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The temporal dynamics of passion

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Chapter 1: Foreword and Overview

The turn of the millennium was a pivotal point in the history of psychology as an important change was taking place. Due to the events and experiences of World War II, psychology at that time period mostly focused on understanding pathologies, mental illnesses as well as curing diseases. Less emphasis has been put on the deeper understanding of positive experiences and of what makes people's lives worth living. The seminal work of Seligman and Csikszentmihalyi (2000) sought to address this absence by proposing a framework for the scientific study of factors that could contribute to people having a more fulfilling life and to people functioning optimally. Vallerand et al. (2003; see also Vallerand, 2015) proposed the *Dualistic Model of Passion* (DMP) and the notion that *being passionate* for a meaningful activity might contribute not just to one's wellbeing, but to one's optimal functioning as well. After the initial investigation of Vallerand et al. (2003), research on passion grew consistently and it quickly became an important part of the positive psychological research stream.

While the DMP describes the initial and ongoing development of passion and states that passion might be subject of changes over time, this proposition has only marginally been investigated in an explicit and direct manner so far. Mostly indirect evidence is available about the potential longitudinal trajectories of passion. Therefore, the aim of the present dissertation was to contribute to a deeper understanding of passion by *directly* testing its temporal dynamics. As these changes might possibly be influenced by individual and social factors as well (Seligman & Csikszentmihalyi, 2000), the present multi-study investigation applied a multidimensional perspective anchored in social-, positive- and developmental psychology for a more holistic understanding of passion.

For individual factors, the present investigation drew upon the theory of *basic psychological need fulfillment*, a micro-theory of Self-Determination Theory (SDT; Ryan & Deci, 2017) which states that the fulfillment of three basic psychological needs (i.e., autonomy, competence, and relatedness) is essential for optimal functioning. As for social factors, we focused on early life parenting styles and *perceived parenting behaviors* which are thought to have great relevance in early life and later human development (Bowlby, 2008). An integration of these different psychological perspectives is likely to provide a novel theoretical insight into understanding of passion with the DMP (Vallerand, 2015) also recognizing the importance of individual and social environmental factors. These predictors were selected on the basis of their documented importance and their relevance to passion (Vallerand, 2015).

The structure of the present dissertation is the following: after this foreword (Chapter 1), the Introduction section (Chapter 2) presents a detailed review about the psychology of passion that is known so far. This chapter starts with its philosophical roots, then introduces the DMP and provides a clear delineation between passion and various related constructs. Subsequently, the potential correlates and outcomes of passion are also presented with a special emphasis being put on basic psychological need fulfillment and perceived parenting styles which are of major importance for the present investigation. Chapters 3 to 7 present five empirical studies that have been realized within the framework of this dissertation. Finally, Chapter 8 concludes this dissertation by providing a general discussion of the findings as well as their potential implications related to future studies and practical applications.

Chapter 2: General Introduction – The Psychology of Passion

Passion only received little scientific attention from psychology early on. However, philosophy was more than interested in understanding the concept of passion, dating back to the Ancient Greek cultures (see Vallerand, 2015). The understanding of passion changed substantially over the centuries: passion at first was thought to be an uncontrollable negative emotion that is unequivocally bad. Over the years, this understanding slowly shifted into understanding passion as an intensive persistent striving that can be negative *and/or* positive.

This dualistic understanding of being either negative or positive (Vallerand, 2012) served as an important foundation for the model established by Vallerand et al. (2003).

Early psychological studies, predominantly in the United States, simply neglected passion as a relevant psychological construct (Vallerand, 2015) given the conceptual overlaps and even confusions between the concepts of emotions and passion. They thought that the concept of emotions is more specific than that of passion, thus the former gained even further prominence. French considered the short-lived and intense emotions to be distinct from the more intellectual and stable passion, identifying it as an intellectualized emotion. Passion also appeared in research related to romantic relationships (Hatfield & Sprecher, 1986). The current understanding of passion is motivational (Frijda, Mesquita, Sonnemans, & Van Goozen, 1991) and interprets passion as a form of motivation striving toward a certain goal. Vallerand et al. (2003) took a unique approach by aiming to integrate both the relevant philosophical and psychological interpretation of passion to have an exhaustive and in-depth definition and model for passion.

The Dualistic Model of Passion

Vallerand et al. (2003) described passion as a strong inclination toward a self-defining activity that people like (or even loves), that they find personally important and meaningful, and in which they invest a substantial amount of time and energy. This definition incorporates several aspects from the above-mentioned philosophical and psychological works: passion is understood as a motivational construct representing a persistent striving toward a specific object. The final aspect of the DMP is that it proposes the existence of two forms of passions, namely harmonious passion (HP) and obsessive passion (OP). In accordance with the DMP, these two types of passion can be differentiated from one another in terms of how the passionate activity is integrated and internalized into one's life and identity, respectively.

Autonomous internalization is thought to be related to harmonious passion. Autonomous internalization entails that the activity is freely accepted by the individuals as being personally important for them, without any contingencies. This way, individuals can freely decide when and how to and when and how not to engage in the passionate activity, thus individuals remains in complete control. that is conductive of positive and adaptive cognitive, affective, and behavioral experiences (Curran, Hill, Appleton, Vallerand, & Standage, 2015). Controlled internalization is thought to be conductive of obsessive passion, stemming from inter- or intrapersonal contingencies and pressures (Hodgins & Knee, 2002). As a result, people with obsessive passion experience an uncontrollable urge to engage in their passionate activity. In other words, instead of the individuals controlling the activity, the activity becomes dominant and starts to control the individuals who cannot help themselves but partake in it, leading to rigid, instead of willful, persistence. With obsessive passion negative and maladaptive cognitive, affective, and behavioral consequences are likely to manifest (Curran et al., 2015).

The Theoretical Distinction of Passion and Related Constructs

From the perspective of passion, Vallerand (2015) as well as Curran et al. (2015) evaluated the similarities and distinctions between passion and various related constructs that are summarized in Table 1. While the majority of the related constructs refer to specific activities and entail that individuals spend a significant time and energy with them, only a handful of the constructs are motivational or include the element of personal importance and value of the activity in their core definition. Even less posit that the activity is part of one's identity and that the activity needs to be liked or loved. Most importantly, none of them are understood in a dualistic view with potentially positive and negative aspects, thus all of them are interpreted in a unidimensional way. Overall, while it is true that passion shares a number of features with related similar constructs, it is also different from them in significant ways.

Table 1. The comparison of passion and related constructs (adapted from Curran et al., 2015 and Vallerand, 2015)

Core elements of passion	Passion	Trait constructs	State constructs	Behavioral constructs	Intrinsic and extrinsic motivation	Affective constructs
1. Motivation	+	+	ø	+	+	ø
2. Specific activity	+	ø	+	+	+	+
3. Liking or love	+	ø	ø	ø	+/ø	ø
4. Time and energy	+	+	+	+	+	+
5. Important and valuable	+	+	ø	ø	+	+
6. Part of identity	+	ø	ø	ø	ø	ø
7. Duality	+	ø	ø	ø	ø	ø

Note. +: the element of passion is present in the other construct as well: ø: the element of passion is not present in the other construct.

The Temporal Dynamics of Passion

One strength of passion research is that a diverse range of methods were used for the scientific examination of passion. While the majority of the studies were cross-sectional (Przybylski, Weinstein, Ryan, & Rigby, 2009), longitudinal (Lalande et al., 2017) and experimental (Bélanger, Lafrenière, Vallerand, & Kruglanski, 2013a) studies were also conducted which converge to the same findings, giving a stronger support for the propositions of the DMP. Still, there is a paucity of research examining the developmental trajectories of passion.

To date, a number of useful longitudinal studies have been conducted. However, these did not focus on the explicit testing of passion trajectories. When focusing on the initial development of passion (i.e., one experiences an activity for the first time), Mageau et al. (2009) reported that 36% of the participating high schoolers developed passion for their musical instruments after a five-month period. Similar observations were made by Kovácsik and Szabó (2019, personal communication, 2 January 2019). However, when the ongoing development (i.e., one has already engaged in the activity for quite some time) is considered, Schellenberg and Bailis (2015) as well as Martin (2016) reported moderate-to-high passion stability. Indirect evidence also supports these findings (e.g., Fernet, Lavigne, Vallerand, & Austin, 2014).

Individual and Social Predictors of Passion Changes

As suggested by Oyserman, Elmore, and Smith (2012), one's identity-related processes might be influenced by distal (e.g., parenting practices or culture) and proximal variables (e.g., psychological implications of a given situation). Ryan and Deci (2017) highlight that identity formation is influenced by outer and inner elements. Thus, it becomes necessary to examine potential changes in passion through a multidimensional lens by taking into account individual and social factors that could potentially influence one's passion.

Need fulfillment. The DMP proposes that the quality of the internalization process—through which the activity is integrated into one's self—is a cardinal deciding factor in the development of HP or OP. However, to achieve an optimal internalization process, high levels of basic psychological need fulfillment should be experienced (Vallerand et al., 2003). The theory of basic psychological needs states that the need for autonomy, competence and relatedness are essential components for growth (Ryan & Deci, 2017). Equally important is the recently proposed distinction between need satisfaction (i.e., the bright side of functioning) and need frustration (i.e., the dark side of functioning), given that the absence of need satisfaction does not equal the presence of need frustration (Vansteenkiste & Ryan, 2013).

Based on the available literature (e.g., Lalande et al., 2017), need satisfaction and need frustration might be differentially related to passion. A final question pertains to assessing need fulfillment on a general versus on a specific level. *General* need fulfillment refers to one's

experiences in life in general and, if imagined in a hierarchy, could be equated with a personality level or global level. On the other hand, *specific* need fulfillment described one's need-based experiences in a particular situation or domain in which people regularly engage (Milyavskaya, Philippe, & Koestner, 2013). For this reason, specific need fulfillment also merits scientific attention, particularly the proposition of Vansteenkiste and Ryan (2013) that experiencing need frustration in an important life domain might be conductive of compensatory behaviors in other areas of life as a way of coping with this state.

Perceived parenting styles. Apart from individual factors, passion could also be influenced by the social environment. However, there is a paucity of research on passion and early life experiences related to parenting styles which are relevant predictors of healthy psychological development (Ainsworth & Bowlby, 1991). Perceived parenting styles might be defined as the child's perception of the parents' attitudes and behaviors (Parker, Tupling, & Brown, 1979). Two core styles can be mentioned which of major importance in relation to passion, namely, care and overprotection. Parental care refers to perceived warmth, closeness, empathy, and affectionate behavior, while overprotection refers to controlling, protective and restrictive parental behaviors (Parker et al., 1979). In addition, autonomy-support has also been proposed as a third relevant parenting style (Ngai et al., 2018).

With respect to passion, parental care, overprotection and autonomy-support have been investigated to various degrees and pertained to only some of these styles. Studies have showed that autonomy-support is positively related to HP, but not OP (Bonneville-Roussy, Vallerand, & Bouffard, 2013). Bonneville-Roussy et al. (2013) reported that psychological control (akin to overprotection) was related to OP. Finally, as for parental care, no prior study is available that could serve as a basis for this link. Still, parental care might provide people with a sense of security and a safe environment that could foster the development and appearance of HP.

Aims and Research Questions

The overarching goal of this dissertation was to examine the temporal dynamics of passion and investigate whether it is stable over time or whether it fluctuates. To achieve these goals, five empirical studies were conducted. *Study 1* focused on the adaptation of the Passion Scale (Marsh et al., 2013) which is the only available instrument that was explicitly designed to measure the two aspects of the DMP, namely HP and OP. Given recent methodological advancements and considerations, confirmatory factor analysis (CFA) and exploratory structural equation modeling (ESEM) models were also tested and subsequently compared on two large samples. *Study 2* focused on re-examining the representation and criterion-related validity, via bifactor-ESEM modeling, of the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015) which has recently been constructed to address the numerous issues pertaining to the measurement of need satisfaction and need frustration.

Study 3 investigated how general need satisfaction and need frustration would be related to HP and OP. More specifically, this study focused on general need fulfillment profiles (i.e., the within-individual interaction of the three basic psychological needs) and investigated the importance of having balanced (i.e., all needs being on the same level) versus imbalanced (i.e., not all needs being on the same level) needs. The construct validity of these profiles was tested in relation to theoretically-relevant profile predictors (i.e., perceived interpersonal behaviors) and outcomes with the latter including positive and negative affect as well as passion. *Study 4* investigated how early life experiences in the form of the perceived parenting styles of care, overprotection, and autonomy-support are related to HP and OP across two samples including adolescents and adults. Finally, *Study 5* focused on the developmental trajectories of passion to directly investigate whether level of passion fluctuate or remain stable over a period of four months. Need fulfillment and perceived parenting styles were also incorporated as individual and social determinants of the growth trajectories, respectively.

Chapter 3: An Illustration of the Exploratory Structural Equation Modeling (ESEM) Framework on the Passion Scale (Study 1)[1]

Aims

Embarking on a longitudinal research requires one to have solid "building blocks" (i.e., instruments) that serve as foundations for the research. If the psychometric properties of these instruments are not systematically investigated, then one cannot be sure whether the instruments indeed measure the intended constructs or whether there are measurement inconsistencies across different populations. For this reason, as a first step toward the overarching goals, Study 1 examined the psychometric properties of the Passion Scale (Marsh et al., 2013). Recent studies suggested that ESEM is a more suitable analytic approach compared to CFA (Marsh et al., 2013). Finally, it was also thoroughly investigated whether the dualistic representation of passion generalizes to various combinations of gender and age groups via tests of measurement invariance, multiple-indicators-multiple-causes models (MIMIC) as well as a hybrid model based on these two methods.

Materials and Methods

Participants

Sample 1. The first study relied on data from a total of 7,466 Hungarian adults (5047 female, 67.7%) who were aged between 18 and 74 ($M = 26.01$; $SD = 8.43$). For Sample 1, several samples with previously published and unpublished data were combined which has never been used for the psychometric investigation of the Passion Scale. Participants filled out the Passion Scale in relation to several activities.

Sample 2. The second study relied on a comprehensive sample of 504 Hungarian adults who use Internet at least once a week. This sample was proportionally representative in terms of gender (51.8% female), age (18 to 60 years; $M = 39.59$ years; $SD = 12.03$ years), education (19.8%: primary; 58.3%: secondary; 21.8%: higher) and place of residence (20.2%: capital city; 19.6%: county capitals; 31.9%: cities; 28.2%: country).

Materials

Passion Scale. This measure (Marsh et al., 2013) assesses the level of passion one has for a certain activity along two dimensions: harmonious passion and obsessive passion. Respondents indicated their agreement on a seven-point scale (1 = not agree at all; 7 = very strongly agree). A standardized back-translation procedure (Beaton, Bombardier, Guillemin, & Ferraz, 2000) was followed to obtain the final Hungarian version.

Statistical Analyses

Factorial structure. All analyses were performed with Mplus 7.4 (Muthén & Muthén, 1998-2015) and estimated with the robust maximum likelihood estimator (MLR). The first phase of the analyses included the examination of the Passion Scale through the comparison of CFA and ESEM model, as recommended by Marsh et al. (2009). In CFA, items only loaded on their respective factor, while cross-loadings were constrained to zero. In ESEM, items loaded on their main factors, whereas cross-loadings were "targeted" to be as close to zero as possible. Based on previous studies (Marsh et al., 2013), we expected that the inclusion of at least two correlated uniquenesses (CU) would be necessary given the wording of the items.

Measurement invariance, differential item functioning (DIF), and their combination. In the second phase, the measurement invariance of the most optimal

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measurement model was tested across the samples from the two studies to verify the replicability of the final model. Invariance tests were performed based on the extended taxonomy of Marsh et al. (2009) including a total of 13 levels of invariance with different combinations of parameters being constrained to equal across groups based on gender, age, and their interaction (gender × age). DIF was tested as a function of age within both gender groups where the factors were regressed on the linear and quadratic components of age (i.e., age and age^2) as well. Marsh, Tracey, and Craven (2006) introduced a hybrid model in which both approaches are integrated for greater precision by adding the MIMIC age effects (i.e., age and age^2) to the multigroup model (i.e., gender × age), making it particularly useful for the present investigation.

Model assessment. In interpreting the results, we relied on a combination of common goodness-of-fit indices with their adequate and excellent thresholds (Marsh, Hau, & Grayson, 2005): the comparative fit index (CFI; .90 and .95, respectively), the Tucker-Lewis Index (TLI; .90 and .95, respectively), and the root mean square error of approximation (RMSEA; .08 and .06, respectively). As for model comparison, changes (Δ) in these goodness-of-fit indices were observed with lack of invariance being present if CFI and TLI decreases are at least .010 or higher or RMSEA increases are at least .015 or higher (Chen, 2007; Cheung & Rensvold, 2002).

Results

Goodness-of-fit indices supported the superiority of the ESEM model including three CUs. Both solutions resulted in well-defined factors (ESEM: $|\lambda|$ = .416 to .893, M = .659; CFA: $|\lambda|$ = .354 to .856, M = .678). Although cross-loadings were present in the ESEM model ($|\lambda|$ = .154 to .349, M = .147), these did not undermine the definition of the factors. The three correlated uniquenesses were similar in magnitude for both models and these were also similar to previous studies. As a result of the cross-loadings, factor correlations were also reduced for the ESEM (r = .587) model relative to the CFA (r = .718). Finally, both factors were reliably in terms of Cronbach's alpha (α_{HP} = .801; α_{OP} = .883) and model-based omega composite reliability (ω_{HP} = .778; ω_{OP} = .867). Results pertaining to Sample 2 reinforced these findings.

In the following step, we addressed the issue of gender and age effects on the combined sample. Considering gender and age groups separately, complete invariance (loadings, intercepts, uniquenesses, latent variances-covariances, and latent means) was achieved in both cases as apparent by the small changes in fit indices (ΔCFI/TLI ≤ .010; ΔRMSEA ≤ .015). These results confirm the equivalence of ratings on the Passion Scale and support its use in gender or age groups (when divided into discrete categories). In the next step, we performed the same analytic sequence with the interaction of gender and age groups (3 × 2 = 6 groups). Only one intercept had to be relaxed; thus, these findings further confirm invariance of measurements by gender and age groups. The same item intercept had to be freed in the MIMIC model and in the hybrid model as well.

Discussion

Our results suggest that the Hungarian version of the Passion Scale has strong psychometric properties (e.g., factor structural and reliability). This research fits well with the increasing amount of research on ESEM (for an overview, see Marsh et al., 2014) in that ESEM could be a viable and flexible alternative to CFA and, as we demonstrated, could further be fruitfully extended to address substantially important issues.

Chapter 4: A New Look on the Representation and Criterion Validity of Need Fulfillment: Application of the Bifactor Exploratory Structural Equation Modeling Framework (Study 2)[2]

Aims

The present study re-investigated whether need satisfaction and frustration are better represented as two opposite ends of the same continuum or two distinct constructs through the application of the bifactor exploratory structural equation modeling (bifactor-ESEM) framework. The criterion-related validity of the final representation was tested in relation to indicators of wellbeing to complement this omission of Tóth-Király et al. (2018). For this purpose, the overarching bifactor-ESEM framework was used that is able to account for two potential sources of construct-relevant multidimensionality (i.e., the assessment of conceptually-related and hierarchically-ordered constructs).

Methods

Participants

The final sample consisted of 774 Hungarian respondents (501 females, 64.7%) who were aged between 18 and 73 ($M = 27.86$, $SD = 9.52$).

Measures

Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS). To assess need satisfaction and frustration, the BPNSFS was administered (Chen et al., 2015). It is a 24-item measure comprised of six factors: autonomy satisfaction and frustration, relatedness satisfaction and frustration, and competence satisfaction and frustration. Participants rated the items of a five-point scale (1 = not true at all for me; 5 = very true for me).

Positive and Negative Affect Scale (PANAS). To measure hedonic wellbeing, the 10-item Hungarian version (Gyollai, Simor, Köteles, & Demetrovics, 2011) of the PANAS was used (Thompson, 2007) which is a 10-item scale measuring general dimension of positive and negative affect with five items each. Participants were asked to rate the extent to which they experienced each emotion in general (1 = very slightly or not at all; 5 = very much).

Statistical Analyses

All analyses were performed in Mplus 8 (Muthén & Muthén, 1998-2017) and models were estimated with the robust maximum likelihood (MLR) estimator. Following theoretical suggestions (Morin, Arens, & Marsh, 2016), alternative CFA- and ESEM-based first-order and bifactor models were compared, then the latent CFA model of the PANAS was incorporated into the final solution. For additive effects, standardized regression coefficients (β) and the percentage of explained variance (R^2) were compared. For model evaluation, see Study 1.

Results

Out of all the models, the bifactor-ESEM—including one global need fulfillment factor and six specific factors—had superior fit to the data. Model including two general factors were not adequate from a statistical point of view. The need fulfillment G-factor was well-defined by the target factor loadings ($|\lambda| = .141$ to $.764$, $M = .538$, $\omega = .909$) by all scale items with the positive and the negative items contributing to the same degree. Most S-factor retained a moderate degree of specificity (relatedness satisfaction: $|\lambda| = .389$ to $.678$, $M = .539$, $\omega = .627$; competence satisfaction: $|\lambda| = .260$ to $.579$, $M = .409$, $\omega = .449$; autonomy frustration: $|\lambda| = .260$

to .517, $M = .407$, $\omega = .445$; relatedness frustration: $|\lambda| = .366$ to .548, $M = .443$, $\omega = .495$; competence frustration: $|\lambda| = .289$ to .469, $M = .399$, $\omega = .433$) with the exception of the autonomy satisfaction S-factor ($|\lambda| = .007$ to .650, $M = .217$, $\omega = .174$), suggesting that the latter does not tap into any meaningful specificity once the variance explained by the G-factor is accounted for. Overall, on the basis of better model fit and theoretical representation, the bifactor-ESEM solution was retained for the subsequent analyses.

The criterion validity results revealed that the need fulfillment G-factor predicted the two outcomes in reasonable direction. Additionally, when the S-factors were also entered into the predictive model, the proportion of explained variance increased by a substantial amount both for positive affect ($\Delta R^2 = .066$) and negative affect ($\Delta R^2 = .108$). The G-factor's effects remained stable and competence satisfaction predicted positive affect, whereas relatedness and competence frustration predicted negative affect over and above the G-factor (see Figure 1).

Figure 1. Schematic representation of the associations between need fulfillment and indicators of wellbeing
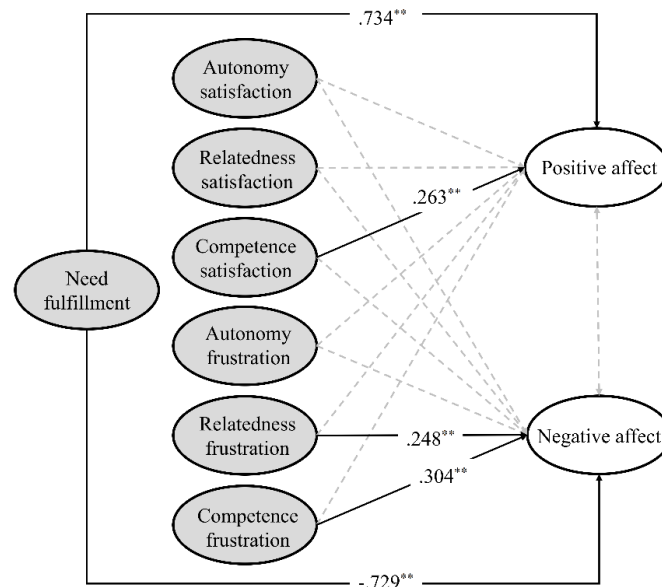
Note. For the sake of simplicity, only latent variables are shown. Variables in grayscale are part of the same bifactor-ESEM model. One-headed arrows represent regression paths. All parameters are standardized. *$p < .05$, **$p < .01$.

Discussion

Taken together, by relying on the bifactor-ESEM framework, need fulfillment was identified again as a multidimensional construct characterized by a global continuum component representing need fulfillment with need satisfaction and need frustration being at the opposite ends. Additionally, the specific combinations of satisfaction and frustration with autonomy, competence, and relatedness are also co-existent in this representation as measured by the BPNSFS (see also Tóth-Király et al., 2018). While the global need fulfillment factor was substantially related to the outcomes of wellbeing, the specific factors also had unique contributions: competence satisfaction was related to positive affect, while relatedness frustration and competence frustration was related to negative affect besides the global factor (similar to Sánchez-Oliva et al., 2017). In sum, the present study also underscores that, for a more detailed picture of the need fulfillment representation and of relations between basic psychological needs and covariates, both the global and the specific factors should simultaneously be taken into account.

Chapter 5: On the importance of balanced need fulfillment: A person-centered perspective (Study 3)[3]

Aims

The present study tested how these needs interact within individuals via latent profile analysis (LPA) and whether having equally low, medium or high level of need fulfillment (i.e., balanced need satisfaction) has additional effects over and above the aggregated need fulfillment itself. This research also documents the relations of these need profiles in relation to theoretically-relevant profile predictors (perceived interpersonal behaviors) and outcomes (affect and passion).

Method

Participants

The sample consisted of 1094 Hungarian participants (female = 746), aged between 18 and 73 ($M_{age} = 26.00$, $SD_{age} = 7.69$).

Measures

Basic psychological needs (profile indicator). See Study 2.

Perceived interpersonal behavior (profile predictor). The Interpersonal Behaviors Questionnaire (Rocchi et al., 2017) was chosen to assess individuals' subjective perception of other people's need-supportive/need-thwarting behavior. Starting with the stem "The people in my life…", the instrument measures a combination of behaviors relating to supporting and thwarting of autonomy, competence, and relatedness. Participants were able to answer on a seven-point scale (1 = Do not agree at all; 7 = Completely agree).

Positive and negative affect (profile outcome). See Study 2.

Passion (profile outcome). See Study 1.

Statistical Analyses

Latent profile analyses (LPA). All LPA models, ranging from one profile to eight profiles, were estimated with Mplus 8.0 (Muthén & Muthén, 1998-2017) with the robust maximum likelihood estimator. Upon identifying the final solution based on a variety of statistical indicators and the theoretical adequacy of the solutions, the auxiliary "BCH" function of Mplus was used to test whether the profiles differed in the levels of passion as well as affect. As for the predictors, multinominal logistic regressions were performed to test the associations between the predictors and the likelihood of membership into the different profiles using the Mplus's auxiliary "R3STEP" function for predictors. Odds ratios (OR) were derived from these analyses, indicating the likelihood of group membership into the target group relative to the referent group (e.g., an OR of 3 suggests that respondent is three times more likely to be member of the target profile compared to the referent profile).

Results

Latent Profiles of Need Fulfillment

A four-profile solution was identified as adequate which is graphically depicted in Figure 2. The four profiles differed from one another both quantitatively (i.e., high vs. low levels) and qualitatively (i.e., all factors vs. only a subset of factors) in terms of need satisfaction vs. need frustration. *Profile 1* represented 18.10% of the respondents and was characterized by high levels on all satisfaction factors and low levels on all frustration factors (Satisfied profile).

Profile 2 included 19.10% of the respondents who had high levels of relatedness satisfaction, low levels of relatedness frustration with the other factors being average (Relatedness profile). Interestingly, relatedness satisfaction was higher than in Profile 1. *Profile 3* was the most prevalent (38.76% of the respondents) with average levels on all need dimensions (Average profile). *Profile 4* (where 24.04% of the participants belong) was the exact opposite of Profile 1 with high levels on all frustration dimensions and low levels on all satisfaction dimensions (Frustrated profile). We interpreted a profile as balanced when the difference between the factor means was 0.50 SD or less. Conversely, a profile was considered imbalanced when this difference was larger than 0.50 SD (see Gustafsson, Carlin, Podlog, Stenling, & Lindwall, 2018 for a similar application). Based on these guidelines, the Satisfied, the Average, and the Frustrated profiles (Profiles 1, 3, and 4, respectively) were balanced (SDs between the factor means ≤ 0.407), whereas the Relatedness profile (Profile 2) was imbalanced (SDs between the factor means ≥ 0.530).

Figure 2. Characteristics of the latent profiles on the basic psychological need fulfillment
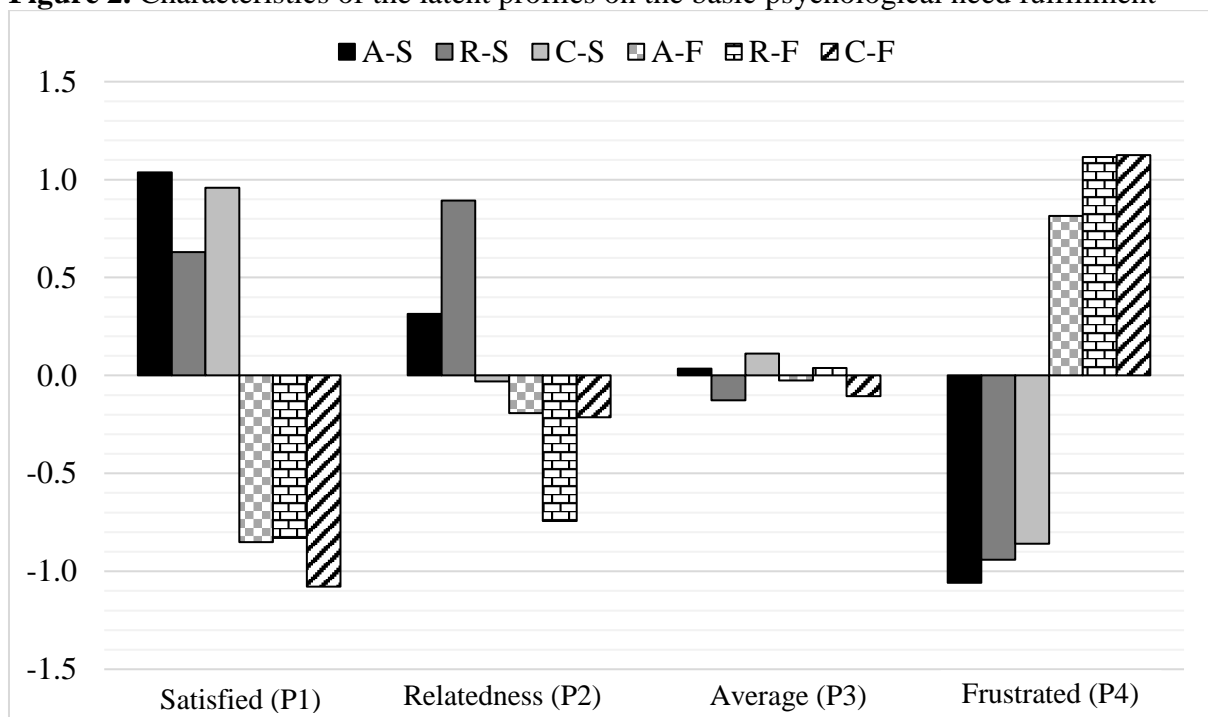
Note. Indicators are estimated from factor scores saved from preliminary measurement models with a mean of 0 and a standard deviation of 1.; Out of all participants, 198 belonged to Profile 1, 209 belonged to Profile 2, 424 belonged to Profile 3, and 263 belonged to Profile 4.; A-S: autonomy satisfaction; R-S: relatedness satisfaction; C-S: competence satisfaction; A-F: autonomy frustration; R-F: relatedness frustration; C-F: competence frustration.; P: profile.

Predictors of Profile Membership

In the next step, predictors were added to the four-profile solution. Perceived global nurturing differentiated all profiles from one another with a greater likelihood of membership into profiles showing higher levels of need satisfaction relative to lower levels of need satisfaction. For example, when comparing the Satisfied and Frustrated profiles, participants experiencing high levels of general need support had a substantially decreased likelihood of belonging to the Frustrated profile (OR = 0.010). The relatedness thwarting specific factor also differentiated between almost all profiles: higher levels of relatedness thwarting were associated with higher likelihood of belonging to the profiles showing lower levels of need

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satisfaction. For instance, respondents experiencing high relatedness thwarting are more than eight times more likely to be members of Frustrated profile relative to Relatedness profile (OR = 8.432). Other specific factors mostly differentiated the Satisfied profile from the other ones. Finally, there were some additional profile differentiators: the Satisfied profile differed from the Average profile and the Frustrated profile on the basis of autonomy support, while the Relatedness profile differed from the Average and the Frustrated profiles on the basis of competence support.

Outcomes of Profile Membership

All profiles differed with respect to negative affect: members of the Frustrated profile had the highest levels of negative affect, then the Average, the Relatedness, and the Satisfied profiles, respectively. As for positive affect, the Satisfied profile had the highest levels, followed by the Relatedness, the Average, and the Frustrated profiles. Note that the Relatedness and the Average profiles did not differ from one another in this dimension (see Figure 5.2 for a visual representation of the findings). All four profiles differed from one another in relation to OP with the Frustrated profile having the highest means, followed by the Average, the Relatedness, and the Satisfied profiles, respectively. The profiles did not differ from one another in terms of HP.

Discussion

In line with prior research conducted within the field of SDT, our results revealed four latent profiles: (1) all needs are highly satisfied, (2) only relatedness is highly satisfied, (3) all needs are average, and (4) all needs are frustrated. Overall, it appears that three "core" profiles (Howard, Gagné, Morin, & Van den Broeck, 2016) have been identified which commonly occur in different contexts: a Satisfied, an Average, and a Frustrated profile. The Relatedness profile was interpreted as a "peripheral" profile (Howard et al., 2016) which may only arise in specific circumstances or in specific subgroups. All core profiles were balanced, whereas the peripheral profile was imbalanced.

Our results provide further support for the validity of the profiles and revealed that the relative likelihood of profile membership differed as a function of perceived need nurturing behaviors. When individuals perceive that their surrounding social environment supports their needs for autonomy, competence, and relatedness (i.e., higher global levels of need supportive behaviors and lower global levels of need thwarting behaviors), they experience higher levels of need satisfaction and lower levels of need frustration which is in line with the proposition of SDT (e.g., Bartholomew et al., 2011; Ryan & Deci, 2017). Some specific factors also had differentiating role. Taken together, these results are aligned with the observation that need nurturing interpersonal behaviors play a key role in the emergence of need fulfillment profiles characterized by high levels of need satisfaction and low levels of need frustration.

The four profiles were related to different levels of negative affect and, to a smaller extent, positive affect with the more satisfied profiles having lower negative affect and higher positive affect. From the perspective of passion, similar to negative affect, more satisfied profiles were associated with lower levels of obsessive passion, aligning with the results of Lalande et al. (2017). In the state of need frustration, a number of potential coping strategies are likely to emerge to counteract these experiences, one of them being obsessive passion as a form of compensatory behavior (Vansteenkiste & Ryan, 2013). Subsequently, when need frustrated people find a potentially satisfying activity, they are more likely to engage in it in an obsessive manner which, in turn, could temporarily restore the need deficits. Finally, harmonious passion did not differ across groups. This result is not that surprising, given that need satisfaction in a general context was not associated with harmonious passion (Lalande et al., 2017).

Chapter 6: Perceived parenting styles matter: care and overprotection as predictors of passion (Study 4)[4]

Aims

Given its important role in human functioning (Bowlby, 2008), the present two-study investigation posited that the perceived parenting styles of care, autonomy-support, and overprotection (Parker et al., 1979) experienced in adolescence are predictive of harmonious (HP) and obsessive (OP) passion which are, in turn, differentially related to subjective wellbeing.

Materials and Methods

Participants

Sample 1. This sample consisted of 513 adolescents (77.4% female) aged between 15 and 20 (M = 17.24 years, SD = 1.20 years).

Sample 2. Same as in Study 1.

Measures

Passion. See Study 1.

Perceived parenting styles. The Parental Bonding Instrument (PBI; Parker et al., 1979; Tóth & Gervai, 1999) is a 25-item self-report instrument about one's recalled experiences about their parents' practices and behaviors during the first 16 years of life. Following Xu, Morin, Marsh, Richards, and Jones (2018), the PBI measured three parenting behaviors: care, autonomy, and overprotection. The instructions were slightly modified in both studies so that participants were asked to think about their experiences with their families instead of one of their parents. Items were formulated in present tense for adolescents and past tense for adults and were rated on a four-point scale (1 = very like this; 4 = very unlike this).

Subjective wellbeing. Subjective wellbeing was measured with the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; Martos, Sallay, Désfalvi, Szabó, & Ittzés, 2014). It is a short 5-item scale assessing participants' level of satisfaction with their lives in general (e.g., "The conditions of my life are excellent"). Participants rated their level of agreement on a seven-point scale (1 = strongly disagree; 7 = strongly agree).

Statistical Analyses

The proposed model was tested in Mplus 8.1 (Muthén & Muthén, 1998-2017) using structural equation modeling (SEM) with latent variables to reduce the biasing effects of measurement errors (Finkel, 1995) which, in turn, provides a more accurate estimation of the parameters. See Study 1 for model evaluation.

**Results**

Main Analyses

The hypothesized model had adequate fit to the data in both samples. Based on the correlation matrix and the regression coefficients, we constructed a more parsimonious model in which autonomy-support was removed. In the same vein, modification indices suggested that the direct paths from parental behaviors to subjective wellbeing should be freely estimated. This revised model (which can be seen in Figure 3) also had good fit in the adolescent sample (χ^2 = 979.148, df = 554; CFI = .938, TLI = .930, RMSEA = .039 [90% CI .035-.043]). Harmonious passion was still predicted by parental care, but not overprotection, while obsessive passion was

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[4] Tóth-Király, I., Gál, É., Bőthe, B., Orosz, G., & Rigó, A. (under review). Perceived parenting styles matter: care and overprotection as predictors of passion.

still predicted by both. Subjective wellbeing was predicted by parental care and harmonious passion, but not overprotection or obsessive passion.

The same model was tested in the adult sample, resulting in adequate model fit (χ^2 = 1137.272, df = 554; CFI = .931, TLI = .922, RMSEA = .046 [90% CI .042-.049]). Harmonious passion was not predicted by any of the parental behaviors, while obsessive passion was predicted by overprotection, but not care. Finally, similar to the other sample, subjective wellbeing was predicted by care and harmonious passion, but not overprotection or obsessive passion.

Figure 3. Results of the structural equation modeling analyses
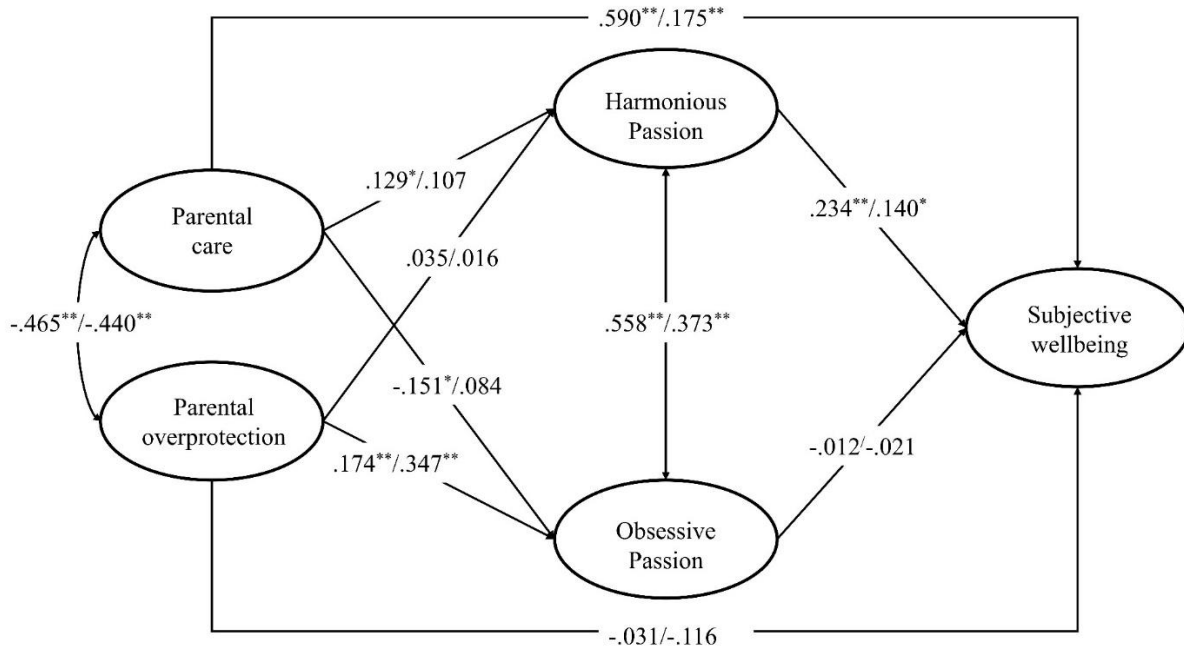
Note. Circles represent latent variables, whereas scale items are not shown for the sake of simplicity. One-headed arrows represent regression coefficients, two-headed arrows represent correlations. All coefficients are standardized. Numbers before the slash sign ("/") refer to Sample 1 (i.e., adolescents, N = 513), while numbers after the slash sign refer to Sample 2 (i.e., adults, N = 504).; *$p < .05$; **$p < .01$.

Discussion

The results partially supported the hypotheses in both samples: parental care positively predicted harmonious passion among adolescents (but not adults) and overprotection positively predicted obsessive passion in both samples which is in line with prior studies on parental behaviors and addiction (Grant & Kim, 2002). Harmonious passion positively predicted subjective wellbeing, while obsessive passion was not related to it, both aligning well with prior studies (Vallerand, 2015). Autonomy-support was not related to passion which is in contrast with the study of Mageau et al. (2009). A potential explanation might lie in the understanding of autonomy-support as per the guidelines of SDT (Soenens & Vansteenkiste, 2010) or as a form of laissez-faire parenting characterized by lack of structure, involvement and guidance.

Chapter 7: Longitudinal trajectories of passion and their individual and social determinants: A latent growth modeling approach (Study 5)[5]

Aims

As the direct examination of the temporal dynamics of passion has not been in the focus of research despite the fact that these investigations could provide important information about its nature, this study directly examined the ongoing development of passion over a period of four months via latent growth modeling. The contribution of individual (need fulfillment) and social (perceived parental styles) determinants to the growth trajectories were also considered.

Materials and Methods

Procedure and Participants

A total of 205 adult university students (64.4% female), aged between 19 and 41 (M = 22.14, SD = 2.54), participated in this study and filled out paper-pencil questionnaires during a four-month period with one data point in each month.

Measures

Passion. See Study 1

Basic psychological need fulfillment. See Study 2.

Perceived parental styles. See Study 4.

Statistical Analysis

Analyses were conducted in Mplus 8.1 (Muthén & Muthén, 1998-2017) with the robust maximum likelihood estimator (MLR). To assess the longitudinal trajectories of passion, latent growth modeling (LGM; Bollen & Curran, 2006) was performed in which two growth factors were estimated: an intercept factor and a linear slope factor. The intercept reflects the mean initial value, while the slope reflects the change over time. Time-invariant predictors were then incorporated into the models and were allowed to influence the growth factors. Models were estimated for harmonious passion (HP), obsessive passion (OP), and the passion criteria (PC) separately. See Study 1 for model evaluation.

Results

Results showed that all LGM models had good fit to the data (CFI and TLI > .950, RMSEA < .080). These results revealed highly similar information across HP, OP, and PC. The mean intercept factors were significant, but the mean linear slope factors were non-significant, suggesting that passion levels remained relatively high and stable for HP and PC as well as moderate and stable for OP (see Figure 4). The significant variance parameter of the intercept showed inter-individual variability, suggesting that individual trajectories significantly differed from one another around the estimated mean trajectory. In addition, time-specific explained variances (R^2) indicated that the growth factors provided a relatively adequate depiction of the repeated passion measures, ranging from 39.1% to 90.8% for HP, 48.0% to 84.3% for OP, and 45.7% to 82.2% for PC.

The incorporation of the predictors revealed several effects which mostly pertained to the intercept factor which might be attributed to the fact that predictors were measured in Time 1. The intercept factor of HP was positively predicted by need fulfillment ($\beta = .362$, $p < .01$) and parental autonomy ($\beta = .264$, $p < .01$). The intercept of OP was positively predicted by

parental autonomy ($\beta = .395$, $p < .01$) and overprotection ($\beta = .230$, $p < .05$). Finally, the intercept of PC was positively predicted by parental autonomy ($\beta = .238$, $p < .05$).

Figure 4. Passion trajectories
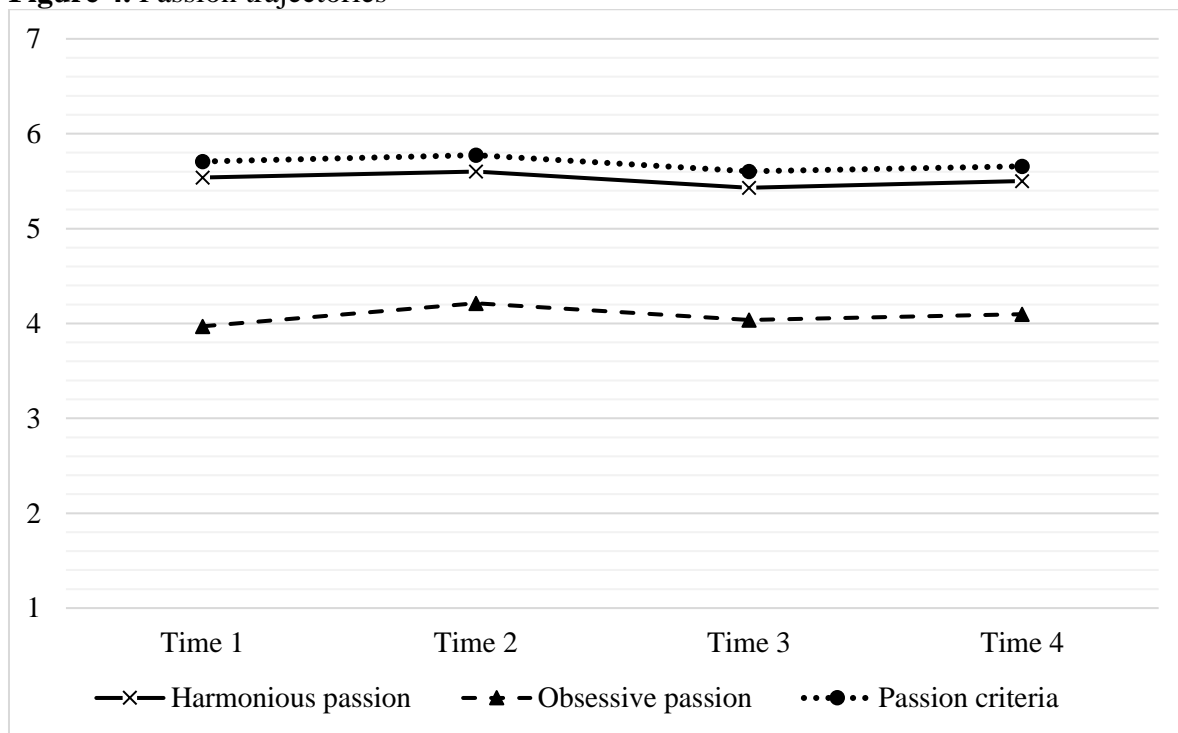
Note. Numbers on the horizontal axis represent time points, while numbers on the vertical axis represent the range of answer options for the Passion Scale. Models were estimated separately, but are depicted in the same figure for the sake of simplicity.

Discussion

Overall, all three forms of passion (harmonious passion, obsessive passion, and passion criteria) had elevated initial values, suggesting that participants were highly passionate. None of the slope factors were significant, indicating that passion levels remain high and stable. These findings are in line with prior studies which indirectly measured change (e.g., Carbonneau, Vallerand, Fernet, & Guay, 2008; Lalande et al., 2017). Mageau et al. (2009) examined the initial development of passion (i.e., respondents who experienced the activity for the first time) and found that 35% of the children developed a moderate level of passion for music after a 5-month period. On the other hand, Schellenberg and Bailis (2015) reported that academic passion changed very little over the course of a semester for most of the first-year students. The present study nicely complements the above-mentioned ones in that the former investigated the initial development of passion (from non-passionate to passionate), while the latter examined how passion for a previously engaged activity manifests in a new context. Adding to them, the present study provides a "snapshot" of the extent to which passion changes in a sample of participants who were thought to have been engaging in their activities for quite some time.

As for the predictors, autonomy-support predicted all passion factors, further suggesting that a clearer delineation is needed in relation to laissez-faire parenting. Overprotection predicted OP similar to prior studies on addiction (Grant & Kim, 2002). Need fulfillment predicted HP, suggesting that having satisfactory experiences in a significant life domain might "aid" participants in finding an activity in which they can engage in a harmonious and more optimal way.

Chapter 8: General Discussion

In the last 15 years, scientific interest and research in passion grew greatly with the introduction of the Dualistic Model of Passion (DMP; Vallerand et al., 2003) which was aimed to be a response to the call of Seligman and Csikszentmihalyi (2000) to identify factors that could contribute to optimal functioning and a more fulfilling life. Passion research has been successful in demonstrating the distinctiveness of harmonious (HP) and obsessive passion (OP) and explaining how these two forms of passion lead to different outcomes across various fields (see Curran et al., 2015; Vallerand, 2015). Passion research also provided support for the initial development of passion (Mageau et al., 2009). Still, despite these results, less is known about the temporal dynamics and the ongoing development of passion which has not been explicitly tested. Thus, the aim of this dissertation was to provide a comprehensive examination of the ongoing development of passion. To this end, five empirical studies were conducted using cross-sectional and longitudinal data based on a variety of community and comprehensive adolescent and adult samples.

Discussion of General Findings

The temporal stability of passion. Passion is thought to be malleable, suggesting that it might change over time as opposed to, for instance, more stable personality traits (e.g., Costa & McCrae, 1994). This temporal change (regardless of being an increase or a decrease) might not only occur during initial development (i.e., when ones becomes passionate from non-passionate), but in later stages of activity engagement as well (i.e., when one becomes non-passionate from being passionate). Despite this assertion, however, the ongoing development of passion in this dissertation was not characterized by a dynamic change, but rather by stability. This is in contrast with Mageau et al. (2009) who focused on the initial development of passion, but agrees with Schellenberg and Bailis (2015) and Martin (2016) who both focused on the ongoing development. Despite not explicitly examining passion changes, several studies have reported moderate-to-high associations between passion scores measured at two different time points (e.g., Carbonneau et al., 2008; Lavigne, Forest, & Crevier-Braud, 2012) among respondents who were thought to have been passionate for quite some time. It appears that once passion is developed, it remains on the same level, at least over the course of the four-month period of the present dissertation.

In general, therefore, these various studies provide complementary information to one another with results converging in the same direction regarding an overarching developmental model of passion (see Figure 5 for an illustrative depiction). As suggested by Mageau et al. (2009), initial passion development might be a dynamic process during which people engage in their selected activity for the first time and they go from being non-passionate to being passionate. However, the ongoing development of passion might be a much slower process compared to the initial development as it involves a continued engagement for the maintenance of passion. This proposition is supported by the activity involvement models of Bloom (1985, see also Vallerand, 2015) and Côte (1999) describing sustained activity engagement. The findings of the present dissertation provide evidence attesting these models. Figure 5 depicts the initial, more dynamic development followed by three distinct potential pathways: (1) passion remains high and stable; (2) passion remains moderate and changes a bit; and (3) passion changes substantially and extinguishes.

Figure 5. A graphical illustration of the developmental model of passion
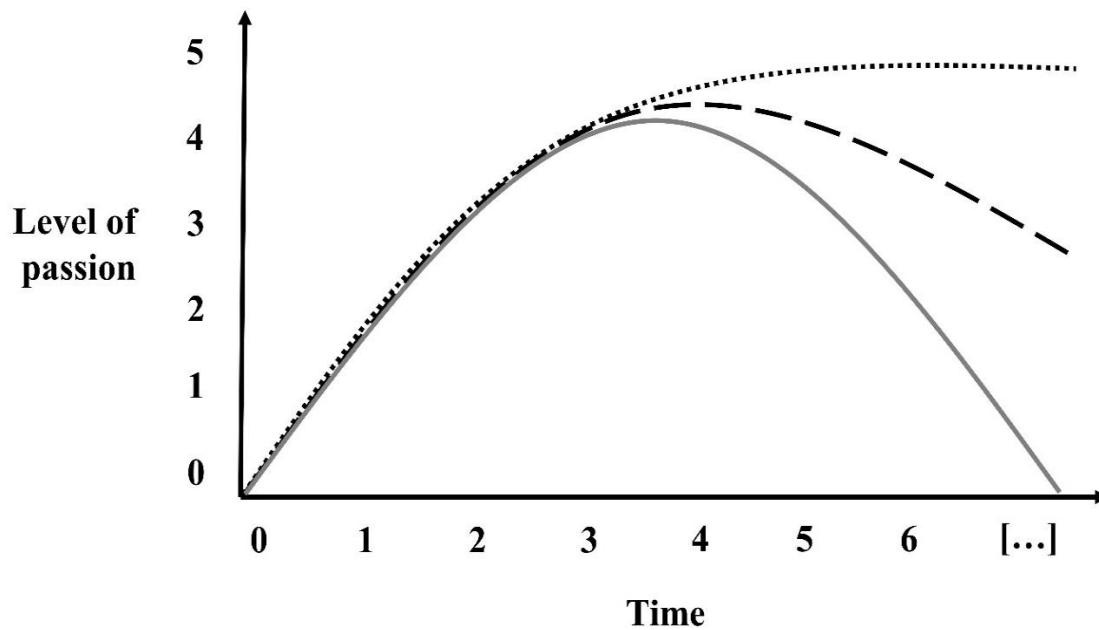
Note. Time and level of passion increments are for illustrative purposes.

The complex relationship of need fulfillment and passion. Apart from the longitudinal changes themselves, the DMP also asserts that individual and social factors influence both the initial and the ongoing development of passion (Vallerand, 2015). Chief among the individual factors is need fulfillment as the highly fulfilled needs of autonomy, competence, and relatedness are thought to be conductive of an optimal, autonomous internalization process resulting in HP, while unfulfilled needs are thought to be related to a suboptimal, controlled internalization process, leading to OP.

Another important finding was that membership to the more frustrated profiles was associated with higher levels of OP. This result is consistent with the theoretical work of Vansteenkiste and Ryan (2013) as well as the empirical work of Lalande et al. (2017). When people experience need frustration (i.e., forced to act or behave in a certain way, feel rejected or isolated, and feel like a failure), they are in a need-deprived state in which they might resort to the use of coping mechanisms that could potentially counter this deficit (Vansteenkiste & Ryan, 2013). As need frustrated people become more sensitive to environmental cues that have the potential to counter this deficit state (Vansteenkiste, Niemiec, & Soenens, 2010), they could see their passionate activity as a route toward need satisfaction. However, this solution is likely to be inflexible and they might be less likely to find an actual solution and instead begin a vicious circle.

The results of the longitudinal study did not align with the results mentioned above. It was hypothesized that similar mechanisms might be at play in the case of specific need fulfillment; that is, when people's needs are frustrated in an important life domain (e.g., work), they were thought to seek out an activity outside this domain with the aim of restoring their sense of need fulfillment. However, based on our results, this was not the case. These apparently contradictory findings suggest that when people's needs are fulfilled in an important life domain, they might experience a sense of freedom, effectiveness, and care that allows them to explore other activities in other life domains. For example, one experiences need fulfillment at a need-nurturing work environment, this worker might start to engage in, for instance, sport in a harmonious way. Having fulfilled basic psychological needs in an important life domain

might mean that people have a domain in which they are able to develop their skills and their self-efficacy which might serve as a basis for them to "try themselves out" in other life areas.

Synthesizing prior (e.g., Lalande et al., 2017) and current findings, it can be suggested that the relationship between need fulfillment and passion might be interpreted in a three-fold manner. *First*, when basic psychological needs are interpreted on a general, global level, compensatory mechanisms might be at play that might orient people toward OP. *Second*, having basic psychological needs within the same domain as passion might reveal how one form of passion might turn into the other form and vice versa. *Third*, when basic psychological needs are interpreted within an important life domain that is not related to passion, it might be indicative of a general background experience that might allow people to have harmonious experiences in other domains of life as well. Arguably, the present dissertation is only able to provide a small step toward understating these complex relationship patterns. Future studies are needed to examine whether these results are country-specific or more generalizable.

Perceived parental behaviors matter with respect to passion. Finally, besides individual characteristics, the social environment is also thought to play a key role in the development and maintenance of passion. The present dissertation corroborates this proposition by focusing on parents as important agents of the environment. Parental *care* positively predicted HP among adolescents, suggesting that parents might be able to provide children with a sense of security and fulfill their needs through positive parenting practices (Baumrind, 1971) so that children would engage in activities in a contingency-free manner. Still, HP and care were not related to one another in the cross-sectional adult and longitudinal adult samples which might suggest that the positive effects of parental care might only manifest when children live with their families. Future longitudinal studies should be conducted to test this proposition.

Parental *overprotection* predicted OP, providing evidence for the effects of negative parenting practices. When parents are overprotective, they might not provide children with enough opportunities to explore their environments and to become engaged in activities of their choice. Instead, overprotective parents might orient their children toward a particular activity that they think might be suitable (Baumrind, 1971). Children experience this lack of volition or control and might seek out activities which might help them restoring their sense of control. Feeling deprived of choice might lead children to engage in an activity in an obsessive manner so that they might experience volition. While the effects of overprotection were small, it was consistent across studies, suggesting that parental overprotection might be a predictor of OP.

Results pertaining to *autonomy-support* were inconsistent and aligned less with previous studies, potentially shedding new light on the interpretation and conceptualization of autonomy. While prior studies showed that autonomy-support is related to HP (but not to OP; see Vallerand, 2015), the present dissertation painted a somewhat different picture. Both HP and OP were associated with autonomy in the longitudinal study (but not the cross-sectional). For this reason, these results should only be interpreted cautiously. This inconsistency might be related to the interpretation of autonomy-support which might have been understood as permissive or laissez-faire parenting style (Baumrind, 1971). This style is characterized by low supervision and lax expectations where parents might even be unconcerned of their children's life and do not establish rules or guidelines for them. At the same time, it has to be noted that prior results on permissive parenting appear to be inconsistent (Uji, Sakamoto, Adachi, & Kitamura, 2014) compared to care and overprotection, echoing the present findings. Overall, early parental experiences do not appear to have a substantial role in influencing one's passion.

Limitations and Future Directions

The present dissertation is not without limitations which should be addressed. First and foremost, while the DMP is a well-established theory based on empirical data, future studies should aim to elucidate the differences and fine-grained differences between passion,

engagement, and addiction. Future studies should strive to recruit participants with more diverse background characteristics. Replications in other countries and cultures should also be performed. Comparing younger and older individuals might also reveal important information about the generalizability of passion changes. All studies were self-reported and questionnaire-based which could lead to potential biases (e.g., social desirability bias or recall bias), thus these should be taken into consideration in the interpretation of the results. Given the questionnaire-based design, it is also important to mention that causality cannot be inferred from the present findings. Another future endeavor would be to conduct 360-degree multi-informant assessment involving the relevant social agents who might potentially influence one's activity engagement (see Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016).

Diary studies might provide a useful way to explore the more nuanced changes in passion during the initial development. Future longitudinal studies should take the potential role of life events into account. An ideal longitudinal study would involve following participants for years which would allow for a more comprehensive examination of passion trajectories. It might also be a worthwhile future goal to examine whether the two types of passion can transform (i.e., HP into OP or vice versa). As for the predictors of the trajectories, a bi-directional relation might be possible between passion and need fulfillment. Future studies should test this assumption. The assessment of parenting styles focused on the perception by the participants rather than the actual parental behavior. Although predictors used in the present dissertation were selected on the basis of their theoretical relevance, there are certainly other variables that could influence passion. Future studies should strive to include these additional variables. There might even be socio-cultural characteristics (i.e., availability and popularity of an activity) that might influence activity selection itself.

Practical Implications

The findings of the present dissertation—that both need fulfillment and perceived parenting behaviors influenced passion—provide more specific suggestions for intervention strategies. One's subjective need-related experiences are shaped by the surrounding social environment (Ryan & Deci, 2017), focusing on the elements of autonomy-support (reflecting on the need for autonomy) as well as the provision of structure (reflecting on the need for competence), and involvement (reflecting on the need for relatedness). All three of these elements have unique characteristics (Ntoumanis, Quested, Reeve, & Cheon, 2017): *autonomy-support* refers to the acknowledging the perspective of others, using a non-controlling informational language, offering meaningful choices, giving a meaningful rationale when explaining a decision. *Structure* involves the creation of a predictable and consistent environment, the adequate communication understandable directions, boundaries, expectations and guides as well as the provision of constructive feedback. Finally, *involvement* refers to being dedicated to and being personally interested in other people by investing time, energy, and resources in them as well as interacting with them in a friendly and warm manner.

Several scholars have underscored the importance of autonomy-supportive behavior via experimental and intervention studies (see Ryan & Deci, 2017). At the same time, although autonomy-support is necessary, it is not a sufficient component for optimal functioning. Some experimental and intervention studies (see Stroet, Opdenakker, & Minnaert, 2013 for a review) have already been conducted with respect to need-supportive behaviors that reflect on either two or all three psychological needs. These studies reported that the interventions were effective and that the behavior of the target groups (e.g., teacher or coaches) changed not just on the basis of self-report from the participants, but from the perspective of students and external observers alike. Overall, one potential avenue for practical implications would be the incorporation of need nurturing, as opposed to need controlling, experiences into practice.

Taking a step back from SDT, interventions should also seek to enhance parents' interpersonal behavior so that they would demonstrate more parental care as well as adequate levels of autonomy-support and protection. Interventions should aim to foster parental behaviors which is able to create a caring climate characterized by emotional warmth, responsiveness, and concern for others. While parental protection is important, parents should not strive to be overprotective or overcontrolling, but rather should aim to find a balance. Intervention programs have already been developed to minimize the risk factors associated with poor parenting (Webster-Stratton & Herman, 2010).

Conclusion

In conclusion, the present dissertation provided five empirical studies for a more detailed understanding of the ongoing development of passion. One important contribution of this dissertation is that the ongoing development trajectories of passion are likely to show high stability over the course of a four-month period. In addition, this dissertation also documented the role of need fulfillment as well as perceived parental behavior with respect to passion both in cross-sectional and longitudinal settings. Finally, this dissertation might be used as a foundation in future applied studies in fostering passion which might, in turn, lead to a more satisfactory life.

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List of publications directly not used in the dissertation

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