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Changes in the first year

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Changes in the first year:

What changed in commitment trajectories and experiences of first year students in the Psychology bachelor, since implementation of education innovations?

Research Rapport

Innovation project Mandy van der Gaag

(subproject 3)

23 December 2014

Mandy van der Gaag & Saskia Kunnen

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Preface

This rapport is part of a project to study the educational innovations implemented in the department of Psychology of the University of Groningen (subproject 3 of the innovation project by Mandy van der Gaag, for an overview of the complete project, see van der Gaag, Kunnen & van Geert, 2014).

This study aims at examining general differences between three academic years, during which time several education innovations were implemented. A detailed analysis of the various innovations and its effects on students is not the purpose of this study. This study shows the general changes across the three years, which coincides with the implementation of several innovations. In a forthcoming study (subproject 4), the qualitative content of experiences of students is analyzed to gain more insight in the specific contributions of the various innovations.

- Mandy van der Gaag, 23 december 2014

Abstract

The department of psychology at the University of Groningen has implemented several innovations in the curriculum, in order to meet the requirements of the performance agreements the university has made with the Ministry of Education, Culture, and Science. One of the main aims is to reduce drop-out rates and at the same time improve quality of higher education.

To gain some insight in the possible effectiveness of the implemented educational innovations, we investigated changes in the types of commitment trajectories that occur among first year psychology students and changes in the occurrence of different types of experiences (positive, negative, mixed and neutral) across the three academic years (2011-2012, 2012-2013, 2013-2014). The first wave of innovations were implemented in 2012-2013, a second wave of innovations was implemented in 2013-2014.

Using cluster analysis, three types of commitment trajectories were found. Results show a significant change in the distribution of the three different types of trajectories across the three academic years. In 2011-2012, students show fluctuating commitment trajectories, accompanied by both weak and strong commitments. In 2012-2013 and 2013-2014, a large proportion of students show stable and strong commitment trajectories, and the occurrence of a weak, fluctuating commitment trajectory decreases with respect to 2011-2012.

Across the three academic years, we find differences in the occurrence of positive, negative and mixed experiences. In academic year 2012-2013, the occurrence of positive experiences is higher, and the occurrence of negative and mixed experiences is lower, than in the year 2011-2012. However, these tendencies do not seem to persist toward academic year 2013-2014, in this year the differences with 2011-2012 are in the same direction as the differences we find for 2012-2013, but smaller and not significant.

The results show a relation with the implementation of the educational innovations. Since the innovations were implemented, there are fewer students with periods of doubts about the choice of education they have made, fewer students who experience continuous doubts, and more students who have a strong and stable commitment. The experiences of students have become more positive, and less negative since the implementation of innovations, though this only seems to be the case in academic year 2012-2013, this result seems to disappear again in 2013-2014.

It is concluded that the educational innovations coincide with positive developments for students. However, caution is warranted for attribution of causality, because of the lack of a simultaneous control-group. Further study of the content of experiences is recommended to gain more insight in the possible effects of specific innovations.

Introduction

In recent years, the Dutch government has placed high demands upon Dutch universities. Universities need to reduce drop-out rates, and make sure that students graduate in the time allotted for finishing a bachelor and master, allowing for little delay. At the same time, the quality of higher education needs to improve. In order to achieve these ambitious goals, the department of Psychology of the faculty of Behavioural and Social Sciences at the University of Groningen has implemented innovations in its educational methods, in accordance with the performance agreements the university has made with the Ministry of Education, Culture, and Science.

Innovations

In the first year of the psychology bachelor, several educational innovations have been implemented (coördinatieteam innovatiefonds psychologie, 2013). Innovations in this first year may be particularly relevant for reducing the drop-out rate, because a large proportion of drop-out occurs in this year (Overwijk, 2011).

One innovation that can be considered fundamental for changing the way that students learn, is the implementation of learning communities. The core of a learning community is that learning becomes part of a community process (Brower & Detting, 1998) where learning is socially constructed, rather than transmitted from teacher to student, making learning communities a potentially powerful educational innovation (Zhao & Kuh, 2004). For example, among many studies showing the effect of learning communities, Zhao and Kuh (2004) found learning communities to have a substantial effect on multiple outcome measures of students' skill, knowledge and overall satisfaction with the college experience.

The other innovations that have been implemented in the first year of the psychology bachelor consist mostly of course improvements. In general, first year courses gained more assignments and opportunity for practice. Also, for some classes, more contact hours were established. In the academic skills course, substantial changes were made at the level of the learning goals, creating better integrated assignments which facilitate interaction in the learning community.

An implemented innovation of a different type was the restructuring of the academic year. In the old structure of the academic year, when the exam period was approaching, some students were tempted to study only for the resits, because resits took place right after the normal exams. To prevent this in the new academic year structure, the resits take place in the middle of a block* instead of at the end of a semester.

*a block is half a semester, 1/4 of an academic year, during which lectures are held. At the end of each block, exams take place.

Present Study

To gain some insights in the possible effectiveness of these innovations, this study investigates what has changed since the implementation of these innovations, with respect to the educational commitment and the experiences of the first year students of psychology. As we will argue, the development of stable, strong commitments in the domain of education is important for the development of students, and we view successful personal development in the domain of education as an important indicator for the quality of education. The experiences students have during their studies are related to changes in commitment and are also viewed as an indicator of educational quality. By investigating differences in these indicators, we aim to unravel the impact of the innovations, from the viewpoint of the first year psychology student.

Commitment. The concept of commitment is derived from identity development literature, originating from Erikson (1968) and Marcia (1966). Commitment is relevant in several domains of life (Goossens, 2001; Bosma, 1985), including education and career. As emerging adults, first year students have to make many important choices (Arnett, 2007). Choosing an education and future career may be one of the most important identity domains in which emerging adults have to make choices, but many adolescents struggle with this choice (Feldman, 2003), and not all succeed in developing stable, mature commitments in this domain (Kunnen, 2009). Research has shown that weak commitments are often accompanied by negative indices of wellbeing, such as psychological complaints, low self-esteem, etc. (Schwartz et al, 2011), while strong stable commitment are associated with positive indicators of wellbeing, and academic success (Berzonsky & Kuk, 2005; Klimstra, Luyckx, Germeijs, Meeus & Goossens, 2012).

In this study we focus on commitment in the domain of education. We have operationalized this as the sense of certainty students feel for the education that they have chosen. Commitment can be more or less stable throughout the first year, with instability indicating periods of doubt, students not being sure what to think of the education they have chosen, while stability indicates certainty of the choice made. Besides stability, commitment towards the chosen education can also be generally strong or weak throughout the year, with stronger commitment being an indication of certainty and weak commitment being an indication of continuous doubt.

We investigate what types of commitment trajectories, in terms of commitment stability and commitment strength, exist among first year students, and if the occurrence of these trajectories changed since the implementation of the innovations. If the innovations were successful in making students more certain of their chosen education, we would expect more instances of strong, stable commitment trajectories and less instances of weak, fluctuating trajectories.

Experiences. Theoretically, commitment develops through experiences adolescents have in interaction with the environment (Bosma & Kunnen, 2001). An experience can be an affirmation of the educational commitment, or could pose a conflict with the existing commitment. In the case of first year students, an example of an affirming experience could be a great lecture that makes a student feel certain this was indeed the right choice of education. A conflicting experience could be a failed exam, which makes a student feel that this education may not be the right choice after all. It has been argued that emotions are an indicator of whether a conflict is experienced, and that multiple conflicts, lead to weaker commitments in the long run (Kunnen, 2006). It has also been shown that experiences are directly related to changes in educational commitment (van der Gaag & Kunnen, 2012; van der Gaag, Kunnen & Pijl, 2014). Positive experiences are on average followed by an increase in commitment, negative and mixed experiences by a decrease in commitment, and not much changes after a neutral experience.

In this study, we will investigate what has changed in the occurrence of these four types of experiences (positive, negative, mixed and neutral) since the implementation of the education innovations. The increased social support of the learning communities may help students regulate emotions accompanying certain events, reducing negativity felt after experiences like failing an exam, and the improvements in courses may provide more positive experiences in the first year. If the innovations overall were beneficial for the way students experience their education, we expect to see an increase in the occurrence of positive experiences and a decrease in the occurrence of negative and mixed experiences.

Research Question

Do differences exist across the three academic years, with respect to educational commitment and experiences of students?

Sub questions:

- a) What kind of commitment trajectories can we distinguish, in terms of commitment strength and commitment stability?
- b) Are there differences in the occurrence of different types of commitment trajectories across the three academic years?
- c) Are there differences in the occurrence of different types of experiences across the three academic years?

Method

Participants

Our sample consists of 80 first year psychology students of the University of Groningen. The mean age of this group was 19.8 (SD = 2.0) at the beginning of the study. The large majority of participants are female (84%, versus 16% male). Eight participants were excluded from the analysis because they participated in less than 15 measurement points, the included 72 participants had 30 measurement points on average (SD = 2.0).

Implementation Innovations

Educational innovations were implemented in the psychology department of the University of Groningen in academic year 2012-2013. In this year, learning communities were implemented, along with improvements to several courses. These innovations persisted in the subsequent academic year, 2013-2014. In this year other improvements to courses were added, and there was a restructuring of the academic year. For an overview of the planned changes see the document by coördinatieteam innovatiefonds psychologie, 2013.

Data Collection

Data collection was completed in three cohorts, the first cohort of first year students participated in academic year 2011-2012 (N=12), before the implementation of innovations. The second cohort participated in academic year 2012-2013 (N=25), after implementation of the first wave of innovations. The third cohort participated in 2013-2014 (N=35) after implementation of the second wave of innovations. We collected weekly diary and questionnaire data throughout three quarters of the first academic year. Data collection started in November, and continued until June, for a total period of seven months, see figure 1 for a schematic overview of the data collection.



Figure 1. Schematic overview of data collection.

Measures

The participants were asked to fill out an online questionnaire every week. This questionnaire contained a qualitative and quantitative section. The students described an important experience that influenced the way they feel about their studies, rated 18 emotions accompanying this experience on a six-point scale, and answered multiple choice questions regarding their exploration and commitment in the domain of education. For the purpose of this research report, we only use the quantitative measure of emotions and the measurement of commitment in the domain of education. The item used to measure commitment is 'Do you stand by your choice for this particular education?' (in Dutch: '*In hoeverre sta je achter je keuze voor deze studie?*') from the Repeated Exploration and Commitment Scale in the domain of Education (RECS-E; van der Gaag & Kunnen, 2013). The question is answered on a scale of 1 (not at all) to 6 (very much).

Analyzing Types of Commitment Trajectories

To analyze what type of commitment trajectories can be found among first year students, we clustered the trajectories of all participants. We used two variables to describe a trajectory of each individual: one variable representing the general strength of an individuals' commitment, and one variable representing the stability of an individuals' commitment.

Clustering variables. We used the average of the commitment scores across the time for each individual as a measure of the general strength of commitment. As a measure of stability of an individual commitment trajectory, we used the variability of the trajectory. This is defined as the average absolute change in commitment from one week to another. For example if an individual first scored 5, then 3, and then 5 again, the change scores are -2, then 2, and the variability score for this person would be 2.

Standardization. We standardized the variables to equate the ranges and variance in both variables, because variables with larger ranges and variances may have a larger influence on the eventual clustering (Henry, Tolan & Gorman-Smith, 2005). We applied a type of standardization that was found to be superior by Milligan and Cooper (1988): dividing the variable by the range of this same variable.

Clustering method. There is not one universally accepted clustering method that is superior in every situation (Milligan & Cooper, 1987). We chose Ward's method (1963) using squared Euclidian distances, because this method specializes in reducing within cluster variance and performs well in most situations (Milligan & Cooper, 1987). We determined the optimal amount of clusters by applying the 'elbow method': plotting the within sum of squares per cluster solution in to a graph and determining the sharpest 'kink' in the graph. We performed a k-means cluster analysis after

Wards method, to fine-tune the clustering results and determine the most optimal cluster membership. The cluster means obtained from the Ward clustering solution was used as input for the k-means cluster means.

Differences in Trajectories between Academic Years

For each cohort (i.e. each academic year), it was determined how often each type of trajectory occurred. The distribution of individuals showing the different types of commitment trajectories was determined for each academic year. Subsequently, it was determined whether differences exist in these distributions, using a chi-square test.

Analyzing Experiences

Each experience for each person was categorized as being either positive, negative, mixed or neutral using a categorization scheme developed by Yvette Pijl (2014). The input of this categorization scheme is the scores on the 18 emotions that accompany the weekly reported experiences. Then, using an elaborate set of rules, the categorization scheme categorizes the experience in one of the four categories. A positive experience means that the positive emotions accompanying the experience were strong on average, and the negative emotions were weak. A negative experience is the opposite; an experience with strong negative and weak positive emotions. A mixed experience is when both positive and negative emotions are strongly present at the same time. A neutral experience is when both positive and negative emotions are weak.

Differences in Experiences between Academic Years

For each person, it is calculated what percentage of his or her experiences is positive, the percentage of experiences that is negative, percentage of mixed, and percentage of neutral experiences. Each individual now has four scores, one score on the proportional occurrence of each type of experience throughout their first year. For example, over the whole first year, one student could have 40% negative experiences, 30% positive experiences, 20% neutral and 10% mixed. Then, for each type of experience, the average of the proportional occurrence is calculated, for participants in each academic year separately. For example in cohort one, on average 40% of the experiences of students is positive, but for cohort 2, 30% of the experiences is positive on average. Using ANOVA, it is tested whether differences exist between the three academic years in the average proportional occurrence of different types of experiences.

Results

Types of Commitment Trajectories

Ward's hierarchical cluster analysis on the commitment trajectories of all participants indicated an optimal cluster solution of three clusters. For each cluster the individual commitment trajectories are shown in figure 2, a summary of the cluster properties is provided in table 1.

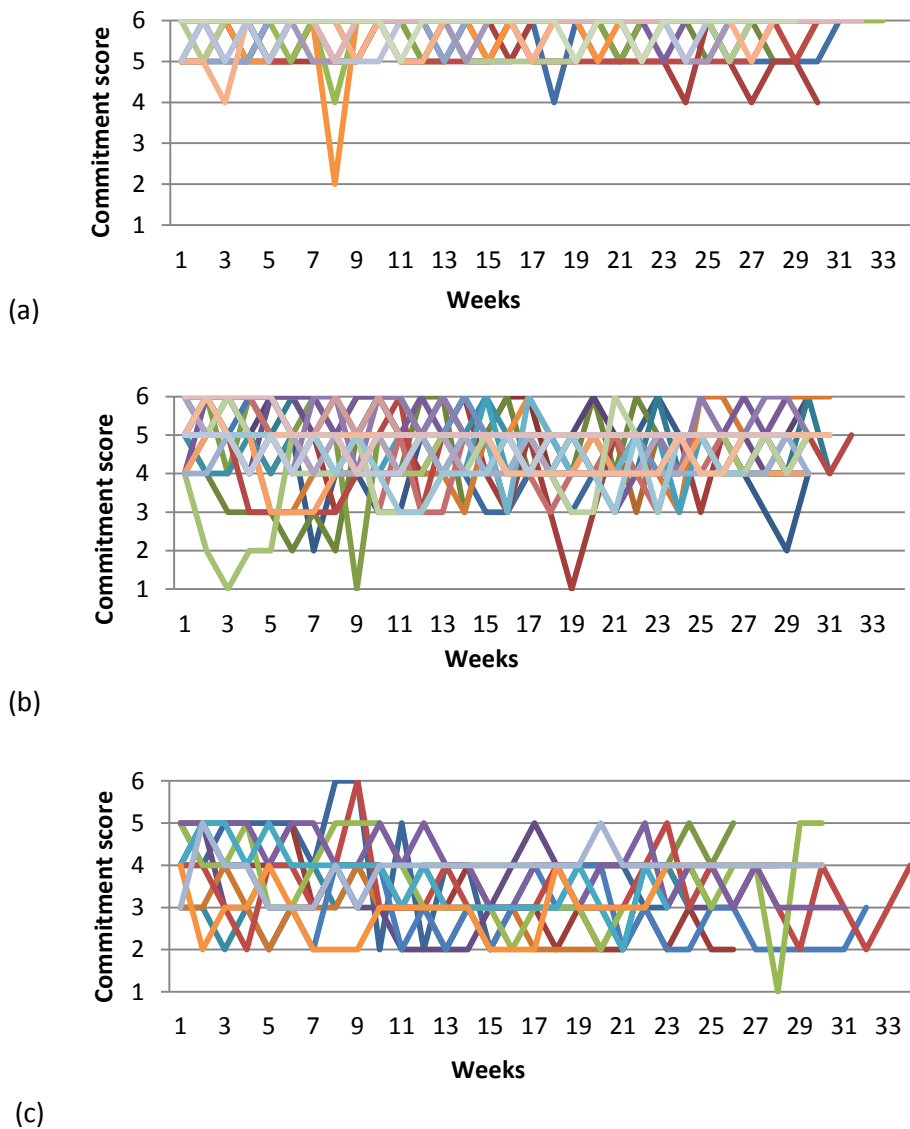


Figure 2. Individual trajectories in a three cluster solution: cluster 1 – high and stable commitment (3a), cluster 2 – high and fluctuating commitment (3b), cluster 3 – low and fluctuating commitment (3c).

Table 1

Summary of participation in the different clusters, the average commitment strength for each cluster, and commitment variability for each cluster.

| | Commitment Strength | | Commitment Variability |
|-------------------------------|---------------------|------------|------------------------|
| | N (perc.) | M (SD) | M (SD) |
| Cluster 1 (high, stable) | 27 (38%) | 5.8 (0.20) | 0.20 (0.19) |
| Cluster 2 (high, fluctuating) | 32 (44%) | 4.7 (0.33) | 0.51 (0.26) |
| Cluster 3 (low, fluctuating) | 13 (18%) | 3.5 (0.39) | 0.60 (0.21) |

The commitment scores of individuals in this first cluster are relatively stable over time, these individuals show low variability, $M = 0.20$ ($SD = 0.19$), as compared to the second, $M = 0.51$ ($SD = 0.26$), and the third cluster, $M = 0.60$ ($SD = 0.21$). Though individuals in the second and third cluster show similarity in the relatively large variability, the second and third cluster differ in the average commitment strength scores, with individuals in the third cluster scoring lower on average, $M = 3.5$ ($SD = 0.39$), than individuals in the second cluster, $M = 4.7$ ($SD = 0.33$). The first cluster has the highest average score on commitment, $M = 5.8$ ($SD = 0.20$).

Types of Trajectories per Academic Year

When the occurrence of the three different types of commitment trajectories is compared between different college years, some differences become apparent, see figure 3.

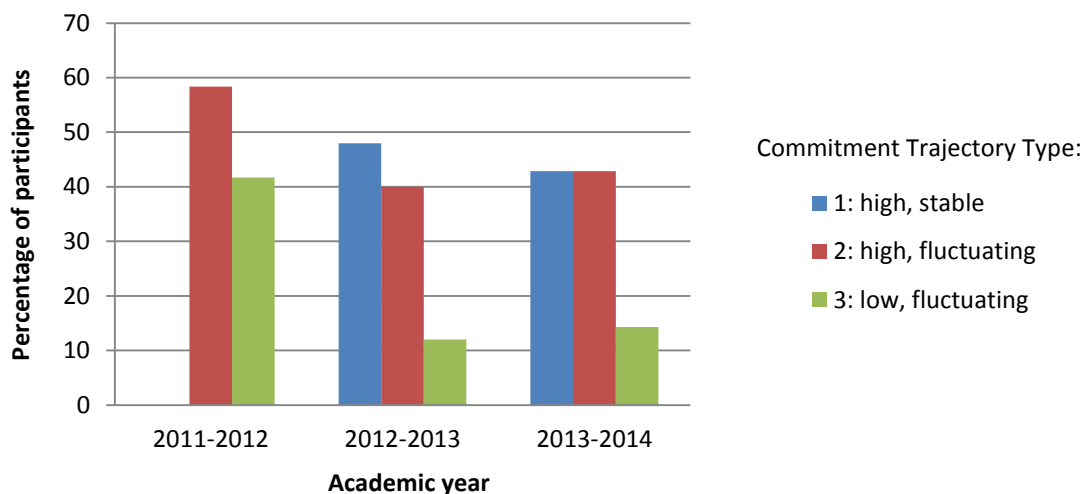


Figure 3. Occurrence of the three different types of commitment trajectories (i.e. membership to a particular cluster), for each of the college years separately.

In the academic year of the first participating cohort, 2011-2012, no individuals are present who show a stable, high commitment trajectory throughout the first year. In contrast, the two following academic years, 2012-2013 and 2013-2014, a large percentage of participants show this stable and high commitment trajectory (respectively 48% and 43%). In the 2011-2012 cohort, the low, fluctuating trajectory is present in a large proportion of the participants (42%) while in the two following academic years, 2012-2013 and 2013-2014, only a small percentage of participant shows this low, fluctuating trajectory of commitment (respectively 12% and 14%). In table 2, cluster membership over the different academic years is summarized.

Table 2

Percentages of participants showing the different types of trajectories, in each academic year.

| Academic Year | Cluster 1: | Cluster 2: | Cluster 3: |
|---------------|---------------------------------------|--|---|
| | High, Stable <i>Percentage (N)</i> | High, Fluctuating <i>Percentage (N)</i> | Low, Fluctuating <i>Percentage (N)</i> |
| 2011-2012 | 0% (0) | 58% (7) | 42% (5) |
| 2012-2013 | 48% (12) | 40% (10) | 12% (3) |
| 2013-2014 | 43% (15) | 43% (15) | 14% (5) |

As can be seen in figure 3 and table 2, the distribution of the occurrence of different types of trajectories is very similar in academic years 2012-2013 and 2013-2014, but the distribution in academic 2011-2012 is deviant. The chi-square test on the distribution of trajectories in the different academic years returns a significant result ($\chi^2 = 10.64$, $df = 4$, $p = 0.031$). This indicates that the observed differences between the distributions of types of trajectories in the three academic years, are not likely to be based on chance.

Types of Experiences per Academic Year

In figure 4 the average occurrence of the four different types of experiences is visualized, for each academic year separately. An overview of differences between academic years in the occurrence of different types of experiences and test results can be found in table 3.

Positive experiences. As shown in figure 4, in the first cohort (academic year 2011-2012), the average proportion of positive experiences is 42,4% of the total amount of experiences. This is lower than the average proportion of positive experiences in the second cohort (55,1%) which represents academic year 2012-2013. As also shown in table 3, this difference is significant ($D = 12.7, p = 0.038$), meaning that the proportion of positive experiences is probably higher in academic year 2012-2013, than academic year 2011-2012. In the third cohort, academic year 2013-2014, the proportion of positive experiences is 45%, slightly higher than the first cohort, but this difference is not significant ($D = 2.7, p = 0.644$). There is a significant decline in the average proportion of positive experiences from academic year 2012-2013 to academic year 2013-2014 ($D = 10.1, p = 0.028$).

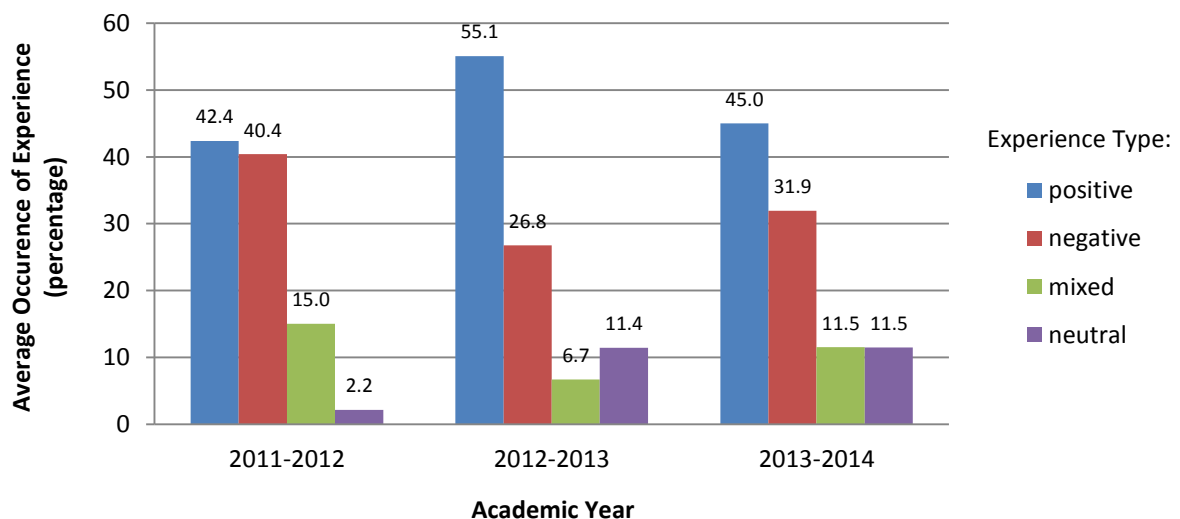


Figure 4. Average occurrence of different types of experiences, for each academic year.

Negative experiences. For occurrence of negative experiences, a decline is visible from the first cohort to the two subsequent cohorts. In academic year 2011-2012 (cohort 1) the proportion of negative experiences is 40.4%, in academic year 2012-2013 this is only 26.8%, this difference is significant ($D = -13.6, p = 0.025$). In the last cohort, academic year 2013-2014, the average proportion of negative experiences is 31.9%, lower than in the first cohort, but this difference is not significant ($D = -8.4, p = 0.140$). The slight increase in average proportion of negative experiences between academic year 2012-2013 and 2013-2014, is not significant ($D = 5.1, p = 0.249$).

Table 3

Outcome of ANOVA on differences between academic years (cohorts) in average proportional occurrence of a certain type of experiences.

| | <i>F</i> | <i>p-value</i> | <i>R</i> ² | Simple Contrasts | | |
|----------|----------|----------------|-----------------------|----------------------------------|----------------------------------|----------------------------------|
| | | | | Cohort 2-1* <i>Difference</i> | Cohort 3-1* <i>Difference</i> | Cohort 3-2* <i>Difference</i> |
| Positive | 3.32 | 0.042 | 0.09 | 12.7** | 2.7 | -10.1** |
| Negative | 2.64 | 0.079 | 0.07 | -13.6** | -8.4 | 5.1 |
| Mixed | 3.02 | 0.055 | 0.08 | -8.3** | -3.5 | 4.8 |
| Neutral | 1.73 | 0.184 | 0.05 | 9.3 | 9.3 | 0.1 |

Note. If difference scores between cohorts are positive, this indicates an increase in this type of experience, from one academic year to the next. If difference scores are negative, this indicates a decrease in this type of experience, from one academic year to the next.

*Cohort 1 represents academic year 2011-2012, cohort 2 represents academic year 2012-2013, and cohort 3 represents academic year 2013-2014.

**Difference score is significant with p -value < 0.05.

Mixed experiences. The average occurrence of mixed experiences in the first cohort, academic year 2011-2012, is 15%. In the second cohort, academic year 2012-2013, the average proportion of mixed experiences is lower with only 6.7%, this difference is significant ($D = -8.3$, $p = 0.025$). In the last cohort, academic year 2013-2014, the average proportion of mixed experiences is 11.5%, lower than in the first cohort, academic year 2011-2012, but this difference is not significant ($D = -3.5$, $p = 0.314$) and higher than second cohort, academic year 2012-2013, but difference is not significant either ($D = 4.8$, $p = 0.079$).

Neutral experiences. The neutral experiences occur the least in academic year 2011-2012 (cohort 1), with on average only 2.2% of the experiences being neutral. In academic year 2012-2013 (cohort 2) this is higher, with 11.4%. This is very similar to the average proportion of 11.5% of neutral experiences in academic year 2013-2014 (cohort 3). The differences between the first cohort and the second is not significant ($D = 9.3$, $p = 0.100$) and neither is the difference between the first and third cohort ($D = 9.3$, $p = 0.082$). The very small difference between the second and third cohort is also not significant ($D = 0.1$, $p = 0.986$).

Discussion

Types of Commitment Trajectories

Based on our cluster analysis, we conclude that among first year psychology students, there seem to be three distinct types of commitment trajectories in the domain of education. One class of individuals has a high level of educational commitment, and this seems quite stable throughout the year. The other two types of individual trajectories show a lot of variability in the level of educational commitment from one week to the next. These trajectories are different in the mean level of commitment strength around which they fluctuate, where one class of individuals shows a lower average level of commitment than the other.

One explanation of the finding that commitment fluctuation in the domain of education occurs more in some individuals than others, could be that emerging adults are differentially susceptible to environmental influences (van der Gaag & Kunnen, under review). For example, a failed exam might lead one student to question the choice of education, while another student merely sees this as a minor setback. This susceptibility may be influenced by any range of factors; we have found indications that susceptibility to change in educational commitment may be influenced by the identity commitments in the domain of education (van der Gaag, Kunnen & Pijl, 2014). For example, if a student is very committed to an identity as a future clinical psychologist, this student may be less swayed by experiences than a student who is not that committed to any kind of (future) identity. This is just one factor that could play a role in differential susceptibility to environmental influences, other factors like quality of social network and personality are likely to play a role as well.

Differences in Trajectories between Academic Years

We find differences in the types of trajectories that occur across the three academic years. For the first cohort, in academic year 2011-2012, two types of trajectories were found: one fluctuating trajectory with a high average score on educational commitment, and one fluctuating trajectory with a lower average score on commitment. It was striking that in this particular year, a stable, high trajectory of educational commitment was not found. In the two subsequent cohorts, in academic years 2012-2013 and 2013-2014, this high, stable trajectory was the most frequently occurring type of trajectory, along with a high, fluctuating trajectory of educational commitment. Also in these two years, the fluctuating commitment trajectory with the lower average commitment was occurring only in a small proportion of participants, in contrast to academic year 2011-2012, where this trajectory occurred in a large proportion of participants.

It seems that from 2011-2012 to the subsequent two years, the occurrence of the different types of commitment trajectories changed from mostly fluctuating and often combined with weak

commitments, to mostly strong commitments, often combined with stability. The occurrence of relatively more stable and strong commitment trajectories, and less fluctuating and weak commitment trajectories, can be considered a positive development for students. Strong, stable commitments are related to positive indices of wellbeing (Schwartz et al., 2011) and academic success (Berzonsky & Kuk, 2005; Klimstra, Luyckx, Germeijs, Meeus & Goossens, 2012).

Relation to innovations. The results of this study show some interesting relations with the implementation of the educational innovations. First of all, educational commitment trajectories that can be considered beneficial for students occur more frequently ever since the innovations were implemented. The biggest change occurs in academic year 2012-2013, the year when the first wave of innovations was implemented. In comparison to 2011-2012, in 2012-2013 more trajectories occur that are characterized by a strong, stable commitment, and fewer trajectories are characterized by a weak and fluctuating commitment. This then seems to persist in 2013-2014, where a similar distribution of trajectories is found.

Differences in Experiences between Academic Years

Across the three academic years, we find differences in the occurrence of positive, negative and mixed experiences. We find that in academic year 2012-2013, the occurrence of positive experiences is higher, and the occurrence of negative and mixed experiences is lower, than in the year 2011-2012. Because positive experiences seem to be related to stronger commitments and negative experiences seem to be related to periods of doubt (van der Gaag & Kunnen, 2012; van der Gaag, Kunnen & Pijl, 2014), the development of more positive, less negative and mixed experiences could be considered beneficial for students. However, these tendencies do not seem to persist toward academic year 2013-2014. In this year, the differences with the occurrence of experiences in the first cohort in academic year 2011-2012, though in the right direction, are smaller and not significant.

Relation to Innovations. The increase in the occurrence of positive and decrease in the occurrence of negative experiences was expected if the innovations were beneficial for the way students experience their education. This is in line with what we see happening after the implementation of the first wave of innovations in 2012-2013. However, these positive results do not persist in 2013-2014, which may indicate that possibly not all of the innovations implemented in 2013-2014, have the desired effect. Caution with interpreting this result is warranted however, for we have found only a significant decline in the occurrence of positive experiences from academic year 2012-2013 to 2013-2014. The occurrence of negative and mixed experiences does not increase significantly. It is also worth keeping in mind that there seems to be a slight overall positive

development, with less negative and more positive experiences in 2013-2014 than there were in 2011-2012, though these differences are not significant.

When working from the hypothesis that some of the innovations implemented in 2013-2014 do not have the desired effect, it seems logical to search for the big and fundamental innovation implemented in this year. One candidate that might fit this description is the restructuring of the academic year. It may be worth investigating further if this innovation could possibly have an undesired effect. However, a detailed rapport on what exactly has been implemented at what time point should be examined first, to find out exactly what happened in this last academic year and what changes can be considered important for the way students experience their education. In a forthcoming study, the content of the experiences will be investigated, which may also give us clues about whether these results are related to some of the innovations, or if it is due to some other factors.

Limitations

A few limitations are important to mention for this study. First of all, because this study does not include a simultaneously studied control group, caution is warranted with interpreting the relations between commitment trajectories, experiences, and the implementation of innovations. A simultaneous control group was not possible given the extent of the innovations that were to be implemented and the time pressure under which they had to be implemented. We were able however, to compare with a year in which the planned innovations had not yet been implemented. This is not an ideal solution, as in this way, we have to deal with possible idiosyncrasies of the academic year 2011-2012. It could be, for example, that 2011-2012 was an exceptionally bad year for psychology education, and the comparisons made to this year are not fair. A future study that examines the content of experiences of students could help find out if this is indeed the case.

Secondly, due to resource restrictions, this study uses a relatively small sample size (total included sample $N=72$), especially in the first year of measurement ($N=12$), which implies that any conclusion with regard to differences between years should be interpreted with caution. It is interesting however, that even though the sample size is small; there seem to be clear and significant differences across the academic years in both the types of trajectories that occur, and the types of experiences that occur.

Another limitation is that in the analysis of experiences, all experiences were included. The students were instructed to describe an experience that was somehow of influence of how they feel about their education. This allowed freedom to describe a lot of things, also experiences outside the domain of education that they felt were important (e.g. a great party, a broken heart etc.). Obviously, experiences like a great party or a broken heart are experiences of which the occurrence

is unlikely to be influenced by educational innovations. In future studies, it would be good to separate experiences within and outside the domain of education. In a master thesis (Mulderij, 2014) this was done for a part of the data (academic year 2011-2012 and 2012-2013), it would seem that about 24% of the reported experiences are outside the domain of education. It would be interesting to repeat our analysis with only experiences within the domain of education, and see if the results change, especially with regard to the last academic year, 2013-2014, in which the increase in positive and decrease in negative experiences was not significant.

Conclusion

According to our results, since the innovations were implemented, there are fewer students with periods of doubts about the choice of education they have made, and fewer students who experience continuous doubts. There are more students who experience stability and have a strong commitment towards the chosen education of psychology. The experiences of students have become more positive, and less negative, though this only seems to be the case in academic year 2012-2013, this result disappears again in 2013-2014.

In the academic year 2012-2013, when the changes in the types of commitment trajectories first occurred and when students' experiences were the most positive, improvements were made to several courses, but the change that could be considered as most fundamental to the students, is the implementation of the learning communities. Our findings make sense in light of an increased social support system. Social support systems could contribute to the strength and stability of commitment, by mediating the impact of experiences. For example, a negative experience, like a failed exam, may be relativized in interaction with fellow students, leaving the educational commitment intact, while processing this same experience alone may result more easily in doubt regarding the current choice of education. Processes like these, which seem more likely to occur in learning communities, could result in more stable commitment trajectories, but also, in less negative and more positive experiences.

Of course, no causality can be inferred with regard to the effect of the implementation of the innovations from this type of longitudinal study, without a simultaneous control group. However, what we have found is a strong indication that something has changed for the better, allowing students to have a stronger and more stable commitment toward their education, and it is striking that this change over the years should co-occur with the first implementation of educational innovations. Further in depth research is needed to investigate whether specific effects of the innovations can be found in the content of the experiences of first year students.

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