

Kent Academic Repository

Full text document (pdf)

Citation for published version

Quinlan, Kathleen M. (2019) What triggers students' interest during higher education lectures? Personal and situational variables associated with situational interest. *Studies in Higher Education* . ISSN 0307-5079.

DOI

<https://doi.org/10.1080/03075079.2019.1665325>

Link to record in KAR

<https://kar.kent.ac.uk/77207/>

Document Version

Author's Accepted Manuscript

Copyright & reuse

Content in the Kent Academic Repository is made available for research purposes. Unless otherwise stated all content is protected by copyright and in the absence of an open licence (eg Creative Commons), permissions for further reuse of content should be sought from the publisher, author or other copyright holder.

Versions of research

The version in the Kent Academic Repository may differ from the final published version.

Users are advised to check <http://kar.kent.ac.uk> for the status of the paper. **Users should always cite the published version of record.**

Enquiries

For any further enquiries regarding the licence status of this document, please contact:

researchsupport@kent.ac.uk

If you believe this document infringes copyright then please contact the KAR admin team with the take-down information provided at <http://kar.kent.ac.uk/contact.html>

What triggers students' interest during higher education lectures? Personal and situational variables associated with situational interest

Kathleen M. Quinlan, Centre for the Study of Higher Education, University of Kent, UELT Building, Canterbury, CT2 7NQ United Kingdom

Email: K.M.Quinlan@kent.ac.uk

Accepted for publication in *Studies in Higher Education* as part of a special issue on emotions due out in October 2019. <https://doi.org/10.1080/03075079.2019.1665325>

What triggers students' interest during higher education lectures? Personal and situational variables associated with situational interest

Lecturing is often touted as a means to inspire students' interest, despite evidence that most lectures fail to do so. This study examines triggers of students' situational interest during lectures. Students ($N=706$) in 12 different individual one hour first year lectures in a UK university were surveyed at the end of the lecture. They described the moment they were most interested; rated a series of 5 point Likert scale items on their situational and individual interest, and features of the content, presentation and teacher's behaviour during that moment; and provided demographic characteristics. Simultaneous regression analyses showed that novelty, cognitive activation, cognitive incongruity, and utility value all positively predicted situational interest. Students' level of individual interest and perceptions of their teacher's enthusiasm, approachability and knowledge were the strongest predictor of situational interest. Overchallenge was negatively associated with situational interest.

Keywords: situational interest, emotion, learning, motivation, utility value

Introduction

Lecturing, a teacher-led didactic method for large groups, is a primary instructional mode in higher education. This format is often believed to enthuse and motivate students, yet evidence suggests lectures are relatively ineffective at doing so (Bligh 1998). Stimulating interest is vital to education, as the level of a person's interest influences their attention, goals, ability to self-regulate, their study strategies, and levels of learning (Renninger and Hidi 2016; Rotgans and Schmidt 2011a, 58-67).

While teachers may think of students as either being interested or not, students' interest is not immutable; it can be stimulated, nurtured and developed through good teaching. Renninger and Hidi (2011; 2016) conceptualise *interest* as both affective and cognitive, focusing on some content or object, involving interaction between a person and the environment, and having a physiological/neurological basis connected to reward circuitry. They distinguish between situational interest, which is a state of heightened interest in a particular situation (state-like), and individual interest in a subject, which endures over time and a variety of situations (trait-like) (Hidi and Renninger 2006, 111-127).

Situational interest can be regarded as an emotional state insofar as it is a short-lived, affective experience combined with cognitive, physiological, expressive and motivational

components. (Shuman and Scherer 2014, 13-35). Situational interest during lectures is the focus of this study. The aim is to understand the particular situational influences that trigger interest, in order to develop recommendations on how to adjust teaching accordingly.

Theoretical Framework

Interest theory (Hidi and Renninger 2006, 111-127; Renninger and Hidi 2016) is combined with Biggs' (1989) Presage-Process-Product (3Ps) theory of teaching in higher education. Biggs' 3Ps model postulates that learning outcomes (*products*) depend upon how students study (*process*), which is dependent upon two main groups of *presage* variables: student characteristics and contextual factors. Student characteristics include such factors as age, gender and ethnicity as well as their goals, knowledge and experience. Contextual factors include curricular content, methods of teaching and assessment, and teacher characteristics. As a constructivist theory, the 3Ps model emphasises that students' perceptions of the learning environment influence their behaviour and subsequent performance (Biggs 1993, 3-19; Biggs 1989, 7-25). Thus, it is important to understand students' responses to the instructional environment, such as their situational interest in a given lecture.

Both interest theory (Renninger and Hidi 2016; Renninger and Hidi 2011, 168-184; Hidi and Renninger 2006, 111-127) and Biggs' model (Biggs 1989, 7-25; Biggs 1993, 3-19) emphasise people-environment interactions. Interest theory focuses attention on a particular student response to the educational environment, namely situational interest. Biggs' model then offers an *instructional* theory that links situational interest to learning processes and outcomes. Although triggered situational interest is often short-lived, repeatedly triggering a student's interest can help maintain interest so that it develops into individual interest (Hidi and Renninger 2006; Rotgans and Schmidt 2017, 175-184), thus producing positive feedback loops in the 3Ps model (Biggs 1993).

Prior Research

Insofar as individual interest in the subject is relatively stable (Hidi and Renninger 2006), it is the key student-based presage variable assumed to be antecedent to students' situational interest in a lecture. Age, gender and cultural background have been associated with differing levels of interest in particular academic subjects (Renninger and Hidi 2016; Bergin 1999, 87-98). Level of interest in the subject, self-concept, prior performance and types of achievement goals also are related to situational interest (e.g. Harackiewicz et al. 2002; Durik, Hulleman, and Harackiewicz 2015, 49-62).

The dependent variable in this study is situational interest, about which educational research tends to focus more on contextual variables that teachers can influence (Hidi and Harackiewicz 2000, 151-179). Nonetheless, attention to the situational variables that predict interest in real-world postsecondary classes is still relatively scarce in higher education compared to primary and secondary education. Optimally challenging situations that prompt 'Ah-ha' moments (Dohn, Madsen, and Malte 2009) and posing problems or raising questions (Rotgans and Schmidt 2011a) can stimulate interest in postsecondary students. Relevance also has been highlighted. Utility value interventions, in which students make connections between the course material and their own lives, were associated with situational interest in psychology (Hulleman et al. 2010) French (Cabot 2012) and zoophysiology (Dohn, Madsen, and Malte 2009, 196-201).

Students' perceptions of teachers' personal concern for students (Marjoribanks and Mboya 2004; Rotgans and Schmidt 2011b) and subject-matter expertise, and ability to explain things in accessible ways have predicted students' situational interest (Rotgans and Schmidt 2011b, 37-42). Social interaction with attentive peers also seems to promote interest (Dohn, Madsen, and Malte 2009; Thoman, Sansone, and Pasupathi 2007), though this may depend upon the student's interpersonal orientation (Isaac, Sansone, and Smith 1999).

Students have qualitatively reported humour (Dohn, Madsen, and Malte 2009) and fun hands-on science activities as triggering situational interest (Palmer 2004). In experimental manipulations, humorous materials (Durik and Harackiewicz 2007; Matarazzo, Durik, and Delaney 2010) have been associated with higher triggered situational interest for students with low individual interest, but not those with higher individual interest. A similar interaction effect with individual interest was found for using colourful, visually appealing materials (Durik and Harackiewicz 2007). Some of these features can introduce extraneous information that actually impedes learning through the ‘seductive details effect’ (Mayer et al. 2008).

While a number of studies have focused on postsecondary students’ text processing (Shraw and Lehman 2001) there is a dearth of studies investigating aspects of lectures that stimulate interest. Those that have done so have used a single course, simple unvalidated surveys, attended to surface features rather than cognitive features of the lecture, or have not been well grounded in prior research and theory on interest (e.g. Clark 2008, 39-44; Lim et al. 2006, 1-4) .

In contrast, broader meta-analyses of learning in undergraduate education emphasise the importance of students’ active mental engagement with course material such as through talking, writing or explaining (Chickering and Gamson 1987; Gibbs 2010; Ambrose and others 2010). Likewise, studies of interest amongst schoolchildren emphasise cognitive elements of instruction such as presenting novel and optimally challenging information (Chen, Darst, and Pangrazi 2001), inducing a knowledge deficit (Rotgans and Schmidt 2014) or inducing incongruity (Bergin 1999). Strong *narrative* elements (e.g. a story) may also trigger students’ interest (Bergin 1999). Activities that break up the usual routine such as computers, group work or puzzles may initially trigger interest but are not as effective at holding interest as involvement and meaningfulness (Mitchell 1993).

Thus this study is unique in rigorously examining a range of lectures in a variety of subjects to identify features of lectures that trigger students' interest in academic subjects in higher education.

Research Questions and Hypotheses

The primary research question is: what student characteristics and instructional variables predict situational interest during first year lectures in higher education? It is expected that both student characteristics and instructional variables will have an impact. First, students' demographic characteristics will affect their level of individual interest and their situational interest (Hypothesis 1). As existing theory and research does not make it possible to formulate more specific hypotheses on each demographic characteristic, these analyses will be exploratory. For instance, it might be expected that mature students who have returned to university after a break would have more well-developed interest in the subject. First generation students under pressure to choose degrees with higher employment prospects may have lower individual interest. Hypothesis 2 is that individual interest influences situational interest.

Situational variables are expected to have a greater impact on situational interest than demographic variables (Hypothesis 3). Specifically, I hypothesise that students' most interesting moments in lectures will be those that offer new information (novelty) (Hypothesis 3.1), prompt students to think (Hypothesis 3.2: cognitive activation and Hypothesis 3.3: cognitive incongruity) without over- challenging (Hypothesis 3.4), are relevant to their lives (Hypothesis 3.5: utility value), offer strong narrative elements (Hypothesis 3.6: examples/stories), and entertain (Hypothesis 3.7). I also predict that students' positive perceptions of teachers will contribute to their situational interest (Hypothesis 3.8).

I first explore whether there are significant differences between different lectures and different student groups in terms of students' situational and individual interest. Variance between lectures and between students is required to investigate the impact of situational and individual variables on students' situational interest.

Method

Participants

The sample included $N=706$ (460 female; mean age=19 years, $SD=3.10$, range 17-59) first year students in a UK university ranked in the top half of UK institutions. Students were ethnically diverse, with 51% identifying as White Europeans (UK/other EU), 10% as Black UK/EU, 24% as another British/EU ethnic minority, and 9% as international (non EU) students. Forty-one percent (41%) were first generation university students. Each participant attended 1 of 12 different individual first year lectures as part of normal activities within their degree course. Four lectures were in the sciences (biosciences, $n=164$; forensic science, $n=50$; mathematics, $n=54$; physics, $n=21$), five in the social sciences (social psychology, $n=147$; developmental psychology, $n=142$; politics, $n=22$; economics, $n=63$; business, $n=22$; social work, $n=28$; social policy, $n=30$), and one in the humanities (history, $n=30$). Participation was voluntary and anonymous; no incentive was provided. First year lectures were studied because students' individual interests will be less well-developed at an introductory stage when they are being exposed to a wide range of new ideas in the discipline. Mean participation rate per lecture (relative to attendance at that lecture) was 69% (median 80%).

Measures

Situational Interest

The situational interest measure was based on Renninger and Hidi's (2016) definition of situational interest as a psychological state characterised by 'increased attention, effort, concentration and affect during engagement' and a 'motivational predisposition to reengage with that content over time' (pp. 8-9). A 3-item scale measuring the affective component of situational interest was constructed using the responses to curious, interested, and inquisitive of the Epistemic Emotions Scales (Pekrun et al. 2017) ($\alpha=.776$). The attentional and motivational components of situational interest were measured using students' answers to 6 items (5-point Likert scale; 1=*strongly disagree* to 5=*strongly agree*). Three items measured students' attention to the lecture (e.g., 'I was focused'; 'I was not distracted by other things'; $\alpha=.752$) while three items measured their desire to learn more (e.g., 'I wanted to keep on studying this topic'; 'I expect to follow up on the topic outside of class'; $\alpha=.607$). The overall 9-item Situational Interest Scale had good reliability ($\alpha=.789$). The psychometric quality of the situational interest scale is corroborated by the findings of confirmatory factor analysis. A one-factor model showed a very good fit to the data, with $\chi^2(18)=64.498, p< .001$; CFI=.975; TLI= .950; RMSEA=0.60; and SRMR=.027.

Individual Interest

Students rated 11 individual interest items on a 5-point Likert scale (1=*strongly disagree* to 5=*strongly agree*) in relation to the overall field of their degree course (i.e. major). The overall scale had good reliability ($\alpha=.861$) and was consistent with Renninger and Hidi's (2015, p. 60) defining characteristics, 'A person who is interested in something is likely to reengage with it frequently and to do so with increasing depth of understanding, voluntarily, and independently.' The Individual Interest Scale asked students to rate their emotional interest in the field (e.g., 'I am curious about this field in general'); knowledge (e.g., 'I am quite good in this field'); and frequent, independent and voluntary engagement (e.g., 'Regularly I find myself thinking about ideas from lectures in this field when I'm doing

other things'; 'I talk about this field beyond what is required for classes'). Some items were adapted from Renninger and Schofield (2014, April).

Features of the Lecture (Situational Variables)

Students rated 5 point Likert scale (1=*strongly disagree* to 5=*strongly agree*) items describing the situational features of the moment they thought was most interesting during the lecture. The items (see Table 1) were used to construct eight scales: *novelty* (1 item), *cognitive activation* (6 items; $\alpha = .763$), *cognitive incongruity* (2 items; $\alpha = .655$), *overchallenge* (1 item), *utility value* (3 items; $\alpha = .748$) (Hulleman et al. 2010), *examples/stories* (2 items; $\alpha = .617$), *entertainment* (2 items; $\alpha = .847$), and *teacher* (5 items; $\alpha = .916$).

[Insert Table 1 here]

Demographic Variables

Students indicated their gender, age, race, whether they were UK/European Union or overseas students and first generation status.

Procedure

Participating lecturers were briefed on the purpose of the study in advance and gave formal written consent for their lecture to be included in the study under a pseudonym. At the beginning of the lecture, lecturers read out a standard briefing document to inform students about the study and how the results would be used. The researcher observed the lecture. Students completed the questionnaire at the end of the lecture. The study was approved by the author's departmental ethics review committee.

Analyses of variance (one way ANOVAs) were used to test for independence of samples across lectures on situational interest and individual interest. Two tailed t-tests were used to test for independence of samples on situational interest and individual interest

between demographic subgroups. Multiple regression rather than latent analysis was used to predict situational interest from the demographic variables, individual interest, and the eight situational variables because many of the independent variables were one item rating scales.

Results

Variation of Students' Interest across Lectures

Figure 1 shows the means and standard errors for situational interest and individual interest for each of the lectures and the overall pattern of relationship between situational and individual interest, which is similar in 10 of the 12 cases. A one-way ANOVA showed that there were significant differences across lectures on situational interest, $F(11, 693)=6.275$, $p<.001$, $\eta=.090$. There were also significant differences on individual interest between students across the lectures, $F(11, 669)=6.710$, $p<.001$, $\eta=.099$.

[Insert Figure 1 here]

Demographic Variables and Students' Interest

On individual interest, women ($M=3.55;SD=.58$) and men ($M=3.52;SD=.64$) did not differ significantly, $t(1,669)=.680$, $p=.50$. UK and EU Black and Minority Ethnic students (BME) students ($M=3.47;SD=.62$) were significantly lower than White UK/EU students ($M=3.62;SD=.58$), $t(1,518)=2.70$, $p<.01$, $d=0.25$. Those who were the first generation in their family to attend university ($M=3.57;SD=.62$) did not differ significantly, $t(1, 659)=1.036$, $p=.30$, from those who were not first generation ($M=3.52;SD=.58$). Students who were younger than 20 years old ($M=3.51;SD=.58$), $t(1, 671)=-2.74$, $p<.01$, $d=0.25$ had significantly lower individual interest than older students ($M=3.66;SD=.64$). First year students who were 20 or older ($n=137$) likely would have taken at least a one year break between school and higher education.

On situational interest, women ($M=3.76;SD=.53$) and men ($M=3.71;SD=.52$) did not differ significantly, $t(1, 687)=1.36, p=.18$. UK/EU Black and Minority Ethnic students (BME) students ($M=3.70;SD=.54$) were lower on situational interest than White UK/EU students ($M=3.80;SD=.50$), $t(1, 528)=2.16, p<.05, d=0.20$. First generation students ($M=3.77;SD=.54$) did not differ significantly, $t(1, 667)=1.07, p=.29$, from those who were not ($M=3.73;SD=.53$). Students who were 20 years old or older ($M=3.90;SD=.50$), $t(1, 681) = -3.95, p<.001, d=0.38$ had significantly higher situational interest than students less than 20 years old ($M=3.70;SD=.54$). These results support Hypothesis 1 insofar as both individual and situational interest differed by students' age and race.

Correlations among Study Variables

Individual and situational interest were positively correlated (Table 2). Age was positively correlated with both interest variables, whereas correlations for race (white vs. BME) were negative, such that white students had higher interest. However, the negative correlation between race and age, such that BME students were more likely to be under 20, may explain some of the racial differences observed on interest. Again, Hypothesis 1 was partially confirmed, with age and race related to individual interest.

[Insert Table 2 here]

Cognitive activation, examples/stories, utility value, and positive perception of the teacher's enthusiasm, friendliness and approachability correlated positively with both individual and situational interest. In contrast, correlations for overchallenge were negative, suggesting that those with greater individual interest are less likely to report that they found their interesting moment hard to understand. Among the situational variables, novelty, cognitive activation, cognitive incongruity, and challenge were positively correlated. Utility value was positively correlated with cognitive activation, examples/stories, entertainment, and positive perception of the teacher. In contrast, cognitive incongruity was negatively

related to entertainment and perception of the teacher, and overchallenge was negatively related to entertainment, perception of the teacher, and use of examples/stories.

Student Characteristics and Situational Variables as Joint Predictors of Situational Interest

Simultaneous multiple regression analysis was used to investigate whether the main demographic variables (gender, age, ethnicity, first generation), individual interest, and the eight situational variables could significantly predict participants' situational interest. The model explained 38% of the variance in situational interest, $F(13, 541)=22.52, p<.01$. Hierarchical regression analysis (Table 3) was used to separate personal characteristics (demographic variables, then individual interest) from situational variables.

[Insert Table 3 here]

The only demographic variable (in model 1) associated with situational interest was age. As older students reported significantly higher individual interest, the effect of age was no longer significant when individual interest was included in models 2 and 3. These results confirmed the general expectation of Hypothesis 1 and showed a positive relationship between increased maturity and interest in higher education. Individual interest continued to be a strong predictor even as situational variables were added in model 3, congruent with Hypothesis 2. Nonetheless, situational variables added significant explanatory power, consistent with the expectation that situational variables would be more important (Hypothesis 3). As predicted, novelty (Hypothesis 3.1), cognitive activation (Hypothesis 3.2), cognitive incongruity (Hypothesis 3.3), and utility value (Hypothesis 3.5) all positively predicted situational interest. As expected, overchallenge was negatively associated with situational interest (Hypothesis 3.4). Contrary to the expectations of Hypotheses 3.6 and 3.7, examples/stories and whether the interesting moment in the lecture was perceived as entertaining were not significantly related to situational interest when controlling for the other

situational variables. The strongest predictor was students' perceptions of teachers (Hypothesis 3.8).

Discussion

The aim of the study was to identify what student characteristics and instructional variables predict situational interest during first year lectures in higher education. Demographic characteristics were not significant predictors of situational interest after taking account of the features of the lecture. Thus, the hypothesis (3) that situational variables would have a stronger impact on situational interest was confirmed. Individual interest, though, played a significant role in situational interest and was affected by age. The first two hypotheses regarding the role of personal characteristics were exploratory. Thus the findings may be useful in refining future hypotheses about individual interest among different student groups in higher education. Research with children and adolescents tends to show a decline in students' interests in academic subjects during adolescence (Renninger and Hidi 2016). This study, though, shows that when adults have selected an area of specialty for postsecondary study, age is positively associated with interest. Race was not specifically expected to influence interest, though BME students had significantly lower individual and situational interest. Because curricular content and role models in academic subjects often do not reflect the cultural backgrounds of Black and Minority Ethnic students, it may be more difficult for them to identify with the subject (Bergin 1999). Given the link between interest and attainment, future studies should investigate ways to make academic subjects more interesting for racial minorities.

There were also differences in both situational interest and individual interest across lectures, enabling the identification of key situational variables that affected students' situational interest. The most important situational factor in this study was how enthusiastic, friendly, approachable and knowledgeable students perceived their teacher, consistent with

previous findings with young adult learners (Marjoribanks and Mboya 2004; Rotgans and Schmidt 2011b). Thus Hypothesis 3.8 was confirmed, highlighting the importance of emotional relationships between students and teachers (Quinlan 2016, 101-111) in stimulating interest in students. Nonetheless, being entertaining and funny was not a significant predictor of situational interest when controlling for other features of the lecture, contrary to Hypothesis 3.7. Previous experimental research has found that humour triggers situational interest only in those with low individual interest (Matarazzo, Durik, and Delaney 2010; Durik and Harackiewicz 2007). As UK undergraduates specialise early, focusing entirely on their major area of study throughout their postsecondary education, they may have high enough levels of individual interest to make humour unnecessary as a trigger, although teacher enthusiasm and approachability still matter. Instead, cognitive activation and utility value (meaningfulness) were two of the most important features of the lectures, consistent with maintaining interest (Mitchell 1993; Hulleman et al. 2010; Rotgans and Schmidt 2011a).

Thus, the findings suggest that situational interest was generated when students experienced cognitive activation (Rotgans and Schmidt 2011a; Rotgans and Schmidt 2014), consistent with Hypothesis 3.2 Cognitive activation was defined as prompting students to think about the material, posing a question, introducing a problem or puzzle to be solved, or answering a question students had (Table 1). Cognitive incongruity (contradictory/controversial information), though, was only weakly related to situational interest, which may be because this study sampled first year university students. Nonetheless, it was significant, confirming Hypothesis 3.3. More advanced students may have more sophisticated conceptions of knowledge, finding cognitive incongruity less threatening than first year students. Further research might investigate differences between first year and later year students.

The findings also suggest that students' situational interest was triggered when they perceived the information as having utility value (i.e. important or useful to them personally or to their future) (Hulleman et al. 2010; Cabot 2012; Dohn, Madsen, and Malte 2009), consistent with Hypothesis 3.5 New information also seemed to trigger interest (Bergin 1999), consistent with Hypothesis 3.1. However, teachers need to be careful not to over-challenge students, as that was negatively related to situational interest, as expected (Hypothesis 3.4).

Given the positive correlation between examples/stories and situational interest, and the fact that teachers often use such instructional devices to convey the relevance, application and real world utility of the subject matter, it was expected that this variable would be a significant predictor (Hypothesis 3.6). So it was surprising that it was not. However, examples/stories were more highly correlated with entertainment ($r=.35$) and the way the teacher was perceived ($r=.30$) than with utility value ($r=.17$). Given the significance of students' perceptions of teachers, cognitive activation, and utility value on situational interest, it may be that particular teaching strategies are effective at triggering interest only insofar as they build rapport between students and teachers (Quinlan 2016, 101-111), prompt students to think, or help students see the importance and usefulness of what they are learning. Because students' perceptions of teachers' enthusiasm, friendliness and approachability were so important, it would be useful to understand what teachers are actually doing that students interpret in those ways.

Previous research suggested that audio-visual materials and technology may enhance student interest (Clark 2008; Lim et al. 2006), but I discarded a single generic item related to audio-visual materials. Virtually all of the lecturers relied on Powerpoint presentations, which is now a staple of higher education lectures. Most of the lecturers also embedded images in those Powerpoint slides and about half of them included short video clips. Thus,

the role of various multi-media resources in stimulating and maintaining interest needs further study, particularly in relation to their cognitive (activation, incongruity and challenge), motivational (utility value) and emotional (entertaining and perceptions of teachers) dimensions.

Peer interaction only occurred in 1 small lecture among the 12 (social work; $n=28$), so it was not possible to draw conclusions about its effect. Further research needs to be done on ‘flipped classes’ to better understand the impact of peer interactions on interest in large group settings.

While this study is based on a range of different disciplines, it is possible that the pattern of students’ responses would differ by subject area or by institution. With a sufficient number of lectures, multi-level analyses could be done. Although the participation rate was high amongst lecture attendees, attendance at lectures are typically lower than enrolments. Students who have already chosen not to attend may need something different.

By documenting instructional features that promote interest in the most ubiquitous instructional setting in higher education, this study makes an important empirical contribution. Blending interest theory (Hidi and Renninger 2006), which has not been extensively applied to learning in higher education, with the well-established 3P’s model of teaching (Biggs 1989), also makes an important theoretical contribution that can underpin further research. Through this blending, this study has demonstrated the importance of individual interest as a key personal characteristic and several specific contextual factors as the presage variables that influence situational interest. Situational interest is operationalised as an important proximal process variable in the 3Ps instructional model.

Acknowledgments

Thank you to Sarah M.Y. Fong for research assistance throughout the project and to Michelle Chorattidou and Zoe Horsham for assistance with data entry. I am grateful to all the

participants, particularly the 12 lecturers who contributed to the project. I also thank two anonymous reviewers for their helpful comments.

References

- Ambrose, Susan A., Michael W. Bridges, Michele DiPietro, Marsha C. Lovett, and Marie K. Norman. 2010. *How Learning Works: Seven Research-Based Principles for Smart Teaching*. San Francisco, CA: John Wiley & Sons.
- Bergin, David A. 1999. "Influences on Classroom Interest." *Educational Psychologist* 34 (2): 87-98.
- Biggs, John. 1993. "What do Inventories of Students' Learning Processes Really Measure? A Theoretical Review and Clarification." *British Journal of Educational Psychology* 63 (1): 3-19.
- Biggs, John B. 1989. "Approaches to the Enhancement of Tertiary Teaching." *Higher Education Research & Development* 8 (1): 7-25. doi:10.1080/0729436890080102.
- Bligh, Donald A. 1998. *What's the use of Lectures?*. Bristol, UK: Intellect books.
- Cabot, Isabelle. 2012. "Le Cours Collegial De Mise a Niveau En Francais: L'Incidence D'Un Dispositive Pedagogique D'Interdisciplinarite." doctoral, University of Montreal, <https://papyrus.bib.umontreal.ca/xmlui/handle/1866/6897>.
- Chen, Ang, Paul W. Darst, and Robert P. Pangrazi. 2001. "An Examination of Situational Interest and its Sources." *British Journal of Educational Psychology* 71 (3): 383-400.
- Chickering, Arthur W. and Zelda F. Gamson. 1987. "Seven Principles for Good Practice in Undergraduate Education." *AAHE Bulletin* 3: 3-7.
- Clark, Jennifer. 2008. "PowerPoint and Pedagogy: Maintaining Student Interest in University Lectures." *College Teaching* 56 (1): 39-44.
- Dohn, N. B., P. T. Madsen, and H. Malte. 2009. "The Situational Interest of Undergraduate Students in Zoophysiology." *Advances in Physiology Education* 33 (3): 196-201. doi:10.1152/advan.00038.2009 [doi].
- Durik, Amanda M., Chris S. Hulleman, and Judith M. Harackiewicz. 2015. "One Size Fits Some: Instructional Enhancements to Promote Interest." In *Interest in Mathematics and Science Learning*, edited by K. Ann Renninger, Martina Nieswandt and Suzanne Hidi, 49-62. Washington, DC: American Educational Research Association.
- Durik, Amanda M. and Judith M. Harackiewicz. 2007. "Different Strokes for Different Folks: How Individual Interest Moderates the Effects of Situational Factors on Task Interest." *Journal of Educational Psychology* 99 (3): 597.

- Gibbs, Graham. 2010. *Dimensions of Quality*, York, UK Higher Education Academy.
- Harackiewicz, Judith M., Kenneth E. Barron, John M. Tauer, and Andrew J. Elliot. 2002. "Predicting Success in College: A Longitudinal Study of Achievement Goals and Ability Measures as Predictors of Interest and Performance from Freshman Year through Graduation." *Journal of Educational Psychology* 94 (3): 562.
- Hidi, Suzanne and K. Ann Renninger. 2006. "The Four-Phase Model of Interest Development." *Educational Psychologist* 41 (2): 111-127.
- Hidi, Suzanne and Judith M. Harackiewicz. 2000. "Motivating the Academically Unmotivated: A Critical Issue for the 21st Century." *Review of Educational Research* 70 (2): 151-179.
- Hulleman, Chris S., Olga Godes, Bryan L. Hendricks, and Judith M. Harackiewicz. 2010. "Enhancing Interest and Performance with a Utility Value Intervention." *Journal of Educational Psychology* 102 (4): 880.
- Isaac, James D., Carol Sansone, and Jessi L. Smith. 1999. "Other People as a Source of Interest in an Activity." *Journal of Experimental Social Psychology* 35 (3): 239-265.
- Lim, EC, Benjamin KC Ong, Einar PV Wilder-Smith, and Raymond CS Seet. 2006. "Sustaining Interest during Lectures with the use of Multimedia." *Med Educ Online* [serial online]: 1-4.
- Marjoribanks, Kevin and Mzobanzi Mboya. 2004. "Learning Environments, Goal Orientations, and Interest in Music." *Journal of Research in Music Education* 52 (2): 155-166.
- Matarazzo, Kristina L., Amanda M. Durik, and Molly L. Delaney. 2010. "The Effect of Humorous Instructional Materials on Interest in a Math Task." *Motivation and Emotion* 34 (3): 293-305.
- Mayer, Richard E., Emily Griffith, Ilana T. N. Jurkowitz, and Daniel Rothman. 2008. "Increased Interestingness of Extraneous Details in a Multimedia Science Presentation Leads to Decreased Learning." *Journal of Experimental Psychology: Applied* 14 (4): 329.
- Mitchell, Mathew. 1993. "Situational Interest: Its Multifaceted Structure in the Secondary School Mathematics Classroom." *Journal of Educational Psychology* 85 (3): 424.
- Palmer, David. 2004. "Situational Interest and the Attitudes Towards Science of Primary Teacher Education Students." *International Journal of Science Education* 26 (7): 895-908.
- Pekrun, Reinhard, Elisabeth Vogl, Krista R. Muis, and Gale M. Sinatra. 2017. "Measuring Emotions during Epistemic Activities: The Epistemically-Related Emotion Scales." *Cognition and Emotion* 31 (6): 1268-1276.
- Quinlan, Kathleen M. 2016. "How Emotion Matters in Four Key Relationships in Teaching and Learning in Higher Education." *College Teaching* 64 (3): 101-111.

- Renninger, K. Ann and Suzanne Hidi. 2016. *The Power of Interest for Motivation and Engagement*. New York, NY: Routledge.
- . 2011. "Revisiting the Conceptualization, Measurement, and Generation of Interest." *Educational Psychologist* 46 (3): 168-184.
- Renninger, K. Ann and Lynne Steuerle Schofield. 2014, April. "Assessing STEM Interest as a Developmental Motivational Variable." Philadelphia, PA, American Educational Research Association, .
- Rotgans, Jerome I. and Henk G. Schmidt. 2011a. "Situational Interest and Academic Achievement in the Active-Learning Classroom." *Learning and Instruction* 21 (1): 58-67.
- . 2014. "Situational Interest and Learning: Thirst for Knowledge." *Learning and Instruction* 32: 37-50.
- Rotgans, Jerome I. and Henk G. Schmidt. 2017. "Interest Development: Arousing Situational Interest Affects the Growth Trajectory of Individual Interest." *Contemporary Educational Psychology* 49: 175-184.
- . 2011b. "The Role of Teachers in Facilitating Situational Interest in an Active-Learning Classroom." *Teaching and Teacher Education* 27 (1): 37-42.
- Shraw, Gregory and Stephen Lehman. 2001. "Situational Interest: A Review of the Literature and Directions for further Research." *Educational Psychology Review* 13 (3): 191-209.
- Shuman, Vera and Klaus R. Scherer. 2014. "Concepts and Structures of Emotions." In *International Handbook of Emotions in Education*, edited by Reinhard Pekrun and Lisa Linnenbrink-Garcia, 13-35. New York: Routledge.
- Thoman, Dustin B., Carol Sansone, and Monisha Pasupathi. 2007. "Talking about Interest: Exploring the Role of Social Interaction for Regulating Motivation and the Interest Experience." *Journal of Happiness Studies* 8 (3): 335-370.

Table 1.

Items Comprising Each Situational Variable

Variables	Items
Novelty	The information was new to me.
Cognitive activation	It raised a question I wanted to know the answer to It answered a question I had It involved something I had to think about It involved me answering a question It involved a problem to be solved
Cognitive incongruity	It involved making or having a choice in what I did The information contradicted my prior beliefs The information was controversial.
Overchallenge	It was hard to understand
Utility value	The information was relevant to me personally The information is important to my future The information is useful in my everyday life
Examples/stories	It involved examples or applications in real life.
Entertaining	It involved a story or anecdote.
Teacher	The teacher was especially enthusiastic [in the interesting moment you have identified] The teacher was especially knowledgeable The teacher was especially accessible. The teacher was especially knowledgeable. The teacher was especially approachable. The teacher was especially friendly.

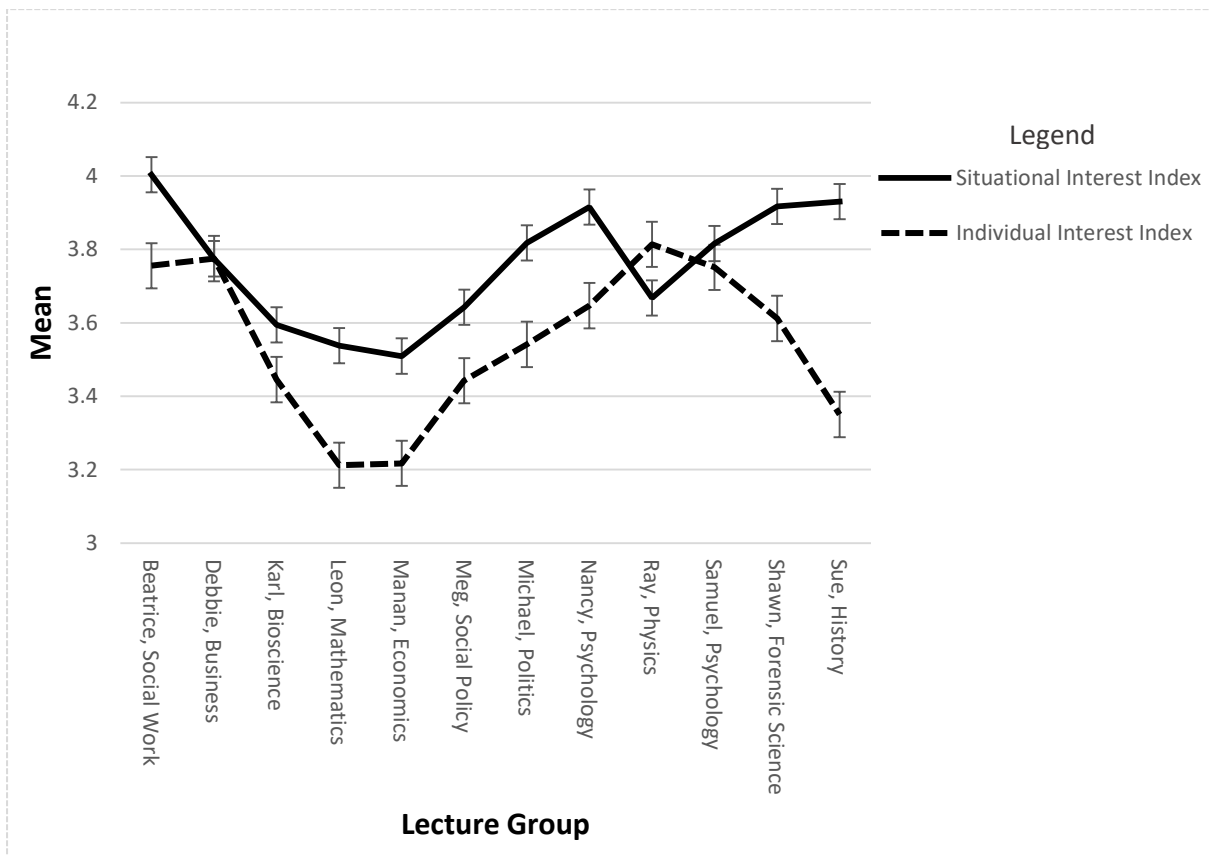


Figure 1. Means and standard errors for situational interest and individual interest across lectures.

Table 2

Pearson Product-Moment Correlations for the Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender	1													
2. White or BME	-.07	1												
3. Age	.02	-.14**	1											
4. First generation	-.09	.22**	-.05	1										
5. Individual Interest	-.06	-.14**	.12**	-.07	1									
6. Novelty	.10*	-.07	.09	-.06	-.07	1								
7. Cognitive activation	.06	.02	.06	-.03	.17**	.14**	1							
8. Cognitive incongruity	-.03	-.00	.00	-.07	.02	.20**	.18**	1						
9. Overchallenge	.11*	.06	-.09	.05	-.27**	.24**	.23**	.28**	1					
10. Utility value	-.12**	.07	.19**	-.01	.27**	-.07	.38**	.09*	-.03	1				
11. Examples/Stories	-.21**	.02	-.05	.04	.15**	.02	.17**	-.08	-.19**	.17**	1			
12. Entertaining	.06	.13**	-.07	.01	.05	-.02	.10*	-.20**	-.18**	.16**	.35**	1		
13. Teacher	-.08	.02	.02	-.11*	.24**	.04	.20**	-.18**	-.19**	.13**	.30**	.27**	1	
14. Situational Interest	-.07	-.10*	.14**	-.07	.51**	.05	.27**	.08	-.25**	.31**	.18**	.06	.31**	1

*p<.05 **p<.01 ***p<.001

Table 3

Hierarchical Multiple Regression for Personal Characteristics and Situational Variables as Predictors of Situational Interest

Model	R Square	F(df1, df2)	Variable	Standardized Beta
1	0.03	4.30(4, 493)	Gender	-.08
			White or BME	-.07
			Age	.13***
			First Generation	-.05
2	0.27	35.89(1, 492)	Gender	-.04
			White or BME	-.01
			Age	.08
			First Generation	-.03
			Individual Interest	.49***
3	0.38	22.52(8, 484)	Gender	.00
			White or BME	-.04
			Age	.04
			First Generation	.01
			Individual Interest	.35***
			Novelty	.08*
			Cognitive activation	.14**
			Cognitive incongruity	.09*
			Overchallenge	-.19***
			Utility value	.13**
			Examples/stories	.03
			Entertaining	-.06
Teacher	.17***			

*p<.05 **p<.01 ***p<.001