also, at work, where she experiences flow, a large part of her flow experiences were connected to social interaction because this is really present and important as a teacher.

Concerning the influence of flow experiences on her mood and high well-being before the isolation, she said: “When I have much certainty, I am always happy. I feel like such experiences are always great and then I am totally relaxed and calm and happy.”. Thus, especially the stability and certainty she gains out of flow experiences, like routines, are important to her.

Changes in Flow Experiences During Isolation

Concerning the flow experiences during isolation, the participant did not mention to perceive an increase of flow experiences. In contrast, she mostly experienced an interruption of flow experiences. Starting with the interrupted flow experiences, the participant recognized this because of her changed routines such as changed working routine as schools were closed during that time. Because routines were mentioned as important flow experiences for her, these were interrupted a lot during isolation. The participant also stated the importance of expectations to experience flow. During the isolation it is hard to fulfil this requirement. She explained: “I also don’t know what I can expect on Monday at school. That bothers me a lot.” During the isolation, the teachers had to wait for news and instructions from the government. Moreover, new information came in all the time. Thus, having expectations was really difficult at the time of the interview. Additionally, the missing the social interaction at work

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during isolation, affected her flow experiences negatively, which has “quite big influence, because you have few social contacts”.

Another aspect the participant mentioned to interrupt her flow experiences are more distractions in daily life during the isolation. She stated: “Somehow there are so many negative aspects which one can hear, yes, I am influenced by this more quickly”.

Additionally, because of her job as her teacher she mentioned receiving more messages. Also, due to the social isolation she was more in contact with friends via social media, which she explained as nice but also more time consuming compared to face-to-face social contacts. Thus, she spent more time on her smartphone, which interrupted her more in her daily routine: “It takes so much time then, especially when you want to get into the flow” and “Always when I got into flow there is another call, another message or you have to answer again”.

Besides the interruptions, the participant also experienced stable flow experiences. Here, the participant made changes in her daily life in order to stabilise the amount of her flow experiences again. To compensate for missing social interaction, the participant talked about a “new ritual”, which she had started. In the evening, she would go on a ride on her bike to different family members and they met for a few minutes with enough distance in the garden. She explained: “Yes that is kind of a routine again that I have at a day. A ritual which structured the daily life again and stabilises.”

Moreover, she spoke about new rituals and routines in general which she developed during the current isolation. She explained: “The longer I live in this quarantine, the more rituals I build up again and with this I experience more flow again”. Another thing she introduced in daily life in order to regain flow is minimizing the interruptions she mentioned as hindering her flow experiences. Thus, she mentioned avoiding her smartphone for some time and not looking at it. This helped her to experience more flow again, since she had more

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time without her smartphone. This was the same for negative news which she also addressed within the aspect of hindering her flow experiences. She stopped reading about the new number of infections every day now.

Conclusion of the Content Analysis

The content analysis of all four interviews revealed that 41 flow experiences before isolation and 39 flow experiences during isolation were coded (see Table 2). The interrupted flow experiences were addressed the most. Participants 1 and 4 indicated that the outbreak of COVID-19 affected them quite heavily and showed a high frequency of interrupted flow experiences during isolation. Participant 3 also showed interrupted flow experiences. She mentioned perceiving a large effect of the isolation on her mood at the beginning of the crises but not anymore at the time of the interview. This also fits to the fact that she mentioned being interrupted in her flow experiences as well as perceiving stability and an increase. Participant 2 mentioned perceiving no large effects due to the crisis. Interestingly, this participant perceived an increase of flow experiences during the crisis. Thus, the more the participants indicated being affected by the isolation due to the outbreak of COVID-19, the more negative change was experienced in their flow activities.

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Table 2

Frequencies of Coding within the Main and Sub Codes for Each Female Participant, Living in Long-Term Isolation

| Main Code | Sub Code | Frequencies | | | | Total |
|-------------------------------------------|-------------|----------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------|-------|
| | | P1 22, Psychology master student | P2 31, in parent leave | P3 27, International business master student, marketing employee | P4 33, primary school teacher | |
| Flow experience | | 8 | 9 | 12 | 12 | 41 |
| Flow experience during isolation | | 7 | 7 | 11 | 14 | 39 |
| | Interrupted | 7 | 0 | 7 | 9 | 24 |
| | Increased | 0 | 7 | 1 | 0 | 8 |
| | Stable | 0 | 0 | 3 | 5 | 7 |

Discussion

The aim of the current qualitative study was to explore how flow experiences changed during the isolation, resulting out of the outbreak of COVID-19. The sample consisted of four female participants living in Germany who took part in a semi-structured interview. The results show that each participant experienced flow during long-term isolation differently. Still, most participants had a tendency towards more interrupted flow experiences, which illustrated a negative change in flow experiences. Only one participant perceived an increase of flow experiences exclusively. For other participants, also stabilisation of their flow experiences during isolation could be seen. Moreover, all participant experience flow as

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contributing to high well-being. Resulting, the participants who indicated being more affected by the isolation, also showed more negative interruptions with regards to their well-being.

Main Findings

Most participants mentioned several reasons why experiencing flow is interrupted during the isolation. For instance, constant thoughts and worries about the virus in connection to the uncertainty about how to behave correctly were revealed. This is in line with the study of Robertson et al. (2004) who also report constant worrying and thoughts of their participants during a pandemic. In detail, they found that people avoided contacting health care professional during the outbreak of SARS due to missing knowledge about the virus at that time. They also mentioned worries about infecting others. Moreover, these worries were *inter alia* due to uncertainty of information about the virus, which was mentioned by several participants. Thus, the correct transmission of information seems to be important to decrease worries during pandemic. This is also stated by Bao et al. (2020), who highlighted the importance of assessing the accuracy of information in order to increase knowledge of people about the virus. Thus, the mentioned insecurities and constant worrying might decrease with correct and sufficient transmission of information, in order to decrease this interrupting factor causing a negative change in flow experiences. Another explanation for perceiving constant thoughts and worrying as an interruption could be that centring attention on a limited stimulus is an important characteristic of flow experiences (Engeser, 2012; Seligman & Csikszentmihalyi, 2014). With constant worries in mind, one might not be able to put one's attention exclusively on the flow activity, which results in a negative change of flow experiences. Taking these explanations together, worrying seems to impede flow experiences.

Another interrupting factor is missing social interaction during flow experiences for all participants, because they mentioned experiencing flow more easily when they are socially interacting. This is in line with other research which found social interaction as contributing

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to flow experiences (Kaur et al. 2016; Su et al., 2016). Still, to the knowledge of the researcher of the current study, it has not been added as a characteristic or a condition, which positively influences flow experiences. Thus, the results indicate that a new characteristic of flow, namely importance of social interaction, might be a valuable addition to preconditions of flow as stated by Engeser (2012) and Seligman and Csikszentmihalyi (2014). Besides the interrupting factors, which resulted in a negative change of flow experiences, some participants coped with the current isolation and its influence on flow experience better and perceived no change or even a positive change of flow experiences.

Some participants stabilized their flow experiences during the isolation again by introducing new activities or increased their flow experiences during the long-term isolation. This might be explained by a higher resilience of those participants who stabilised their flow experiences. This would be in line with Vinkers et al. (2020) who investigated resilience during the pandemic of COVID-19. They found that some people are more prone to being influenced by the pandemic in different ways as dealing with more stress during the pandemic. In the current study, this can be seen in the participant who perceived an increase in flow experiences during the isolation exclusively. It might be the case that this participant is exposed to less stress at the time of the interview, as her usual commitments did not take place during the isolation. This could make her less prone to interruptions and might explain the increase in flow and illustrate a higher resilience. The participant also mentioned to spend much time outside during the pandemic while gardening, where she is physically active, and spending time with her children. These aspects might influence her high resilience positively. This would be in line with Killgore et al. (2020) who also investigated resilience during the pandemic of COVID-19 and found predictors of greater resilience during the pandemic. Among others, spending time outside, physical exercise as well as social relationships predicted resilience positively. These predictors are applicable to the participant who

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experienced a positive change in flow experiences. Thus, for this specific participant flow experiences increased and might have positive consequences, like a high well-being.

Generally, all participants mentioned flow experiences as contributing to their positive mood and high well-being. These findings are in line with prior literature (Asakawa, K., 2010; Kaye and Bryce, 2014; Lyubomirsky, 2011; Seligman & Csikszentmihalyi, 2014; Tsaur, et al., 2013). However, during the long-term isolation most participants did not experience as much flow as before the isolation, which indicates that flow experiences could not benefit for them as before. Thus, as flow contributed to well-being before the isolation, a negative change in flow experiences might imply that flow could not contribute to well-being during the isolation. As only participant 2 stated that the interrupted flow experiences during isolation decrease her well-being and well-being was not measured, future research should investigate whether interruptions in flow experiences lead to a decrease in well-being.

Strengths and Limitations

A strength of the current study is that the data collection took place after the local restrictions and the following isolation had been present for about five weeks. So, the first adaption to the isolation period had taken place. This might have decreased the influence of first stressors caused by the novelty of the crises. A second strength is the time frame in which the interviews were conducted. All interviews took place within one week. This had the advantage that the current information about COVID-19 as well as the current level of isolation were similar to all participants. Additionally, the individual situations of the participants with regards to working and living situation were similar. Moreover, certain characteristics (country of origin, gender, educational background) were similar. Thus, the sample was homogeneous as the participants' situation resembled each other.

Going on with the limitation, the sample also needs to be addressed in this context as it only consisted of four participants. This highly limits generalizability to the rest of the

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population. Second, the coding process was conducted by only one researcher and no inter-rater reliability could be conducted. Usually the inter-rater reliability assures that the analysis, in this case the coding scheme, is not based on one perspective and resulting seems logical to other people (Smith, 2009). Thus, although the coding scheme was discussed with other researchers in order to improve structure as well as description of the codes, the analysis might still be based upon subjective analysis of the data.

The addressed coding scheme entails a third limitation. The frequencies about the occurrence of flow experiences were coded based on what the participants shared during the interviews about their flow experiences in general. So, it also includes how they felt during flow, what they reflect as important etc. Thus, the frequency of this code is not representative for their actual number of flow experiences before and during the isolation. Resulting, the frequencies do not allow for a comparison between numbers of flow experiencing of these two time points, but only for a ranking of the sub codes of the flow experiences during the isolation.

Recommendations

The coding scheme might be improved in future research. As explained in the corresponding limitation, the coding scheme entails flow experiences before as well as during the long-term isolation, which do not display actual numbers of the flow experiences as the codes also entail described feelings for instance. It would be more illustrative if the codes actually display the numbers of flow experiences before and during the isolation so that the frequencies allow comparison. Moreover, while improving the coding scheme, the process should be conducted with more than one researcher. The inter-rater reliability should be conducted, and the coding scheme should be discussed more often, in order to verify the inclusion of different perspectives.

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Going on with further recommendations for future research, the results need to be taken into account. These showed that flow experiences are mostly negatively changed during long-term isolation. At the same time, the participants indicated that flow contributes to their high well-being. As one participant indicated that the interruption of flow experiences actually leads to a decrease in well-being, it might be interesting to research further whether this is also the case for the other participants or an even larger sample, too. In order to research this, well-being needs to be investigated in more depth. A longitudinal study is needed in which well-being is measured at the beginning and during the isolation. Ideally, a sample with existing data of the well-being before the isolation is recruited. Investigating this further, is of importance as a decrease in well-being should be prevented during a crisis like the outbreak of COVID-19.

Also, Keyes (2007) highlights the importance of well-being. The author states that mental health is more than the absence of mental illness. Moreover, he points out that mental health is mistakenly supposed to be established by reducing mental illness. Thus, concepts like flow, which are found to increase well-being (Keyes, 2002; Lyubomirsky, 2011; Seligman & Csikszentmihalyi, 2014; Tsaur et al. 2013) should be supported. This demands for more resources. During the crisis funds by the government are needed that support stabilization or improvement of well-being. That way, new possibilities for experiencing flow during the isolation can be created. For instance, different facilities like sports clubs, gyms or different associations could be provided with the needed capital to offer activities online for free (like online workouts, drawing together online, online reading and so on or other activities which might elicit flow). Also, the interest of professional offering online courses needs to be evoked. In order to achieve this, the funds need to be inserted in a way that the courses are profitable, although the offerings are for free or at least affordable for public. Finally, the public needs to get informed and inspired by validated information about flow

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and its importance communicated via different media. Here, also ideas for experiencing flow or how people get into the flow more easily should be provided.

Conclusion

The outbreak of COVID-19 and the following isolation in Germany in 2020 changed flow experiences mainly negatively for the participant of the current study. Constant thoughts and worrying as well as the missing social interaction caused interruptions of flow experiences. However, some participants also experienced an increase in flow activities or were able to stabilize the number of flow experiences during the isolation. The present study indicates that flow experiences are connected to high well-being. Future research should focus on this aspect in order to verify the connection of flow and well-being during long-term isolation. More attention of governmental as well as different social institutions should be paid on the topic in order to set a basis with the needed resources for experiencing flow during the pandemic. Hence, concepts like flow, which contribute to well-being, should not be underestimated during pandemics as experiences of flow are changing negatively.

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Appendix

Interview guide

1. Informed consent
2. Photo exercise as introduction
3. Flow: Explaining the concept
4. Flow before the isolation:
 - Can you name flow experiences of yours? Can you explain them in detail?
 - What do you feel during these flow experiences?
 - How do flow experiences contribute to your mood?
 - Follow up questions
5. Flow during long-term isolation
 - How much are you currently isolated?
 - Does the long-term isolation influence your flow experiences?
 - How does this influence look like?
 - Follow up questions on what is applicable (positive, negative, or no change)