

**Exploring the Relationship Between Ideas About Time and Student Stress: a Meta-Ethnography**

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## Abstract

Student stress is a phenomenon that is still subject to ambiguity, in the identification of its sources and the most effective ways to reduce its negative effects. This study aimed to explore how ideas about time relate to educational scientific research on student stress. This paper is motivated by the suspicion that ideas about time are often (unconsciously) employed in research about student stress. A meta-ethnography was performed to identify if and how ideas about time indeed relate to student stress. The study found that ideas about time relate to student stress in many different ways. They shape the interventions that are proposed, design and methodology of the studies and the way in which results are interpreted. Due to these findings, this study recommends further research in the exact nature of the relationship between student stress and time.

*Keywords:* student stress, time, qualitative analysis, meta-ethnography, educational scientific research

### **Exploring the Relationship Between Ideas About Time and Student Stress: a Meta-Ethnography**

A rise in student stress levels has been reported many times in scientific literature and mass media (Låftman, Almquist & Östberg, 2013; de Boer, 2017; Kassymova et al., 2018; Ribeiro et al, 2018, Van Dinther, 2018). Stress can be conceptualized as the mental and/or physiological reaction to feeling unable to cope with a situation in the past, present or future (Robotham & Julian, 2006). The rise of stress levels is problematic due to the psychological problems (e.g., depression, burn-out, anxiety) and the physical toll that can result from prolonged exposure (e.g., heart and digestion problems) (de Boer, 2017; Kassymova et al., 2018). Subsequently, these problems cause students to face difficulty performing in the academic domain (Robotham & Julian, 2006).

Due to the negative consequences that students face from stress, there is a wealth of research on interventions that seek to reduce or prevent stress (Robotham & Julian, 2006; Hurst, Baranik & Daniel, 2013). Interventions meant to aid in stress relief differ in terms of approach; depending in part on what is perceived to cause the problem, and in part on contextual factors like the intervention's scope, focus and desired outcomes (Robotham & Julian, 2006). However, interventions differ in terms

of effectiveness and there remains no conclusive answer about which interventions are most effective (Turner & Lander McCarthy, 2017).

Given the (unanswered) calls for more qualitative research on the subject matter (Hurst et al., 2013) and the mixed results on the effectiveness of interventions, it can be concluded that there is a lack of understanding of the many manifestations of student stress. It is beneficial to consolidate this fragmented landscape by investigating a common denominator between all the aforementioned studies. Considering this, this study suggests that research on student stress is underscored with temporal elements. In the following paragraph, this will be illustrated with examples.

Firstly, time and stress are connected on a conceptual level, as stress is a result of the perception of a situation that could not be effectively handled in the past, present or future (Robotham & Julian, 2006). According to this conceptualization, how a student perceives time is central to how much stress they feel, thus inseparably connecting the two concepts (Macan et al., 1990). Secondly, time is often explicitly or implicitly mentioned in research on causes of stress. For example, the connection can implicitly be recognized when stress originates from time-bound occurrences such as deadlines and exams (Hurst et al., 2013). The interrelation between time and stress can also be seen explicitly through stress originating from time pressure caused by having to work next to studying due to financial pressure (Robotham & Julian, 2006). Lastly, this study notes that many times the structure of research on student stress meaningfully appreciates the influence of time on student stress. To illustrate, longitudinal studies on student stress are recommended to further explore how the phenomenon develops over time (Robotham & Julian, 2006). Yet despite the justifiable relationship between time and student stress, a tendency exists to refrain from explicating time as a concept with theoretical value in need of explication. That is to say, it is not used as an explanatory variable. This study argues that it can be. In the next sections, this study will outline a non-exhaustive summary of relevant viewpoints with which time can be theoretically evaluated and outline the starting point for this study. In doing so, it will attempt to illustrate that how time is seen in research on student stress may have fundamental consequences for the design and interpretation of results.

## Theoretical Framework

There are multiple ways in which time is employed meaningfully in our daily lives. E.g., missing the bus because you are late, being legally allowed to drink due to your age and knowing that it is customary to go clubbing after 12 o'clock at night are three distinct instances that have temporal meaning. However, they also differ from each other. One of the ways in which to theoretically differentiate between these instances is to view them as different dimensions of time. Leaton Gray (2017) reviews three distinct dimensions that are often used in the recent sociological literature: fixed, biological, and social time. Fixed time refers to time as we can objectively measure it: a 24-hour rotation of the earth comprises a day and night, a year lasts 365 days. Biological time refers to meaning ascribed to the chronological passing of time. Like the legal drinking age described above. Another example of meaning that is given within the dimension of biological time is when the behaviour of a child is observed to not fit their age, "isn't she a little old for that?". In this example, a child's age determines the expected behaviour. Social time refers to the structure of time as societally agreed upon. For example: the week has seven days, and each day has a specific name that we all agree upon. Social time determines the norms and values that are assigned to different instances of time.

Zerubavel (1985) explains that due to the many ways in which time plays a role in modern society, it is used as an orienting factor for individuals. He gives the example of a receptionist asking an unknown visitor in the doctor's office, "Are you the four o'clock appointment?". Here the receptionists uses fixed time -to orient herself on whether or not the situation is going according to plan. Similarly, an individual can use time to know which role they have to fulfil and what is expected of them. For example, between nine to five an individual fulfils the role of an employee and after five they take on the role of spouse. Again, time is used as an orienting factor to be able to perform according to expectations. The expression of time that is used as an orienting factor falls in the social time dimension, because work schedules are socially constructed, as well as the expectations we have of a partner.

Everyone sees and experiences time (and thus its dimensions) in their own way and this determines how they experience the world around them (Bergmann, 1992). The way in which an individual orients themselves in the face of time is called their temporal orientation. Temporal orientation influences life through the emphasis that an individual places on the importance of specific tenses. Someone's temporal orientation is culturally, historically, and socially dependent. An example of a different, culturally dependent temporal orientation is that in some cultures an emphasis is not placed on the distinction between past, present and future, but on 'now' and 'not now'.

### **This study**

The value of these theoretical perspectives is their capacity to provide meaningful interpretations of time in research on student stress. If researchers applied them, it would allow them to disentangle different conceptions of time and operationalize them. With that they could give their research more focus and well-demarcated limitations. Currently, this is not done. The potential will be demonstrated by applying theoretical perspectives as just outlined to two common stress reduction interventions: time management and mindfulness. In time management, one seeks to teach a student how to effectively divide their (finite) time across everything they want to do (Claessens et al. 2007). In mindfulness the goal is to teach students how to have an open and accepting attitude to their experiences in the present (De Vibe et al., 2013). In time management, students are taught how to deal with fixed time, while in mindfulness it seems as though they are taught how to engage more meaningfully with their own temporal orientation. Both studies aim to solve the same problem, student stress, but their angles and their relationship to an individual's ideas about time may differ.

Since there are so many ways in which time gives meaning to daily life and student stress is such a complex and multilevel concept (Nonis et al., 1998), the relationship between time and student stress raises questions. As was illustrated above, theoretical perspectives on time could have explanatory value in research on student stress, a phenomenon in which there remains, as shown in the introduction, accumulating ambiguity. Therefore, this study investigates the way that researchers see time and the assumptions they bring to the fold in relation to research on student stress. Additionally, this study entails a curiosity on whether researchers use their ideas about time consistently across their

research. As was mentioned before, the design of research and the methodology often use time in a meaningful way, but the explanatory value of time and time perspectives is not explored in the interpretation of research. Due to the rarity of the use of theoretical perspectives on time in educational scientific research (Leaton Gray, 2017) -and the current implicit nature of the employment of ideas about time in educational scientific research, the questions raised in this section can currently not be answered.

That is why this study seeks to explore the relationship between time and student stress across a variety of empirical studies on student stress. A systematic exploration of the use of ideas about time might elucidate whether ideas are used consistently and how they relate to the current deficiencies of the body of knowledge. If ideas are indeed often employed and authors do not seem to be aware of this, this could cause a gap in the current understanding of student stress. That is why this study poses the following research question:

“How do ideas about time that researchers employ when designing their research and interpreting their results relate to educational scientific research about student stress?”

### **Method**

The method of a meta-ethnography allowed us to explicate the used embedded concepts, operationalizations and interpretations of the included studies. The meta-ethnography is a qualitative interpretative approach to analysing literature (France et al., 2019). The synthesis of individual studies added an additional layer of understanding from the combination of papers (Vermeire, 2009; France et al., 2019) to identify overarching ideas within and across studies (France et al., 2015).

### **Sample Characteristics**

This study used a purposeful search strategy for the selection of the 8 articles that were analysed. It aimed to include a range of recent English-written peer reviewed empirical articles that originated from the social science domain, post-dated 2010 and varied in research approach, design, and methodology. This study deliberately aimed to include qualitative and quantitative studies, because of the prevalence of quantitative research on student stress and the simultaneous call for more

qualitative research (Hurst et al., 2013). By including both, it can give a more representative overview of embedded ideas that inform current research. Studies were considered suitable if they detailed the causes, as well as a proposal about interventions aimed at stress reduction. Studies were considered unsuitable if they focused on interpersonal student stress (e.g., bullying), or considered other groups than undergraduates, because those topics did not fall within the scope of the present study.

Originally, these criteria lead to a high number of studies from the field of medical education. But, because this study aimed to include a range of articles, it was decided to include a maximum of two papers from the health domain. All the criteria were determined in line with the aim of the research and through an extensive scoping exercise. Initially the search terms, “student AND stress AND higher AND education” were utilized, but the terms qualitative and intervention were added during the search process to yield more relevant results. The study utilized Scopus, Web of Science, Eric and Psychnet for its search. A total of 592 articles was screened across the different databases. Screening and selection were done on the basis of the articles’ title and abstract.

The search process finally resulted in the selection of four qualitative studies, three quantitative studies and one mixed method study. Six studies evaluated an intervention. While Denovan and Macaskill (2013) and Griffin and Wildbur (2020) did not include suggestions for interventions, the topics of their studies and the way they typified causes of stress were interesting grounds of comparison with the other studies, which justified their inclusion. Additionally, both studies made a recommendation with regards to how their findings could be used to construct interventions. Table 1 contains the studies’ salient characteristics.

**Table 1***Salient characteristics studies*

Authors	Research approach	Design	Method	Sample	Timeframe	Aim	Main Finding	Included based on ...
Brooman, & Darwent (2012)	Qualitative	Case Study	Analysis of student reflection essays	First-year Law students (UK)	Intervention took place during one of the first courses at university	Investigate if the use of self-awareness literature can support student development on a personal and academic level during the first year of university	Use of self-awareness literature seems to aid development by providing new personal insights and encouraging proactive problem solving.	C&I
Baghurst, & Kelley (2014)	Quantitative	Quasi-experimental	Surveys	College students from all levels (USA)	Intervention took place during a 16-week course	Investigate the effectiveness of three differently oriented 16-week courses aimed at stress reduction.	All interventions significantly reduced indicators of stress compared to the control group. The psychological intervention (Stress Management) was slightly more effective than the most effective physiological intervention (Physical Activity)	C&I
Agnew, Poole & Khan (2019)	Qualitative	Case Study	Focus Groups	Undergraduate students (Canada)	The fall break takes place in the 5 <sup>th</sup> week of the fall semester. Study was conducted during the fall semester.	Investigate the impact of the introduction of a fall break on student stress levels.	The scheduling of assessments around the break, as well as the timing of the break in general determine the effectiveness of the intervention at reducing stress levels and meeting academic needs. Intervention policies should be evidence-based to guarantee effectiveness.	C&I.
Zell, Pedigo & Cooney (2021)	Qualitative	Case study	Focus groups, reflective diaries	First-year students (USA)	The intervention took place over the course of a	Construct a grounded theory about how first-year students become and stay involved with a regular	Developing a mindfulness practice requires time investment and freedom to experiment. Reflection and regularity of practice was	C&I

					semester as part of a course.	mindfulness practice and outline what benefits they might derive from this.	beneficial. Interventions tied to a solid structure were recommended for the future.	
Häfner et al. (2014)	Quantitative	Quasi-experimental	Surveys	First-year students (Germany)	The intervention was a 2-hour time-management training and surveys were filled in 2 weeks before and after the training.	Investigate the effectiveness of a 2-hr time management training on perceived stress and perceived control of time.	The intervention was effective. The control group had a higher perceived stress score than the group that received the intervention. Additionally, those who had received the training had an increased perceived sense of control over time, while the control group's sense of control did not change.	C&I
Griffin & Wildbur (2020)	Mixed Method	Case study	Surveys, interviews	Undergraduates (UK)	The study was conducted during and right after the first year of university.	Investigate whether a student's (balanced) time perspective affected their subjective well-being and psychological health.	A student's time perspective can be connected to their subjective well-being. Interventions aimed at developing a balanced time perspective are a useful future research direction.	C
Denovan & Macaskill (2013)	Qualitative	Case study	Interviews	First-year students (UK)	The study was conducted after the first year.	Investigate why the experience of adjustment to university can be stressful for students.	The transition to university and the extent to which a student becomes stressed is impacted by the coping strategies they have at their disposal. Students can become stressed by a range of factors such as: all the changes; their expectations and academic life.	C.

Young et al. (2020)	Quantitative	Quasi-experimental	Surveys	Undergraduates from a psychology course (Australia)	Surveys before and after the intervention, which lasted a semester.	Investigate the effectiveness of an embedded wellbeing program.	The wellbeing program effectively worked as a buffer against the decrease of wellbeing over the course of a semester.	C&I
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Note: C means *including a thorough description of the cause of student stress*, I means *proposing an intervention to reduce student stress*.

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## **Instrument**

To achieve the close and detailed understanding of the studies that is essential to a meta-ethnography (France et al., 2019), this study developed a critical appraisal form. The form consisted of a combination of the Critical Appraisal Skills Programme (CASP) (2018) checklist for qualitative research and Campbell et al.'s (2012) appraisal form. Some questions were adapted and added to enable the inclusion of quantitative studies.

## **Procedure**

Figure 1 contains the steps in the meta-ethnography as described by France et al. (2019, p.6), a short explanation of the steps that were undertaken and under which heading they are reported upon. As can be seen in table 1, in the fourth and fifth step of the meta-ethnography, the studies were coded. This was done with the program Nvivo. Meta-ethnography distinguishes first order constructs (e.g., participant quotes and raw material) and second order constructs (author's interpretations) (Malpass et al., 2009). But in the case of this study and the aim of this study, the complete study can be seen as a reflection of the author's interpretation. That is why in this paper the entire study was treated as a second order construct.

However, not everything in the studies was relevant to this study's research question. That is why a selection was made of instances in which an idea about time was relevant to this study. They were identified by asking the question, "is this idea about time directly related to how and why an author wants to answer their research question?". An example of material that was regarded as irrelevant is a moment in which a reference was made to a point in time, but it could on its own give no clues about the ideas about time that authors employed. For example, "They [focus groups] were facilitated by a member of the research team (the lead author) and lasted approximately 45 to 60 minutes in length. (Agnew et al., 2019, p.46)". In the end, only the relevant material was analysed in light of the research question. This part of the procedure corresponds to the practice of inductive coding of a meta-ethnography (France et al., 2019).

**Figure 1**

*Process of the meta-ethnography and the distribution of steps across this study*

Step in process of meta-ethnography	Explanation step	Section in this study
1. Getting Started	The aim, focus and context for the study were identified by determining the problem statement and constructing a theoretical framework.	Introduction
2. Deciding what is relevant to the initial interest	A search strategy, in- and exclusion criteria were formulated. Articles were screened and finally selected based on the (refined) criteria.	Methods
3. Reading the studies	The studies were read critically and thoroughly to achieve a deep understanding of the content and context of the studies.	
4. Determining how the studies are related	Per individual study a first round of coding was done to identify (relevant) content related to the research question. A second round of coding was done that grouped relevant quotes together to discern the use of ideas related	Results

- to time across the study. The use of the idea was then tracked throughout the study.
5. Translating the studies into one another      The tracks of how ideas unfolded in the individual articles were compared to each other.
  6. Synthesizing translations      The results were interpreted to achieve an overarching understanding of the way in which ideas about time were employed in the studies that were read.      Discussion and conclusion
  7. Expressing the synthesis      The study's implications and limitations were considered and recommendations for future research were formulated.
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## Data Analysis

After the initial selection of relevant content for this study, this content was subjected to a second round of inductive coding. During the second round of coding firstly the content was given descriptive codes. For example, “The transition and subsequent adjustment typically involve positive aspects including growth opportunities and meeting new people; however it is also a period of great change which is stressful. (Denovan & Macaskill, 2013, p. 1003)” was coded “causes of (increase) student stress over time” and “Change (in lifetime)”.

After this, the descriptive codes were grouped to discern the main ideas related to time. The clearest (most easily recognizable) ideas preceding the methodology were considered the main ideas. They were considered the main ideas because they fed into the study's design and were most likely to be reflected on in the interpretation of the results. The individual ideas and their employment were tracked throughout the study to see how they unfolded. An example of what this looked like was a case in which the study described that assessments might cause stress due to a lack of time. This idea was carried through to the design of the study by constructing an intervention that taught students how to manage their time. The extent to which these choices were explicitly or implicitly motivated was also tracked.

After identifying the individual tracks per study, we compared the tracks to each other to produce the results that could be used to answer the research question. The comparison resulted in themes that represented the most often used ideas across the studies. The comparison was based on: 1) the (un)commonality of the employment of ideas, 2) how different ideas were employed in the design and methodology of the studies, 3) how different ideas were employed in the interpretation of the results of the studies 4) the level of explicit discussion of ideas about time across the studies, 5) the way the studies recommended that their results should be used in future research and practice. The criteria for comparison were based on the various ways in which this study suspected that studies might use ideas about times in their research.

### **Researcher Positionality, Ethics, and Quality**

Due to the increasing use of literature reviews to inform policies and in the face of the stakeholders those policies will impact, it is important to take ethical considerations into account before embarking on the review (Suri, 2020). This study was done in accordance with the ethical guidelines set out by the Utrecht University (2021). With this paragraph, I would like to inform the reader of my positionality. The study was written from the constructivist paradigm (see Guba and Lincoln 1994) and may be influenced by the fact that I am a student myself. However, to ensure the study's quality and objectivity, peer and supervisor reviews were sought for feedback. Additionally, an audit procedure as outlined by Akkerman et al. (2008) was performed to increase the trustworthiness

of the research (see appendix). The audit resulted in a positive review of this study's trustworthiness. To furthermore increase the trustworthiness and usability of the results, the reporting guidelines for a meta-ethnography and literature search were adhered to (Booth, 2006; France et al., 2019).

## Results

In this section the results of the analysis will be presented. From the comparison of the different tracks, three themes were identified that represent the most commonly used ideas. Each of the themes will be introduced and it will be outlined how often ideas were used in the studies. Then the employment of the ideas in the design and methodology and the interpretation of the results will be discussed. An overview of the themes and employment of ideas can be found in figure 2. Overall, in all of the studies ideas that were formulated about time were reflected to some extent in the design of the studies. In all cases, as can be seen from table 1 and figure 2 interventions or research were anchored in the structure of the academic year, reflecting the assumption that student stress levels would rise over time as the year passed. Moreover, this was actually a hypothesis of all of the quantitative studies. The rest of the results will be discussed per theme.

### Figure 2

#### *Overview of the themes and employment of ideas in the studies*

	Themes		
Studies	Simultaneous engagement with many new things can be stressful	A lack of time can be stressful	Expectations of the future can relate to stress
Brooman & Darwent (2012)	<b>I</b> ; students face many challenges. <b>D&amp;M</b> ; awareness, reflection and engaging with experience will foster learning. <b>R</b> ; awareness of stress aids learning from experience.	<b>D&amp;M</b> ; embedded intervention in the course curriculum. <b>R</b> ; students applied strategies to organize their (study) time more efficiently.	<b>R</b> ; stress impacts (future) expectations and expectations influence behaviour.

Baghurst & Kelley (2014)	<p><b>I;</b> students face many challenges and resulting demands. <b>D&amp;M;</b> students need help with coping (-strategy development). <b>R;</b> a combination of different stress reduction strategies is most effective.</p>	<p><b>I;</b> Facing many demands can result in an (experienced) lack of time. <b>D&amp;M;</b> the psychological intervention was partially focused on time management and planning. <b>R;</b> the (marginally larger) effectiveness of the intervention is not explored</p>
Agnew et al. (2019)		<p><b>I;</b> Students need reprieve during the semester from structural stress. <b>R;</b> inaccurate expectations can cause stress.</p> <p><b>D&amp;M;</b> the study evaluated the introduction of a fall break. <b>R;</b> students experienced trouble managing their time around the holiday.</p>
Zell et al. (2021)	<p><b>I;</b> students face many challenges. <b>D&amp;M;</b> through mindfulness students will accept their learning process. <b>R;</b> mindfulness aids the (positive) evaluation of experiences and learning processes.</p>	<p><b>I;</b> students are victims to the pressure of academic life. <b>D&amp;M;</b> embedded course in the student curriculum. <b>R;</b> interventions that are anchored in familiar structures ease time investment.</p>
Häfner et al. (2014)	<p><b>I;</b> Time management can prevent an increase in tension caused by the amount of demands students face. <b>D&amp;M;</b> time management can help give students a feeling of control. <b>R;</b> time management strategies help students feel less threatened by the demands they face through a sense of control over their time.</p>	<p><b>I;</b> students are subject to time-related stress because their workload increases, and they have to face many demands at the same time. <b>D&amp;M;</b> time management might help students structure their time and a short intervention does not demand a lot of their time. <b>R;</b> Students feel more in control of their time.</p> <p><b>R;</b> alternative explanations of the effectiveness of the intervention: students knew what to expect because the intervention taught them planning strategies.</p>

Griffin & Wildbur (2020)	<p><b>I;</b> students face many challenges.</p> <p><b>D&amp;M;</b> Examine over the course of a semester if students' view of time influences their ability to cope with challenges. <b>R;</b> a balanced time perspective aids in processing experiences and adapting future behaviour.</p>	<p><b>I;</b> Certain time perspectives can negatively or positively shape tendencies for certain kinds of (positive or negative) future expectations. <b>R;</b> future expectations can positively and negatively influence adjustment to changes.</p>	
Denovan & Macaskill (2013)	<p><b>I;</b> students face many challenges.</p> <p><b>D&amp;M;</b> examine how students cope with stress over time. <b>R;</b> Students learn coping strategies over time.</p>	<p><b>I;</b> time management is a meaningful coping strategy. <b>R;</b> universities might play a role in teaching time management and time management might be learned by students themselves over time.</p>	<p><b>I;</b> Individuals' expectations of events influence how they deal with situations. <b>R;</b> expectations not being met caused stress, while more accurate expectations lead to easier adjustment to changes.</p>
Young et al. (2020)	<p><b>I;</b> students face many challenges.</p> <p><b>D&amp;M;</b> employ preventative measures because students will inherently face stress. <b>R;</b> becoming aware of the commonality of stress and being supplied with strategies for dealing with stress provided a buffer against stress over the course of the semester.</p>	<p><b>D&amp;M;</b> embedded intervention in course curriculum as a preventative measure. <b>R;</b> embedded programs reduce required time investment for studies.</p>	

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Note: **I** means *the idea appears in the introduction*; **D&M** means *Unfolds in design and methodology*; **R** means *Unfolds in Results interpretation*

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### **Simultaneous Engagement With Many New Things Can Be Stressful**

Seven of the studies employed the idea that students were at a pivotal time in their lives in which they were faced with a multitude of (new) challenges and transformations. To illustrate:

Baghurst and Kelley (2014) describe that, "... college students are moving into and through a major developmental period of transition ... as they grapple with increased academic, personal, social, and moral pressures in their lives. (p.438)". The reason that change can be seen as stressful that could best be deduced from the studies is that it requires students to adapt and learn new things, additionally, they must learn many new things at the same time. As Denovan and Macaskill (2013) describe it "[students] struggled with the new situation and 'all the change' happening to their lives simultaneously. (p.1008)."

### *Use in Design and Methodology*

The employment of the idea that students faced many challenges at the same time unfolded in two distinct ways across the studies that described the implementation of an intervention. Brooman and Darwent (2012) and Zell et al. (2021) suggested that the key to supporting the process of adapting to many new things is helping students become aware of- and engage with their experiences through reflection. On the other hand, Baghurst and Kelley and Häfner et al. suggested that teaching students strategies for stress reduction or feeling in control of their time will help them as they face many challenges at the same time.

These ideas were expressed in their interventions. For instance: Brooman and Darwent hoped that "keeping a diary would encourage some reflection on [students] personal and academic challenges, successes and development throughout the semester. (p.21)". Häfner et al., described that they hoped that time management will prevent a perceived demand after the first few weeks of the semester (p.406). Here the ideas seem to distinctly differ in terms of how inevitable they perceive stress to be and what role they feel that students should play in reducing their own stress. This distinction between how the process should be supported was not seen in Young et al. Instead, they sought to achieve a combination of reflection and teaching strategies for protecting students against negative consequences from stress through a preventative program.

### *Use in the Interpretation of Results*

All the studies returned to the idea of stress resulting from simultaneous engagement with many new things. Brooman and Darwent and Zell et al. found that reflection made students aware of

the (commonality) of stress. This was beneficial to their learning process and the extent to which they developed strategies for dealing with stress. Moreover, Brooman and Darwent outline that the intervention was especially useful because, “[students] were given the opportunity for self-discovery rather than simply being presented with directives. (p.29).”

Baghurst and Kelley reported that all the strategies they taught students reached the desired effect of reducing stress. They conclude that, “a combination of stress reduction strategies may be the most effective means of reducing stress... (p.445)”. Häfner et al. found that while the control group did experience an increase in demands during their first weeks, the experimental group did not. They attributed this to the fact that their intervention, “might have been useful for perceiving external demands as less threatening (p.411).” Young et al. found that the preventative program provided students with a buffer against stress as the semester progressed compared to the control group (p.14).

Griffin and Wildbur (2020) found that a balanced time perspective aided in how experiences are processed and when things are experienced as overwhelming. This is because people who employ a balanced time perspective (TP), “can be flexible with their TP in response to changing circumstances and situational demands (p.8).” Denovan and Macaskill confirmed that students learn coping strategies over time, and that the way in which experiences are evaluated determines the kinds of actions they take.

### **A Lack of Time Can Be Stressful**

Five studies formulated the idea in their introduction that students might suffer from a lack of time, while one implicitly introduced this idea in their methodology section and later referred to it in their results (Young et al., 2020) (see figure 2). Two studies explicitly connected this to the fact that they had to learn many new things at the same time, which could cause a lack of time. For example, Baghurst and Kelley describe that, “[these challenges] can lead to students feeling as if they do not have enough time or energy to cope with the responsibilities associated with the collegiate experience. (p.438).” Additionally, two studies note that the academic environment is one that puts pressure on students' schedules and that due to the way in which academic life is structured, this too might result in

a lack of time. To illustrate: “Another source of students’ perceived stress is time-related demands such as an increasing workload, time pressure and regulation of their selfstudy... (Häfner et al., 2014, p.404)”.

### ***Use in Design and Methodology***

Measures to alleviate the sense of a lack of time or the idea that students might suffer from a lack of time were featured in the (construction of) interventions of six of the eight studies. Agnew et al. (2019) evaluated the introduction of a fall break that seeks to provide students with, “meaningful reprieve during a strategic moment in the course of their studies to improve academic performance and mental health and well-being (p.46).” The word reprieve led to the conclusion that this intervention assumed that students suffer from a lack of time that caused them to not be able to meet all their needs and that this could be resolved with extra time.

Häfner et al. deliberately constructed a short time management intervention which focused on teaching students about planning and goal setting. Baghurst and Kelley employed three different kinds of interventions and in their psychological intervention, some attention is paid to time management. Additionally, three studies (see figure 2) employed an intervention that was embedded in the curriculum and while none of them describe in their methodology section that this might save students time, references to this are made in their result sections. For example, Zell et al., mentioned that embedding an intervention in courses helps students invest the time that is needed for their intervention to work (p.287).

### ***Use in the Interpretation of Results***

The idea that students might suffer from a lack of time unfolded across seven studies. It featured most explicitly in Agnew et al.. They found that the intention of giving students more time did not provide them with the intended relief. Instead, some students reported that due to the holiday they became more stressed. “Students’ reports of the transition back to campus after the break indicated that their post-break stress heavily derived from overwhelming academic responsibilities upon returning to campus. (p. 51).” The intention to give students more time leads to an increased

pressure on their time management capabilities due to the planning of assessments. Additionally, students found that the break disrupted the rhythm of the academic schedule, “while they appreciated the opportunity to relax and visit with their family and friends, they perceived that the break had upset their “natural rhythm” (p. 50).” This resulted in procrastination during the break when they wanted to do academic work.

The psychological intervention that incorporated elements of time management in Baghurst and Kelley was marginally more effective than the other interventions. They did not explore why this was the case to a deeper extent than, “broad, universal interventions with a strong cognitive–behavioral component can be highly effective in reducing stress... (p.443).” Häfner et al. report that the sense of control over time helped students and they are pleased about the fact that such a short intervention helped. Denovan and Macaskill mention passingly that universities could implement, “... programs that address time management ... (p.1011).” The studies that used embedded programs similarly gave practical recommendations for the use of their results.

### **Expectations of the Future Can Relate to Stress**

Two studies introduced the idea that expectations of the future can positively and negatively relate to stress. Sometimes expectations of the future caused stress, while at other times expectations of the future guarded against stress (Denovan and Macaskill, Griffin and Wildbur). For example, Griffin and Wildbur described a time orientation that is focused on the future, which enables you to delay gratification of your cravings due to what you expect the future to entail (p.2). The idea that expectations of the future might be related to stress did not feature recognisably in the design and methodology of any of the studies.

### ***Use in the Interpretation of Results***

Five of the studies made some reference to the role of expectations in the interpretation of their results. It is confirmed that expectations can positively and negatively influence student stress. Denovan and Macaskill find that, “[students] experienced disappointment and greater stress from university not meeting their expectations; whereas students who held more accurate expectations adjusted to the transition, because they were more prepared for the experience. (p. 1011).” Griffin and

Wildbur find that a future orientation is associated with planning and setting goals, which in turn is associated with recognizing success and general well-being (p.7).

Furthermore, it was interesting to see that this idea that expectations are related to stress was introduced in the results of three studies. Brooman and Darwent find that “[experiencing negative consequences from stress] lowered expectations of passing and decreased confidence, and possibly leaving the course. (p.26).” In their recommendations, they refer back to in their recommendation that the notion that students should be made aware of the possibility of becoming stressed during their first year in university. Agnew et al. outlined that student expectations about the fall break not being met caused stress. Additionally, when students disappointed themselves by procrastinating during the break or ineffectively managing their time, they became stressed. Lastly, Häfner et al. offer an alternative explanation for the effectiveness of their finding, namely that by using planning skills learned from time management training “potentially stressful events can be anticipated and emotionally controlled resulting in positive effects on perceived stress (p.411).”

### **Discussion**

This study provides preliminary insight in the nature of the relationship between ideas about time and research on student stress. It did so by identifying ideas that inform research and the way in which those ideas are used in the design, and in the interpretation of the results. The results confirm the argument that was made in the introduction: that ideas about time and student stress are inseparably connected. This is concluded due to the way in which the results highlight that the studies in this article were grounded in ideas about time. The themes give some indication of the distinct ideas that were employed by the studies, but due to the study’s exploratory nature and inductive coding procedure, no theoretical perspectives can be connected to them with absolute certainty. However, the way in which the interpretations across the studies seem to be related to each other (for example learning many new things at once and a lack of time) give indication that an investigation of the nature of the relationship is worthwhile. In this discussion section the many ways in which ideas about time relate to educational scientific research on student stress will be discussed in order to pave the way for future investigations.

This study questioned to what extent it was common for studies to be informed by ideas about time and how explicitly those were discussed. It found that all of the studies were informed by at least one distinct idea about time, but that most of them were actually informed by multiple at the same time. Additionally, in five cases new ideas were introduced in the design of the study or in the interpretation of their results that were not present in the theoretical framework. However, when this was the case, the studies did not explicitly relate the new ideas to theoretical perspectives. This shows that it is not common to explicitly discuss ideas about time that inform research.

The fact that multiple ideas about time informed the studies by itself was not problematic. Nevertheless, this study found that it was problematic to distinguish which aspect of student stress that the studies related to time they thought to be the one that caused them stress. For example, six of the studies described that students had to learn many new things at the same time, but also assumed that students suffered from a lack of time. Indeed, the relationship between those two distinct ideas was not specified. Likewise, it was not made clear whether the fact that students had to learn many new things at the same time might cause them to suffer from a lack of time or if the lack of time might result from something else. An example of something else is that they faced an increased workload due to the pressure that university might put upon them.

This study was also curious how different ideas about time that studies might employ related to the design of their studies and methodologies. Firstly, this study found that the different ideas about time instigated various interventions that seemed to have distinctly different starting points, even though they identified the same cause for student stress. Additionally, it found that all of the studies were informed by the idea that student stress is related to the passing of time and that stress would mount over time. This was deduced from the fact that they planned their interventions over the course of a semester or evaluated student experiences after a semester or the school year. With regards to the employment of the ideas in the interpretation of their results, this study found that studies did not consistently refer to or reflect on ideas they had formulated at the start of their studies about causes of stress. Whenever they did so, it was mostly formulated on a practical level with regards to the recommendations they made rather than on an empirical level.

The findings from this study imply that authors are not always aware of the implications of the ideas about time they (unconsciously) operationalize. This could mean that the perceived causes of- and solutions for student stress might not always align. This inconsistency could explain why interventions differ in terms of effectiveness. Additionally, the findings from this study feed the implication that student stress might be an all-purpose concept that could be researched more effectively if it were unpacked. Indeed, this study suggests that there is explanatory value in reviewing theoretical perspectives on time in the unpacking of the concept of student stress.

The findings from this study can be connected to the research field in several ways. It aligns itself with Robotham and Julian's (2006) suggestion that interventions differ in terms of what they perceive to cause the problem. It would like to add that what they perceive to be the cause of the problem may be informed by ideas about time. Furthermore, this research also serves as a response to the call for more qualitative research on student stress as made by Hurst et al. (2013). It can therefore be stressed that the findings from this study only reinforce the urgency of that call. Along similar lines, this study tentatively agrees with Jafar (2018) who notes that the practice of expressing positionality might also be appropriate for quantitative studies. It does so because this study found that it seems that unconscious assumptions shape the research on student stress. Positionality could inform readers more of the context of the studies and add to the validity of the studies' findings (Jafar, 2013). According to the findings of this study, expressing positionality is important regardless of the research approach that is chosen. This study's suggestion that student stress might be caused by a multitude of different things and that interventions should match the cause of stress that they seek to resolve is not in line with recent findings from Jones, Park and Lefevor (2018). They suggest that while student stress is caused by a number of factors, academic and financial stress are most prevalent, and it is most useful to address those in interventions. However, their study was conducted on a sample of students that sought out interventions, while the studies that were investigated in this study mostly considered a more general body of students.

### **Limitations**

This study was subject to a number of limitations. In hindsight, this study would have benefitted from

a different approach to the coding process. The coding process was inductive due to the exploratory nature of this study and the fact that the study was not certain to what extent ideas about time might be employed in the studies that were investigated. However, there was a grounded suspicion that research on student stress was interlaced with ideas about time. A deductive-inductive coding scheme based on the theoretical perspectives of time that were outlined in the theoretical framework could have made this study's results less abstract. However, within the scope of this research it was not possible to analyse the results according to such a coding scheme post hoc. Additionally, the scope of the research question somewhat exceeded the scope of the research. There were so many different ways in which ideas about time were used in the studies that the selection of the main ideas about time might have benefitted from another distinction. For example, between uses of ideas about time that informed the design and the methodology and ways in which the ideas about time were used in the interpretation of results. Because this study highlighted both of these, it reinforced the argument that student stress and time are related in a research worthy way. But it kept the study from the in-depth exploration of the way in which ideas about time shaped the research. Lastly, as was outlined earlier, this study was conducted in the context of a master thesis and may have been influenced by the fact that it was written by a student. However, through the informing of researcher positionality and a quality check in the form of an audit trail, the study's objectivity was safeguarded.

### **Future research recommendations**

Future research might expand on the findings from this study by reproducing this study with the inclusion of a deductive-inductive coding scheme or a directed content analysis (Hsieh & Shannon, 2005). This would allow studies to reinterpret findings from earlier research in the light of theoretical perspectives on time. This could aid in the understanding of student stress and make use of the findings from earlier studies. Additionally, if this study would be replicated, it would be beneficial to the trustworthiness of the research to ask the authors of the studies to review the interpretations that are made in the study. Unfortunately, there were not enough resources to address this within the scope of this study. Additionally, future research might identify whether there is a difference in qualitative and in quantitative studies in the use of ideas about time. This might reinforce the argument that

quantitative studies could benefit from expressing positionality, if it is found that ideas about time are used more consistently when positionality is expressed. Furthermore, future research is recommended to clearly outline what they perceive to be the cause of student stress and how that relates to the intervention that they propose. They are recommended to inform their perspective with theoretical perspectives on time, because this study has shown that there is a relationship between student stress and time that is currently not expressed in the research.

### **Conclusion**

This research explored how ideas about time relate to student stress. Through its exploration it showed the extent to which conceptually rich, creative, diverse, and overall excellent research is done in the field of student stress. This study also gave indication that there may be much more implied meaning that can be extracted, researched, and analysed from the abundance of research. This paper found indications that the implicit use of ideas about time causes ambiguities that can be avoided by way of explicit considerations of theoretical perspectives on time. Additionally, it found that underutilized explanatory power might be derived from the inclusion of such perspectives. Given these points, this study's findings are an important contribution to the understanding of student stress because they identify possible gaps in scientific understanding and provide guidance on how this gap might be addressed in future research.

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## Appendix

### Results of the audit procedure

The audit was performed by an independent peer that was not affiliated with the rest of the research.

Audit trail		Quality		
Components				
		Visibility	Comprehensibility	Acceptable
Data gathering	Planned	The original plan is presented. The inclusion and exclusion criteria for the articles are clearly described. The selection method for relevant material from the articles is described.	The selection criteria are described in detail and the search is reproducible. The selection of relevant material requires somewhat more detail to be reproducible.	Relevant literature provided best practices for the data gathering of a meta-ethnography.
	Realized	The deviations from the original search strategy are iteratively described along with the introduction of the original search strategy. An	While the selection of articles is very clearly described, the selection of appropriate data from the articles remained slightly ambiguous. However, the example mostly clarified this.	The data gathering was transparently described and the best practices were recognisably used to produce a trustworthy report of the data gathering.

example is given of what was seen as relevant and irrelevant material from the articles.

Data analysis	Planned	The steps that were taken in the analysis were described in detail.	The intention behind the coding process that this study employed was stated in detail.	The steps that are customary for a meta-ethnography are described and best practices are taken into account in the conduction of the data analysis.
	Realized	The steps that were taken in the analysis are illustrated with examples.	The steps that were undertaken were specifically tailored to be comprehensible to educational scientific researchers that were not familiar with the meta-ethnography. This added to the clarity of the description of the data analysis.	The steps that were undertaken in the coding process conform to the steps that are described for a meta-ethnography and are clearly recognizable, adding to the trustworthiness of the research.

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