"That Was Amazing!": A Two-Study Perspective on Language Classroom Experiences Through the Lens of Psychological Flow

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ABSTRACT

The construct of psychological flow bridges several areas of second language learning interest, including motivation, investment, self-efficacy, and autonomy. Flow, characterized by intense focus on an enjoyable activity that is at once challenging and accessible, creates conditions that have been linked to learning. Research interest in flow has grown, but the L2 research remains scarce and exploratory. This paper, which uses a two-study format, proposes and tests a new category coding scheme designed to explain which activities generate language-class flow. In Study A, third- and fourth-semester learners of Spanish, French, Italian, and German (N = 82) described their most flow-generating language-class experiences on an online questionnaire. In Study B, first- through fourth-semester students of Spanish (N = 588) did the same. The responses were coded to one category in each of four contrasting category pairs. Parallel analyses were conducted for each study, and within each study counts and chi-square tests were performed separately on each category pair. The results of both studies showed statistically significant contrasts within all four category pairs, and revealed that student-centered, open-ended, authentic, and non-competitive activities were more likely to generate flow than their opposites (i.e., teacher-centered, closed-ended, inauthentic, and competitive activities). Pedagogical implications and directions for future research are discussed based on these results.

Keywords: psychological flow, classroom experiences, emotions, motivation, positive psychology

INTRODUCTION

In recent years, research in educational psychology and second language (L2) learning has expressed increasing interest in how learners' emotional states (i.e., affect; Arnold, 2011) impact their learning success (Dörnyei, 2020). Specifically, research has considered how positive affect favors learning (Ellis, 2019; MacIntyre et al., 2019). This domain of positive-psychology-based L2 research includes, but is certainly not limited to, such constructs as motivation (Dörnyei, 2005, 2009), investment (Norton & Toohey, 2011), self-efficacy (Piniel & Csizér, 2013), and autonomy (Benson, 2007, 2011, 2013; Holec, 1981).

Some L2 researchers (Aubrey, 2016, 2017; Egbert, 2003; Zuniga & Rueb, 2018) have noticed parallels between these psychological constructs and *flow*, which was originally proposed to describe people's *optimal experiences* in work and in leisure (Csíkszentmihályi, 1975). These studies have considered how likely one or a few activities were to generate flow, yet no known study has considered a large range of in-class experiences in a way that would allow for predictions of which activities might generate flow.

Heeding Piniel and Albert's (2020) call for further L2 learning research into language learners' flow states, this paper examines which language class activities are most likely to generate flow for learners. To distinguish this study from others, the design for this project includes a larger sample size of participants and considers a larger array of activities than previous studies. This article synthesizes the findings of two independent studies (Study A and Study B), the second of which is a replication of the first, into a unified discussion. This replication follows a long tradition that holds that replication is useful because it provides the opportunity to further examine research findings, while also verifying prior results and reducing the impact of limitations (McManus, 2020; Porte & McManus, 2019).

LITERATURE REVIEW

Flow Theory Defined

Cognitive psychologist Mihályi Csíkszentmihályi (1975) first described flow as a state where "action follows upon action according to an internal logic that seems to need no conscious intervention by the actor" (p. 36). In other words, a person in flow is fully focused on an enjoyable activity that is at once challenging and accessible. This person is self-motivated to engage in the activity, and as a result, stays on task without external reminders. Furthermore, because flow is such a positive experience, the person eagerly returns to what generated flow, and is thus provided with repeated opportunities for skill development (Csíkszentmihályi, 1975, 1990, 2008). Flow can occur individually, but it can also occur in groups, including within teams and in the classroom, where group members often feed off each other's flow (Csíkszentmihályi, 1975, 1990, 2008). The scholarship shows that flow has four key components: (a) enjoyment, (b) focused attention, (c) control, and an (d) ideal challenges-skills balance.

Interest-enjoyment, as Dewaele and MacIntyre (2014, p. 242) later called it, is the first and perhaps most important component of flow, as it is this component that paves the way for the other three (Csíkszentmihályi, 1975, 1990, 2008). Flow can occur during practically any activity, but it is only likely to occur when people are completing tasks they enjoy (Abuhamdeh, 2020). This makes sense considering that Csíkszentmihályi (1975) first described flow as a "theoretical model of enjoyment" (p. 35). It is certainly true that this enjoyment will arise from the activities that people deem "fun," yet it will also arise during those activities that they find less fun yet still relevant in attaining personal goals. In other words, *interest-enjoyment* arises when someone finds an activity to be satisfying (Dewaele & MacIntyre, 2014).

It is this *interest-enjoyment* that elicits the second component of flow: focused attention (Csíkszentmihályi, 1975, 1990, 2008). Focused attention, as shown by cognitive psychology (Niedenthal & Kitayama, 1994; Öhman et al., 2001; Todeva, 2009), is only likely to occur when something is deemed relevant, or in other words, worthy of one's focus. This does not mean that the activity must be fun but that it must be deemed important. Although enjoyment (or "interest-enjoyment") is the primary source of flow, focused attention is perhaps what is most likely to be noticed when observing someone else's flow experience. In other words, while a person is in flow, that person's attention is fully focused on the task at hand. Csíkszentmihályi (1975) suggests that an element of competition, such as what is found in games, can help focus attention. This is because games require one to concentrate on reaching a specific goal. Furthermore, the desire to win—which will only exist if the players find the game

interesting and buy into it—helps to focus attention even more. At the same time, Csíkszentmihályi (1975, 1990, 2008) also gives many examples of non-competitive flow experiences, suggesting that this competitive element, while potentially useful, is not a requirement for flow to occur.

It is not enough for the task to be relevant for enjoyment and focused attention to occur; there are yet other conditions that must be met. Specifically, it is necessary for people to feel in control over the task. This control is the third component of flow (Csíkszentmihályi, 1975, 1990, 2008). Having control does not imply that the task is ill-defined, but rather that it is defined precisely enough to focus attention on the attainment of a concrete objective, yet also openly enough for people to customize the task to their interests and needs. In fact, research has shown that creative activities (i.e., art, music, and writing) can be particularly strong flow generators, thanks to the autonomy that they allow (Csíkszentmihályi, 1997). Yet, given their diverse skills and interests, not all people will find flow in the same activities.

Finally, for people to feel in control of an activity, their skills must align perfectly with the challenges that the activity presents. In other words, individuals must believe they possess the necessary skills to complete the activity, and they must also believe that the activity is sufficiently challenging given their skills (Csíkszentmihályi, 1975, 1990, 2008). This means that the activity can be neither too easy nor too difficult, as an activity that is too easy will generate boredom (Csíkszentmihályi, 1975; Nakamura & Csíkszentmihályi, 2009), and an activity that is too difficult will generate debilitating anxiety, which impedes focus and task completion (Piniel & Csizér, 2013). These states of boredom and anxiety can both be called *anti-flow*, which is the opposite of flow (Czimmermann & Piniel, 2016). When individuals are in anti-flow, they are not focused on the task at hand, and as a result, they are unlikely to learn optimally.

Flow and Other Constructs of SLA Positive Psychology

The construct of flow unites several themes of recent and widespread interest in L2 learning research. Enjoyment, the first component of flow, is most closely connected to foreign language enjoyment (FLE). This is the positive emotion of "interest-enjoyment" that comes from completing a fun or useful task (Dewaele & MacIntyre,

2014). FLE, the enjoyment theorized to cause flow, can perhaps be best explained by models of motivation and investment.

Dörnyei (2005, 2009) proposes the L2 Motivation Self System (*L2MSS;* Dörnyei, 2005, 2009) to explain motivation. This theory holds that all language learners possess *L2 motivational selves*. L2 selves are representations of who learners are and will become that are shaped by their individual goals, interactions with society, and instructor interventions (Safdari, 2021). Under this model, learners will only want to engage with, and will only find flow in, those activities that align with their envisioned L2 selves.

The L2MSS considers the impact of communities on motivational selves and learning behavior, but the construct of "investment," which complements the L2MSS, emphasizes their impact (Norton Peirce, 1995; Norton & Toohey, 2011). Recent evidence of the importance of outside influences on motivation can be seen in Kangasvieri and Leontjev (2021), where societal expectations were the most important driver of Finnish teenagers' L2 English selves. Under the construct of investment, learners, due to their interactions with society, come to see themselves as members of current and future "imagined communities." Imagined communities are groups of people who may not know each other yet share a common bond, thanks to their common identities and interests (Anderson, 1991). Under the theory of investment (Norton Peirce, 1995; Norton & Toohey, 2011), learners are most likely to engage with, and thus find flow in, those activities that they believe will bring them closer to the imagined communities they see for themselves. This is much like what happens under the L2MSS.

In synthesizing the L2MSS and investment theories, it can be said that learners' visions of the imagined communities to which they belong and will belong shape their visions of their "selves," which they use as guides in their language learning (*self-guides*). As a result, learners are only likely to engage with activities they find relevant in helping them to realize L2 selves who are closer to current and future imagined communities. Flow requires engagement, which means that learners will likewise only find flow in those activities that they believe are connected to who they are now and who they will become.

Motivation and investment are closely related, and the word "motivation" will be used from this point on to describe the mental state that arises when learners see a connection between activities and where they are today or where they will be in the future. Much recent research has considered motivation in L2 learning (Kubanyiova & Yue, 2019; Li & Zhang, 2021; Zheng et al., 2018). Many studies have focused on adult learners, but many others have shown that younger learners also possess L2 selves. This can be seen in Fenyvesi (2020), where primary school language learners were more motivated by those activities that they determined to mimic real-life situations that learners believed their L2 selves would encounter outside their language classes. Wang et al. (2021) reached the same conclusion in their study of post-secondary language learners.

Derakhshan et al. (2020) provided support for the assertion that activities to which learners perceive real-world connections boost motivation from the reverse perspective. They researched when learners were least motivated, finding that activities that were perceived as irrelevant or unrealistic were least likely to motivate. Conversely, Henry and Thorsen (2020) discovered that learners are most motivated and engaged by those activities that allow them to be their authentic selves and remain true to their identities. This is most likely to happen when learners are given agency over their learning (Lambert, 2021).

Furthermore, research has shown that more motivated learners are likely to learn more than their less motivated counterparts (Hiromori, 2021; Lambert, 2021). There multiple reasons why motivation and the resulting engagement favor learning. One is because increased engagement leads to more of the practice opportunities that have been shown to be necessary for uptake, and thus learning, to occur (DeKeyser, 2007; Suzuki et al., 2019). Another is that positive emotions, like the interest-enjoyment that creates motivation (Dewaele & MacIntyre, 2014; Fredrickson, 2001, p. 3), lower defensive affective barriers and create the environment that is necessary for learning to occur under a "broaden and build" framework (Fredrickson 2001, p. 3), where learners engage in exploratory behaviors that allow them to take their skills to new levels (Damasio, 2012; Fredrickson, 2001, 2013).

Flow also benefits learning through focused attention, which is the second component of flow. Under flow theory, it does not matter whether attention is focused on meaning or form, but it must be focused on the task at hand (Csíkszentmihályi, 1975, 1990, 2008). Otherwise, there is no flow. L2 researchers continue to debate where focused attention should be (i.e., on form or on meaning), but many believe that "attentional resources" (Robinson et al., 2012, p. 247) must be focused on whatever is to be learned, be it communication or a target word or structure (Robinson, 1995, 1997; Robinson et al., 2012). Focused attention will only occur when something is deemed important or emotionally salient (Niedenthal & Kitayama, 2004; Phelps, 2006). Importance and salience are closely related to motivation, as these feelings are only likely to arise when learners see a reason for doing a task. According to the L2MSS model and investment theory, learners are only likely to see a reason for doing a task and focus when they see connections between the task at hand and their current or future selves and imagined communities. This means that focus is unlikely to occur without perceived connections.

The third component of flow, control, refers to the level of autonomy that learners possess over the completion of a task. Autonomy, a concept of strong interest in L2 research today (Yildiz & Yucedal, 2020), refers to the learners' control over both the learning process and their language use (Benson, 2007, 2011, 2013; Holec, 1981). According to flow theory, a controllable task is more likely to be interesting and focused-attention-worthy than a less controllable task (Csíkszentmihályi, 1975, 1990, 2008). This is because learners can adapt it to their needs and interests as necessary. Henry and Thorsen (2020) observed this relationship when they found that those activities that learners could tailor to their envisioned L2 selves were most likely to motivate. As can be seen, control (autonomy) reinforces motivation, but research has also shown that motivation must be present from the moment learners engage with the task for them to exercise their autonomy and make use of its benefits (Ushioda, 2016). Otherwise, learners are unlikely to engage fully with the task or reap all its learning benefits.

Importantly, autonomy over a task also allows learners to adapt it to their skill level. In other words, it allows them to make the task easier or more difficult, so they might find it more motivating and thus more worthy of focused attention. Flow theory states that a task that is too easy will

lead to boredom, while a task that is too difficult will lead to anxiety (Csíkszentmihályi, 1975, 1990, 2008). This anxiety impedes task completion by raising defensive affective barriers (Piniel & Csízer, 2013). Both boredom and debilitating anxiety are antithetical to flow and instead lead to *anti-flow* (Piniel & Csízer, 2016).

Flow cannot occur without an ideal challenges-skills balance because the lack of this balance, manifested as either boredom or anxiety, takes away from focused attention, which is the second component of flow. The ideal challenges-skills balance is thus the fourth and final component of flow. Both cognitive and sociocultural SLA theories discuss the necessity of this balance for learning to happen. This is because both hold that new knowledge can only be constructed using prior knowledge as a base (Ellis, 2019; van Lier, 2003; Vygotsky, 1978) upon which learners "broaden and build" (Fredrickson, 2001, p. 3) through exploration and boundary pushing (Fredrickson, 2001, 2013). Given their varied experiences and developmental stages, learners will possess different skills, leading them to evaluate the challenges-skills balance of the same activity differently. These beliefs about how well learner skills align with the task at hand are known as self-efficacy (Bandura, 1986; Piniel & Csizér, 2013).

Learners who believe they possess the skills necessary to succeed in completing a task can be said to have high self-efficacy, while those who do not believe they possess the necessary skills have low self-efficacy. L2 learning research (Piniel & Csizér, 2013) has shown these perceptions of self-efficacy to be very important for language-learning success because high self-efficacy both increases motivation and decreases the anxiety that impedes task completion (Botes et al., 2020; Piniel & Csizér, 2013). Low self-efficacy, on the other hand, has a reverse effect, leading to disengagement from the activity (Claro, 2021). Disengagement is the opposite of focused attention and is thus incompatible with flow (Csíkszentmihályi (1975, 1990, 2008). Furthermore, disengagement with a task means no practice or learning opportunities (DeKeyser, 2007; Suzuki et al., 2019).

The Current State of L2 Flow Research

The first known flow study (Turbee, 1999) in L2 learning used student journal entries to explore how a computer game generated flow for high school students of Spanish. This study showed that, due to the game's adaptive (student-centered) nature, emphasis on authentic (meaningful) communication, and focus on performing better than others (i.e., a competitive element), it generated much flow. Turbee, however, considered only one activity, thus reducing the generalizability of his study. Later studies have shown that activities whose completion students can control (student-centered) and that have many possible responses or outcomes (open-ended), as well as those that focus on authentic, meaningful communication, elicit the most flow for students (Aubrey, 2016, 2017; Dewaele & MacIntyre, 2014; Egbert, 2003). Recent studies have also corroborated Turbee's finding that competitive activities (games) generate flow for learners (Hong et al., 2017, 2019; Zuniga & Rueb, 2018). Furthermore, Zuniga & Rueb (2018) suggested that the relationship between activities and flow can be understood by looking at the characteristics of activities. This is helpful in predicting how activities, including those that have never been studied through a flow lens, will influence flow.

These findings make sense on a theoretical level. Student-centered and open-ended activities are more adaptable to learners' diverse visions of L2 selves and imagined communities than their opposites are. In other words, they can be more easily adapted to learners' unique situations, which means that learners are more likely to find them relevant, adequately difficult, focus-worthy, and flow-generating. The relationship between communication-focused authentic activities and flow also makes sense considering that most learners study languages to communicate with those who speak that language (Hertel & Dings, 2017; Knouse et al., 2021; Magnan et al., 2014). As a result, learners are likely to believe that authentic activities will help them become L2 selves who are more connected to envisioned imagined communities and thus focus on them. Competitive games, for their part, had been theorized to generate flow since the genesis of flow theory, due to the sharpened focus that often occurs when learners are intent on achieving game-related goals and winning (Csíkszentmihályi, 1975, 1990, 2008).

Flow is a deeply personal experience that depends largely on learners' unique identities, but research has suggested that teachers are skilled at perceiving when students experience flow (Şentürk, 2012; Tardy & Snyder, 2004), and that teachers can easily and intentionally choose

activities that favor it. Additionally, research has shown that teachers can often look inward for confirmation on when flow occurs. This is because flow is mutually "contagious"—or co-constructed—between students and teachers, leading both parties to experience flow at the same time (Şentürk, 2012; Tardy & Snyder, 2004). Other studies on emotions in SLA corroborate this, as they have found that instructor emotions and behaviors can impact students' emotions and behaviors (Dewaele & Dewaele, 2020; MacIntyre et al., 2019; MacIntyre et al., 2020; Moser et al., 2021). Interestingly, this is true for both positive mental states like flow and negative mental states like anti-flow (Czimmermann & Piniel, 2016).

Rationale for the Present Study

The existing research provides some insight into which activities are likely to generate flow, but this research is scarce and exploratory, and much remains to be studied. Given the infinite possible classroom activities, it is logical to consider activities based on shared characteristics, as did Zuniga and Rueb (2018). Their specific categories, however, may not be the most explanatory of activity flow, as demonstrated by the fact that many categories did not show statistically significant differences over their opposites. Furthermore, Zuniga and Rueb (2018) considered 12 categorical variables, which might be too many to keep in mind when planning class activities.

Zuniga and Rueb (2018) included 24 different activities in their study, while Egbert (2003) included only 13. Other studies (i.e., Turbee, 1999; Aubrey, 2016, 2017) considered even fewer. Apart from including a very limited number of activities, all these studies only examined immediate class experiences, thus excluding a wide array of possible flow experiences from consideration. Dewaele and MacIntyre (2014) was one of the very few studies to go beyond a few recent class activities. Yet, they set out more to gain a global picture of foreign language enjoyment (FLE), a component of flow, than to study activities and flow completely. Broad studies of flow that both consider all of flow's components (i.e., interest-enjoyment, focus, control, and challenges) and do not limit themselves to immediate class experiences are therefore warranted.

Accordingly, the present study attempts to consider more activities than previous studies while reducing the number

of categories Zuniga and Rueb (2018) used to a more manageable number that show statistically significant differences from their opposites and can be easily remembered when planning class activities. Eight categories organized into four contrasting pairs were proposed in Study A, where 82 university students of four different modern languages described their language-class flow experiences on an online questionnaire. They were then applied to Study B, where 588 first- through fourth-semester students of Spanish at a different university did the same. The categories were chosen before the data were seen and represented the characteristics the existing literature suggested to be the most important. Within each study, separate chi-square tests were performed on each of the four category pairs to determine the statistical significance of the contrasts within the pairs.

The categories were inspired by prior studies, yet they were quite different from those used in Zuniga and Rueb (2018), which is the only other known study to categorize flow-generating activities. Based on prior research, it was hypothesized that student-centered, open-ended, authentic, and competitive activities would be more likely to generate flow than their opposites. Both Study A and Study B began with the same hypothesis. Of these, only the competitive vs. non-competitive contrast had been included in Zuniga and Rueb (2018). Due to the newness of the category coding scheme, replication was deemed appropriate. Scholarship in the field supports this decision, suggesting that replication can produce stronger, more thoroughly tested conclusions (McManus, 2020; Porte & McManus, 2019).

This paper employs a two-study design to test the validity of a new coding scheme in two different contexts. Study B is a replication of Study A, meaning that apart from the contexts and participants, the research designs are extremely similar. Yet, for the sake of clarity, the two studies' methods and results will be presented separately before proceeding with a unified discussion. To guide the reader, there will be parallel subsections for both studies.

METHOD – STUDY A

Research Questions

1. Which activities are most likely to generate flow for university language students?

2. Does the newly proposed coding scheme adequately explain flow experiences?

Participants

The participants in this study were 82 third- and fourth-semester students of Spanish, French, German, and Italian at a large, urban public university in the United States. These participants were selected to represent the modern language enrollments at the university. Among these 82 participants, there were 52 students of Spanish (63.41%), 17 students of French (20.73%), eight students of German (9.76%), and five students of Italian (6.10%). As Dewaele and MacIntyre (2014) did not find the language of study to have a significant influence on students' reactions to language-class experiences, and flow theory does not mention any language-specific differences, it made sense to consider all the participants' responses together.

Although proficiency tests were not administered as part of this study, a look at the course syllabi showed that the third- and fourth-semester courses in which the participants were enrolled focused on CEFR B1 or ACTFL Intermediate Mid-High learning objectives. This means that, generally, the participants' proficiency was either at this level or the previous level (i.e., CEFR A2 or ACTFL Intermediate Low-Mid). This assertion can be made with high confidence given that the participants had to either complete a prerequisite or take a placement test to gain access to these courses. As demonstrated by Zuniga's and Rueb's (2018) study, which did not show significantly different flow experiences between basic- and intermediate-level French learners, it did not seem necessary to treat the students' proficiency levels as a variable.

Data Collection

Study A data were collected during the Fall 2018 semester, which means that COVID-19 had no impact on this study. The participants were recruited via visits to their classes, during which the researcher explained the purpose of the study and answered any questions the potential participants might have. At the end of each class visit, the students received a paper (in English) with a quick summary of the study and a link to the online form that would be used for the anonymous data collection. The researcher also sent the

instructors emails to forward to their students so that they could access the survey more easily.

The survey, which was essentially a brief written reflection, was inspired by data elicitation materials from Dewaele and MacIntyre (2014), which asked language learners to describe their most enjoyable language-class experiences. However, instead of studying enjoyment alone, this study sought to focus on flow, while including all four of its components, and thus posed the following question:

> Describe one specific event or episode in your FL class where you were at the same time: a) enjoying yourself, b) highly focused on the activity, c) feeling in control, and d) working toward attainable challenges. Please be sure to specify which language class this was.

As can be seen, the word *flow* was avoided, as it had been in Dewaele and MacIntyre (2014), and an attempt to use everyday language was made. The participants answered the question outside of class so they could feel more relaxed when responding. The participants all chose aliases to protect their anonymity.

Data Analysis

The 82 participants mentioned a total of 146 flow experiences. This is because some participants described more than one activity in a single response. To consider the broadest possible array of experiences, all responses that were sufficiently detailed were considered in the analysis. Only allowing one response per participant would have eliminated many interesting responses from consideration and would have thus provided a less clear picture of how likely a range of activities were to generate flow. Furthermore, no known research suggests that only one activity necessarily generates flow for a given person, so the second or third cited activities are likely as valuable as the first.

Study A's open-ended design and the diverse participant experiences led to extremely varied responses. Therefore, the mentioned activities were assigned to categories, as Zuniga and Rueb (2018) had done, to allow for more succinct conclusions. These categories were chosen before the data collection to reflect the contrasts that the literature suggested were most relevant. Zuniga and Rueb's (2018)

categories were adjusted with the hope of finding more statistically significant contrasts. Eight categories, organized in four contrasting pairs, were used in this study:

Pair 1: who controls the means of accomplishing the task

- **Student-centered:** the students have more control over the means of accomplishing the activity than the instructor does via the decisions that they make and the input they provide. The instructor uses this input to affect the means of accomplishing the activity.

- **Teacher-centered:** the students have less control over the means of completing the activity than the instructor does. Student decisions and feedback do not affect the means of accomplishing the activity.

Pair 2: the outcome of the task

- **Open-ended:** the activity has many correct or plausible solutions or outcomes, rendering an answer key irrelevant.

- **Closed-ended:** the activity has one or a very limited number of correct or plausible outcomes or solutions that could be clearly listed on an answer key.

Pair 3: the focus of the task

- **Authentic:** in doing this activity, the students bridge an information gap to communicate a real, meaningful message (Ellis & Shintani, 2014; Willis & Willis, 2007).

- **Inauthentic:** in doing this activity, the students mechanically display linguistic or factual knowledge. The language itself is more important than the message it conveys.

Pair 4: the dynamic between students

- **Competitive:** comparing one's performance to that of other students or groups of students is a primary expressed goal of the activity

- **Non-competitive:** comparing one's performance to that of other students or groups of students is not a primary expressed goal of the activity.

The categories were chosen and defined to consider the characteristics of flow-generating activities that Csíkszentmihályi (1975, 1990, 2008) emphasized, as well as the findings of previous SLA flow studies (Aubrey, 2016, 2017; Egbert, 2003; Hong et al., 2017, 2019; Turbee, 1999; Zuniga & Rueb, 2018). Two researchers independently coded each participant response, and the coding based on these categories reached 95% inter-rater reliability. According to Bernard's (2018) and Saldaña's (2016) recommendations, this is more than acceptable, considering the high level of inference required for some of these categories. All disagreements were then resolved to achieve 100% agreement.

These categories may appear discrete as defined, but they are, in fact, continuous. For example, it is difficult to imagine an entirely student-centered in-class activity over which the instructor possesses zero control. Yet, while instructors have some control over most any activity completed in a classroom setting, they have far more control over some (e.g., a full-class discussion) than others (e.g., a small-group activity).

All the activities from the participant responses were assigned to exactly one category in each of the four pairs to the extent permitted by the participants' responses. In the case that the activities showed traits of both categories in a pair (e.g., both student-centered and teacher-centered), they were assigned to the categories of which they were more representative. As the responses were written without categories in mind, it was, at times, impossible to make a category assignment in each pair. Accordingly, a total of 24 responses (out of 146) were not coded because they did not provide sufficient detail for any category assignments to be made. These included references to the content of the activity (e.g., "Activities where we learn about Spanish-speaking cultures"), to classes or instructors (e.g., "A high school French teacher really did it for me"), and to vaguely described assessments (e.g., "the tests I used to take"). Here is an example of a particularly detailed response and an explanation of how it was coded:

> "In my German IV class sophomore year, we had a fairytale unit, and we had an assignment to write our own fairytales which was challenging, interesting, and just a really fun activity! It was nice because we got to use the vocabulary and use the

grammar, but it wasn't stressful, and we also really got to show who we were and our writing abilities."

- **Student-centered:** the student says that they could write their own fairytales and that they could "show who [they] were." This demonstrates that the students had a lot of control over the accomplishment of the task.

- **Open-ended:** there are unlimited possible fairytales when the students are writing their "own fairytales."

- **Authentic:** the student mentions vocabulary and grammar, but it is clear that these were used in context and that displaying knowledge of these was not as important as engaging in meaningful communication by writing a fairytale.

- **Non-competitive:** there is no indication that the students were in competition to write the best fairytale.

After the activities had been coded, the mentions of each of the eight categories were counted, as were the uncodable responses within each of the four contrasting category pairs. Lastly, a chi-square test was performed on each category pair to determine the statistical significance of the count differences within that pair. The uncodable responses were included in these tests. Cramér's V was calculated along with each chi-square test as a measure of effect size.

RESULTS – STUDY A

The number of flow experiences coded to each of the eight categories, as well as the number of responses that were uncodable for a given pair, can be found in Table 1. Table 2 presents the results of the chi-square tests that were run on each category pair.

Table 1. *Count and Percentages for Characteristics (Categories) of Flow Experiences*

Category	Count (k = 146)	Percentage
Student-centered	105	71.92%
Teacher-centered	12	8.22%
Uncategorizable for pair	*29*	*19.86%*
Open-ended	77	52.74%
Closed-ended	28	19.18%
Uncategorizable for pair	*41*	*28.08%*
Authentic	90	61.64%
Inauthentic	23	15.75%
Uncategorizable for pair	*33*	*22.60%*
Competitive	26	17.80%
Non-competitive	92	63.01%
Uncategorizable for pair	*28*	*19.19%*

Table 2. *Results of Chi-square Analysis of Categories of Flow Experiences*

Category pair	Chi-square	*df*	*p*	Cramér's *V*
Student-centered vs. teacher-centered	100.80	2	< .001**	0.83
Open-ended vs. closed-ended	26.48	2	< .001**	0.43
Authentic vs. inauthentic	53.68	2	< .001**	0.61
Competitive vs. non-competitive	57.92	2	< .001**	0.63

As can be seen in Table 1, student-centered, open-ended, and authentic activities were far more likely to be cited among flow experiences than their opposites. This supports the hypothesis being tested. More specifically, student-centered activities were more likely to be cited among flow experiences than teacher-centered activities by a ratio of 8.75:1. Open-ended activities, for their part, were cited among flow experiences more often than closed-ended activities by a ratio of 2.75:1, and authentic activities were cited among flow experiences more often than inauthentic activities by a ratio of 3.91:1.

The situation of competitive versus non-competitive activities, however, did not support the original hypothesis, as non-competitive activities were cited among flow experiences more often than competitive activities by a ratio of 3.54:1. This difference is also striking, and it is similar in magnitude to two of the pairs mentioned above. It is, however, much less striking than the student-centered vs. teacher-centered contrast.

As shown in Table 2, the contrasts within each of the four contrasting category pairs are statistically significant ($p < .001$ for each pair). This suggests that there is indeed a strong relationship between activity characteristics and flow. The Cramér's *V* effect size measures support this conclusion, as all four effect sizes, which range from 0.43 to 0.83, are moderate to large. It is also worth noting that the lowest effect size measure corresponds to the category pair with the most uncategorizable responses (open-ended vs. closed-ended).

In sum, Study A suggests that student-centered, open-ended, authentic, and non-competitive activities in the language classroom generate more student flow than their opposites, and that the differences between opposing categories are indeed significant. Apart from the finding on competitive versus non-competitive activities, these results support the original hypothesis and the validity of the newly proposed coding scheme. We turn now to study B.

METHOD – STUDY B

Research Questions

1. Which activities are most likely to generate flow for university language students?

2. How do the findings of Study A and Study B compare?

3. Does the coding scheme proposed in Study A adequately explain flow experiences?

Participants

Study B took place at a large Appalachian research university in the United States. The participants included 588 students enrolled in face-to-face first- through fourth-semester Spanish classes. Research suggests that the proficiency differences between basic- and intermediate-level learners are unlikely to impact the results (Zuniga & Rueb, 2018). Therefore, as in Study A, the proficiency variation among these learners was not considered a variable of interest.

Data Collection

The Study B data were collected during the Fall 2021 semester. Institutional COVID-19 measures, such as a mask mandates, were in place, but other research conducted during COVID-19 suggests that learners respond positively to the same activities in the presence or absence of COVID-19 and related policies (Jacobs, 2021). As a result, COVID-19 was not considered a variable of interest in this study.

The Study B participants completed an online questionnaire at the middle of the semester on which they answered the same question as the participants in Study A:

> Describe one specific event or episode in your FL class where you were at the same time: a) enjoying yourself, b) highly focused on the activity, c) feeling in control, and d) working toward attainable challenges. Please be sure to specify which language class this was.

As can be seen, these participants were asked to describe flow experiences without being directly asked about flow. This was done both to provide a more rigorous, component-based measure of flow and to avoid possible confusion surrounding the likely-to-be-unfamiliar concept of flow. The questionnaire was sent out to all first- through fourth-semester students of Spanish. All responses were anonymous.

Data Analysis

The 588 participants mentioned a total of 559 flow experiences. Some participants mentioned more than one activity, while others did not describe experiences in sufficient detail for them to be coded (see below for examples of the types of responses that were deemed uncodable). As in Study A, all codable responses were included in the analysis to provide the broadest perspective possible. These responses were coded in the same way as in Study A (see below for more detail), and the responses that were coded to each category were counted. A chi-square test was performed on each of the four category pairs to determine the statistical significance of the count contrasts, and Cramér's *V* was calculated along with each chi-square test as a measure of effect size.

Table 3. *Count and Percentages for Characteristics (Categories) of Flow Experiences*

Category	Count (k = 559)	Percentage
Student-centered	315	56.35%
Teacher-centered	50	8.94%
Uncategorizable for pair	*194*	*34.70%*
Open-ended	205	36.67%
Closed-ended	77	13.77%
Uncategorizable for pair	*277*	*49.55%*
Authentic	210	37.57%
Inauthentic	69	12.34%
Uncategorizable for pair	*280*	*50.09%*
Competitive	69	12.34%
Non-competitive	331	59.21%
Uncategorizable for pair	*159*	*28.44%*

RESULTS – STUDY B

Table 3 shows how many of the participants' flow experiences were coded to each category. The chi-square tests results are presented in Table 4.

As shown by the *p* values, which are all less than .001, there is a statistically significant relationship between activity categories and flow among student responses. The moderately-high Cramér's *V* effect size values, which range from 0.44-0.58, further support this conclusion.

Table 4. *Results of Chi-square Analysis of Categories of Flow Experiences*

Category pair	Chi-square	*df*	*p*	Cramér's *V*
Student-centered vs. teacher-centered	188.90	2	< .001**	0.58
Open-ended vs. closed-ended	110.10	2	< .001**	0.44
Authentic vs. inauthentic	124.00	2	< .001**	0.47
Competitive vs. non-competitive	190.20	2	< .001**	0.58

The results of this new dataset showed student-centered, open-ended, and authentic activities in the language classroom to be far more likely to generate flow than their opposites. This supports both the hypothesis and the results of Study A. It also supports the validity of the coding scheme proposed in Study A. The contrasts within these categories were also striking, as there was a 6.30:1 ratio of student-centered to teacher-centered activities, a 2.66:1 ratio of open-ended to closed-ended activities, and a 3.04:1 ratio of authentic to inauthentic activities among reported flow experiences.

The results of the competitive vs. non-competitive pair, where non-competitive activities were shown to generate more flow than competitive activities by a ratio of 4.8:1, do not support the original hypothesis, but they do align with the results of Study A.

DISCUSSION

Study A and Study B are the only known L2 classroom studies to both consider a broad array of language-class flow experiences and employ categories in their analyses. Unsurprisingly, the results of the replication study (Study B) mirror the results of the initial study (Study A),

suggesting that the categories proposed in Study A are indeed valid. More concretely, these studies support previous studies' suggestions that student-centered, open-ended, and authentic activities in the language classroom would generate more flow than their opposites (Aubrey, 2016, 2017; Egbert, 2003; Zuniga & Rueb, 2018), while showing that the contrasts within category pairs are strong. In other words, it appears that the chosen categories hold significant predictive power over flow experiences.

The connection between flow and known L2 learning facilitators suggests that flow-generating activities, if they are well designed to meet learning goals, will lead to language skill development (Fredrickson, 2001, 2013). Furthermore, flow, due to its highly positive nature, leads to repeated task engagement, which in turn, leads to more practice and more learning (Csíkszentmihályi, 1975, 1990, 2008; Lee & Lee, 2020; Suzuki et al., 2019). Nonetheless, it is reasonable to assume that the instructor's implementation of tasks and classroom management would have an impact on flow and learning. There is, however, little existing research on this relationship, and it would be worth exploring the impact of such factors in future research.

Although Study A and Study B reinforce each other, and support the hypothesized relationships between L2 task characteristics and flow on three out of four category pairs, the situation of competitive versus non-competitive activities is more complicated. While it was hypothesized that competitive activities would be more likely to generate flow than their opposites (Hong et al., 2017, 2019; Zuniga & Rueb, 2018), both Study A and Study B showed the reverse to be true. This is the first known study to specifically show competitive activities in the language classroom to be less likely to generate flow than their opposites. Given the magnitude of the differences within this pair in both studies, it seems unlikely that this surprising result would be due to error, but the divergence of this result from those found in prior research suggests that further study on this issue may be needed.

One possible explanation for this surprising result is that, while competitive L2 activities (i.e., games) can generate flow, as shown by past studies (Hong et al., 2017, 2019; Zuniga & Rueb, 2018), flow experiences do not have to be competitive. This has been seen in past L2 classroom studies (Aubrey, 2016, 2017; Egbert, 2003) where no games were considered, yet flow was still observed. Another possible explanation is that competitive L2 learning activities, while they may generate much flow, are simply less likely to be remembered than other activities. Perhaps this is because the participants saw few (if any) games in their classes, or perhaps competitive activities are very likely to generate flow, yet this flow is also likely to be forgotten quickly. Therefore, a study of learners' anti-flow experiences could be useful, as it might show that, while learners are unlikely to recall competitive L2 learning activities among their flow experiences activities, they are also unlikely to recall them among their anti-flow experiences. Additionally, a study that invites learners to react to specific L2 activities (including games) could also shed some more light on this question. Importantly, asking learners about activities right after the activity would reduce the number of activities that could be considered in a study, but it would mitigate the effect of forgetting.

The fact that most flow experiences involved non-competitive L2 learning activities suggests that flow-generating activities need not belong to all four of the categories that were hypothesized to generate flow. It appears that it is more important for an L2 learning activity to be student-centered than anything else. Yet, it also seems that the more flow-generating categories an activity belongs to, the better, at least when the categories in question are student-centered, open-ended, and authentic. This suggests that instructors are more likely to generate flow and learning if they choose L2 classroom activities that belong to more flow-generating categories (i.e., three rather than one). It also appears that, while competitive L2 activities can generate flow, it is not particularly important for flow-generating activities to be competitive. In fact, it appears that an element of competition is the least important characteristic of the four considered in these sequential studies here.

Still, many of the teacher-centered, closed-ended, and inauthentic activities that were cited among flow experiences (i.e., a teacher-led online quiz game) were competitive, suggesting that the addition of an element of competition has the potential to make L2 learning activities generate more flow than they otherwise would. Some might contend that this means that teachers should gamify everything, but the present results do not appear to support this, as most flow-generating activities were not competitive. As it appears, gamification is a useful tool for L2 teachers to add to their toolkits, but this tool should be used sparingly.

Importantly, flow does not guarantee L2 learning. Flow creates conditions that are favorable to learning, but optimal learning is only likely to occur when L2 activities are well designed to meet learning goals (DeKeyser, 2007; Suzuki et al., 2019). Therefore, a proficiency-oriented class is only likely to achieve its goals if plentiful L2 proficiency-oriented activities are used in the classroom. In other words, students must make meaning in class if they are to do so outside of class. A quiz game *à la* Kahoot does little to promote meaning making, as it focuses on providing discrete answers rather than on communicating messages. The same could be said of many L2 vocabulary and grammar games, though this does not have to be the case. Some games, such as those that require learners to describe vocabulary words *à la* Taboo, and those that require learners to interact with each other to generate shared answers (i.e., Scattergories), allow them to compete and negotiate meaning at the same time. This is beneficial to both flow and L2 learning. Perhaps games like Kahoot also provide learning benefits in a communicative- or task-based framework, at least insofar

as vocabulary acquisition is concerned, but games that do not promote meaningful communication are unlikely to promote communicative competence in the absence of more communicative activities (Loewen et al., 2020).

Unsurprisingly, not all participants agreed on which L2 learning activities generated flow. After all, Csíkszentmihályi (1975, 1990, 2008) mentioned that, due to individuals' different skills and interests, not everyone will find flow in the same activities. This assertion is corroborated by both Study A and Study B, in which all eight categories of tasks generated flow for some language learners and none generated flow for all. Perhaps learners who find flow in L2 activities that would not be predicted to favor flow indeed learn through these activities, but it is also possible that their past experiences have led them to believe that these activities are what language learning looks like, leading to motivation, engaged learning behavior, and flow. For example, learners whose previous L2 classes focused on grammar drills might come to believe that this is what they should be doing, and as a result, these learners will be motivated by grammar drills, and will willingly engage with them, even though grammar drills do little to promote communicative competence when used in isolation (DeKeyser, 2007; Suzuki et al., 2019). These individual differences in flow are worthy of further exploration, so that L2 educators can intervene as necessary to help the entire class experience flow.

Perhaps most importantly, this research not only shows what kinds of activities tend to generate flow, but it creates, tests, and validates a new coding scheme that both L2 teachers and researchers can easily use to understand language-class flow experiences. The coding scheme successfully explains flow experiences in two different university contexts, one urban and the other rural, in studies that were conducted three years apart. Zuniga and Rueb (2018) suggested that the likelihood of L2 activities to generate flow could be understood by examining their characteristics, but most of their 12 categorical variables did not show statistically significant influences on flow. By contrast, this research considered only four categorical variables, all of which showed statistically significant effects in predicting flow. In other words, it appears that categories are indeed useful in predicting flow and that the right categories (or perhaps more correctly, some right categories) have been found.

Still, it is likely that this category scheme can be refined via future research, though, it would be desirable to keep the number of categories small, so both L2 teachers and researchers can easily remember them.

Limitations and Directions for Future Research

The findings of the present research are significant, but further research into psychological flow in L2 learning contexts is necessary. All categories in Study A and Study B showed statistically significant contrasts with their opposites, but there are certainly other categories of activities that could have an impact on flow and would be worthy of consideration. Also, both studies considered flow experiences without considering their opposite. Therefore, future studies would do well to also consider anti-flow experiences for an additional perspective, as well as to further investigate the role of individual differences and task implementation in flow. Competitive games produced surprising results in both Study A and Study B, and it would be worthwhile to further investigate this situation. Additionally, it would be useful to consider the topic of L2 teacher flow and to compare teacher and student perspectives in the process. Research has suggested that students and teachers co-construct flow, but there is currently little research in this area (e.g., Şentürk, 2012; Tardy & Snyder, 2004). Lastly, it would be valuable to directly assess the link between activity type, flow, and L2 learning. The few studies that explicitly considered this link (e.g., Hong et al, 2017, 2019) only examined one form-focused activity, a computer game to practice Chinese characters. Future studies on flow and L2 learning should consider a broader array of activities, including some that are more communicative or task-based than this game.

CONCLUSION

The present work represents two studies, an original study and its replication, that consider flow more broadly than previous studies and mutually inform each other to provide a broad perspective on student flow in L2 learning. This work validates a new coding scheme while revealing that students are most likely to find flow in student-centered, open-ended, authentic, and non-competitive activities. Competitive activities can generate flow as

hypothesized, but as it seems, most flow experiences are not competitive. These results suggest that teachers should incorporate student-centered, open-ended, authentic, and possibly non-competitive activities into their L2 classes to generate learning through flow. It is also important for teachers to remember that flow is not a guarantee of L2 learning and that the flow-generating activity must be well-aligned with learning objectives if learning is to occur. Furthermore, students must buy into activities for them to find flow and learning. This means that L2 teachers would do well to choose activities that students are likely to find relevant, *vis-à-vis* their L2 selves and imagined communities, and to emphasize these connections as they introduce tasks. At the same time, they should try to convince students of the learning value of other activities that students do not initially find relevant, so that students will hopefully come to see their relevance, and as a result, engage with them. Practically speaking, L2 teachers should follow the trends in flow, but they should also remain attuned to individual differences, as not every student finds flow in the same activities. This will often mean using diverse activities in their classes. It is hoped that the present paper will serve as an impetus for the continued exploration of flow in L2 learning, and that this continued exploration will consider topics such as individual differences, the relationship between flow and learning, the possible co-construction of flow between instructors and learners, and the influence of factors other than L2 activity characteristics.

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