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Antecedents and Consequences of Situational Interest

Lisa Linnenbrink-Garcia,
Duke University

Erika A. Patall, and
The University of Texas at Austin

Emily E. Messersmith
Arbor Research Collaborative for Health

Abstract

Background—There is a growing body of research on situational interest (SI). Yet, we still know relatively little about how SI is supported in the classroom and the academic benefits of SI.

Aims—The current study investigated (1) contextual antecedents of SI, (2) potential benefits of SI for academic outcomes, and (3) SI as a mediator of classroom practices to academic outcomes.

Sample—Participants were 126 male and female adolescents (mean age = 14.6 years) who took part in a science course during a 3-week residential summer program for talented adolescents.

Method—Participants completed self-report measures prior to the start of the summer program and at the end of the program. Summer program instructors completed ratings of students' engagement during the program.

Results—Multiple regression analyses were conducted to investigate the three study aims. After controlling for initial individual interest, perceived choice, instructor approachability, and course connections to real life were statistically significant predictors of SI during the summer program, with varying relations observed based on the form of SI (triggered, maintained-feeling, maintained-value). SI was positively related to individual interest and perceived competence in science at the end of the program as well as teacher-rated engagement; SI also mediated the relations of classroom practices to these outcomes.

Conclusion—Results suggest that classroom practices shape SI. In turn, SI supports motivation and engagement. Moreover, differentiated antecedents and outcomes of the three subcomponents of SI were identified, highlighting the utility of this three-component approach for studying SI.

Interest and value are important predictors of students' achievement, engagement, and subsequent career choices (Schiefele, 2001, 2009; Wigfield & Eccles, 2001). As such, it is important to understand how interest can be supported in classroom settings as a mechanism for supporting academic outcomes and career choices. Building on recent work on interest

Correspondence regarding this manuscript should be addressed to Lisa Linnenbrink-Garcia, Department of Psychology & Neuroscience, Duke University, PO Box 90086, Durham, NC 27708-0086, USA or llinnen@duke.edu.

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development suggesting that enduring forms of individual interest can develop via situational interest (e.g., Krapp, 2002; Hidi & Renninger, 2006; Schiefele, 2009), the current study investigated how situational interest can be supported in the classroom and the potential benefits of situational interest for academic outcomes. Specifically, the purpose of the current research was to (1) explore contextual antecedents of situational interest, (2) examine how situational interest supports individual interest, perceived competence, and engagement in academic settings, and (3) examine whether classroom practices shape individual interest, perceived competence, and engagement via situational interest.

Theoretical Views on Interest

Researchers studying interest have primarily differentiated between two main forms of interest: individual and situational. Broadly speaking, *individual interest* (also referred to as personal interest) is relatively stable and resides within the individual; it includes a deep personal connection to the domain and a willingness to re-engage in the domain over time (cf., Hidi & Renninger, 2006; Krapp, 2005; Renninger, Hidi, & Krapp, 1992; Renninger, 2009; Schiefele, 1991, 2001, 2009). Within the extant literature, there are varying views regarding the conceptualization of individual interest.¹ In the current study, we employ Schiefele's (1991, 2001, 2009) affective-evaluative orientation, which conceptualizes individual interest as including both positive feelings, such as enjoyment, towards the domain, as well as the view that the domain is personally meaningful and important.

In contrast to the relatively enduring qualities of individual interest, *situational interest (SI)* refers to interest that emerges from and is supported by the context (Hidi & Baird, 1986; Hidi & Renninger, 2006; Krapp, 2002; Schiefele, 2009). Individual interest can also be supported by and actualized within a particular context, but in contrast to situational interest, it is not dependent on situational supports and continues to exist without them. A number of theoretical conceptualizations of situational interest have been put forth, including the distinction between catch and hold (Mitchell, 1993) and triggered and maintained (Hidi & Renninger, 2006) situational interest. Linnenbrink-Garcia et al. (2010) extended these models to develop a three-component model of situational interest, consisting of triggered-SI, maintained-SI-feeling, and maintained-SI-value, which was supported by a series of empirical studies showing that these three components of situational interest were distinct from each other and from individual interest, and predicted changes in individual interest during the academic year. This three-component model, described in detail below, serves as the foundation for the current research.

Triggered-SI, which is similar to Mitchell's (1993) conceptualization of catch, refers to a relatively short, heightened affective state that is generally initiated by contextual supports (Hidi & Renninger, 2006). During this phase of interest, the context may momentarily trigger engagement and attention, but it does not lead to prolonged engagement with the domain. These affective reactions likely emerge from the form of instruction itself, rather than the content of the course (Linnenbrink-Garcia et al., 2010). Triggered-SI is often

¹See for example Renninger's differentiation between less- and well-developed individual interest (Hidi & Renninger, 2006; Lipstein & Renninger, 2007; Renninger, 1992, 2009).

relatively short-lived. It can, however, lead to maintained-SI and thus is critical in the overall development of individual interest (Hidi & Renninger, 2006; Renninger, 2009; Renninger & Hidi, 2002).

Maintained-SI, which is similar to Mitchell's (1993) conceptualization of hold, refers to situational support of an individual's more focused involvement, attention, and persistence in a domain, including finding meaning and personal connections to the domain content (Mitchell, 1993; Hidi & Renninger, 2006). In contrast to triggered-SI, maintained-SI occurs when the context supports involvement in and enjoyment of the material itself (Schiefele, 2009). During this phase, students are likely to experience positive feelings (e.g., enjoyment), but are also developing deeper value for and knowledge of the content (Renninger, 2009). Maintained-SI may be similar in structure to individual interest in that it involves both positive feelings for and valuing of a domain (Linnenbrink-Garcia et al., 2010; Schiefele, 2009; see also Tsai, Kunter, Ludtke, Trautwein, & Ryan, 2008 for a similar argument). Thus, Linnenbrink-Garcia et al.'s (2010) three-component model further differentiates between the feeling and value components of maintained-SI, such that *maintained-SI-feeling* refers to experiencing positive affect toward the domain via instructional support and *maintained-SI-value* to cognitively finding meaning and personal usefulness in the domain via instructional support. These two maintained-situational interest components are related, but represent distinct ways in which situational interest may emerge in the classroom.

While these two components of maintained-situational interest are thought to be similar in structure to individual interest, they are distinct in that they focus on enjoyment and value that emerge as a function of contextual supports rather than enduring predispositions to find enjoyment and value in the domain. Thus, an individual experiencing maintained-SI would find the content of a course enjoyable and/or meaningful while learning in that context, but would not necessarily seek out other opportunities to learn about the domain outside of the supported environment or once the instructional unit was complete. It is only after the transition is made from maintained-SI to individual interest that individuals begin to seek out repeated additional experiences with the domain. Importantly, although both triggered-SI and maintained-SI emphasize feelings emerging from the situation, triggered-SI refers to feelings related to the *form* of instruction whereas maintained-SI-feeling refers to feelings based on the *content* of the instruction. That is, triggered-SI is an emotional reaction to how the material is presented or experienced, whereas maintained-SI-feeling is an emotional reaction to the topic itself.

Supporting Interest Development

Given the potential of situational interest to develop into individual interest and its potential link to other important academic outcomes, it is critical to examine how these three forms of situational interest can be supported in educational settings. Much of the existing research on interest development focuses on identifying different phases of interest, rather than classroom supports for these phases (cf., Lipstein & Renninger, 2007; Renninger & Hidi, 2002; Renninger & Lipstein, 2006). There is also an extensive body of research examining how specific features of texts promote situational interest during reading (c.f., Hidi & Baird,

1988; Schraw & Lehman, 2001). In a review of this work, Schraw and Lehman (2001) highlighted a number of text features that promote situational interest including the seductiveness, vividness, and coherence of the text (see also Schraw, Flowerday, & Lehman, 2001). While this research informs our understanding of supports for interest in the context of reading and identifies some factors that may support situational interest in the classroom (e.g., lectures that include seductive details), there is a clear need to move beyond text-based studies to consider antecedents of situational interest in a broader range of classroom contexts. Compared to research on text-based supports for interest, the empirical base examining classroom factors leading to situational interest is relatively small, with very few studies considering any of the subcomponents. However, there is growing convergence of evidence identifying several critical factors for promoting situational interest. Below, we provide a brief review of this work.

In one of the initial studies conducted outside of text processing, Mitchell (1993) used student surveys to identify five contextual factors that could be differentiated into supports for triggered-SI (use of computers, puzzles, and group work) and maintained-SI (making mathematics meaningful and active involvement in the lesson) in secondary mathematics classrooms. Since this seminal study, other researchers have queried teachers and students about what helps them learn and what makes learning interesting (Zahork, 1996; Freeman, McPhail, & Berndt, 2002), developed in-depth case studies or portraits of interest development (Renninger & Hidi, 2002; Lipstein & Renninger, 2007), and used field observations and interviews (Dohn, Madsen, & Malte, 2009) to describe situational supports for interest. The results from these studies suggest that active involvement (e.g., hands-on activities, building models, experiments), course connections to real life, social connections (e.g., group work, working with friends), social support from parents and teachers, and autonomy support are key for supporting interest. Building from this qualitative and observational research, several more recent studies investigated how students' perceptions of classroom factors relate to self-reported interest (both situational and individual). These studies identified perceived autonomy support (Ciani, Ferguson, Bergin, & Hilpert, 2010; Tsai et al., 2008) and perceiving the instructor as friendly, enthusiastic, and having subject-matter expertise (Frenzel, Goetz, Pekrun, & Watt, 2010; Rotgans & Schmidt, 2011b) as significant predictors of interest.

Other research has examined shifts in situational interest over time as a function of classroom instruction (Palmer, 2009; Rotgans & Schmidt, 2011a) or experimental intervention (Del Favero, Boscolo, Vidotto, & Vicentini, 2007; Durik & Harackiewicz, 2007; Hoffman, 2002; Hulleman & Harackiewicz, 2009; Hulleman, Godes, Hendricks, & Harackiewicz, 2010). For instance, Palmer (2009) studied ninth grade students participating in a hands-on inquiry lesson. He found that situational interest varied across the lesson, with the lowest levels when students copied notes, moderate levels during the demonstration, proposal, and report phases of the lesson, and the highest levels during experiments. Using qualitative interviews, Palmer identified opportunity to learn, choice, novelty/suspense/surprise, hands-on activity, and social involvement as sources of situational interest. Four intervention studies experimentally manipulated relevance or connections to real life and found that targeting relevance effectively supported interest (Durik & Harackiewicz, 2007; Hoffman, 2002; Hulleman & Harackiewicz, 2009; Hulleman et al., 2010). For example,

Hoffmann (2002) found that when teachers made connections between physics topics and aspects of everyday life that were likely to be especially appealing to girls, girls became increasingly more motivated to study physics. In a fifth intervention study, Del Favero et al. (2007) manipulated active involvement with peers by comparing the effects of engaging in problem-solving in groups through discussion or individually. Students in the discussion condition reported higher situational interest in participation (e.g., interest in participating in the activities) and in activities (interest stimulated by the activities), although there were no significant changes in individual interest.

Several key themes emerge from this prior work. First, the role of choice or autonomy support was observed in a number of the studies (Ciani et al., 2010; Palmer, 2009; Renninger & Hidi, 2002; Tsai et al., 2008; Zahorik, 1996). Autonomy support is also identified as a key support for motivation by other major motivational theories. For example, self-determination theory proposes that the need for autonomy is one of the three primary needs underlying intrinsic motivation (Ryan & Deci, 2000). Prior research from this theoretical perspective indicates that provision of choice is an autonomy supportive practice through which feelings of interest and intrinsic motivation may be supported (see Katz & Assor, 2007; Patall, Cooper, & Robinson, 2008 for reviews). Moreover, autonomy support is also identified as central for supporting mastery goal orientations (Ames, 1992; Patrick, Anderman, Ryan, Edelin, & Midgley, 2001), which have in turn been linked to higher levels of individual and situational interest (Harackiewicz, Barron, Elliot, Carter, & Lehto, 1997; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Harackiewicz, Barron, Tauer, & Elliot, 2002; Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008).

Thus, we hypothesize that autonomy support and the perception of having choices, in particular, can lead to higher levels of situational interest. While there is little empirical evidence regarding its relation to the sub-components of situational interest, we hypothesize that it will be associated with triggered-SI and maintained-SI-feeling. Providing students with procedural and material choices in the classroom should both trigger students' initial interest in the activity at the moment that the choice occurs, as well as support maintained positive feelings toward the subject being studied. In light of prior research showing little relation between choice provision and high school students' reports of engaging in coursework because it is personally valued or viewed as important (e.g. identified regulation for coursework; Patall, Cooper, & Wynn, 2010), we do not expect provision of choice to enhance maintained-SI-value.

A second component of the classroom identified in our review concerned characteristics of the instructor as friendly, approachable, and supportive of a social relationship with students (Dohn et al., 2009; Frenzel et al., 2010; Renninger & Hidi, 2002; Rotgans & Schmidt, 2011b). At a theoretical level, instructor approachability and friendliness can support feelings of relatedness, including belongingness and feelings of close connection to the teacher (Bergin, 1999; Schiefele, 2009). Drawing from self-determination theory, the extent to which students feel social support and connection should also facilitate interest (Krapp, 2005; Ryan & Deci, 2000). Because instructor approachability and friendliness focuses on the instructor rather than the content being taught, we expect that it will be more likely to facilitate feelings of triggered-SI rather than maintained-SI. That is, these characteristics of

the instructor are likely to enhance students' momentary positive feelings in a particular classroom setting, but are not tied directly to enjoyment of the content being studied.

A third factor was students' opportunities to become involved in a lesson. Specifically, working in groups, doing hands-on activities, engaging in group discussion, and working with friends have all been identified as supporting situational interest (Del Favero et al., 2007; Dohn et al., 2009; Freeman et al., 2002; Mitchell, 1993; Palmer, 2009; Renninger & Hidi, 2002; Zahorik, 1996). The majority of this prior work did not consider what form of situational interest would be supported through opportunities for involvement. However, Mitchell (1993) identified group work as a form of triggered-SI, but opportunities for deeper involvement as a form of maintained-SI. The relation of involvement to the various forms of situational interest most likely depends on the degree to which tasks promoting involvement tie in directly with the course materials. If it is superficial (e.g., the opportunity to complete a task with friends), it will likely lead to triggered-SI; however, if involvement helps students to more actively engage in the material, it may also lead to maintained-SI. Since many group activities and opportunities for involvement emphasize complex, real-world tasks, we expect that opportunities for involvement can support both the feeling and value forms of maintained-SI.

A fourth consistent theme throughout the literature is the need to make course material meaningful and tied to everyday life (Dohn et al., 2009; Durik & Harackiewicz, 2007; Hoffmann, 2002; Hulleman & Harackiewicz, 2009; Hulleman et al., 2010; Mitchell, 1993; Zahorik, 1996). The majority of studies examining connections to real life looked at situational interest more generally. While it is possible that connections to real life grab students' attention, we hypothesize that this contextual support will be most strongly related to maintained-SI-value, as it will help to highlight the value of what is being learned.

While our review also identified a number of other factors that might support situational interest (e.g., puzzles, live animals, opportunities to learn), autonomy support, instructor approachability/friendliness, opportunities for involvement, and connections to real life were most consistently identified across the studies and align well with theoretical perspectives on the underlying components of interest development (Bergin, 1999; Hidi & Renninger, 2006; Krapp, 2005; Schiefele, 2009). As such, we focused our investigation on these four primary classroom supports for situational interest and sought to extend this prior work by examining how these classroom factors related to triggered-SI, maintained-SI-feeling, and maintained-SI-value.

Consequences of Situational Interest

In addition to considering possible antecedents of situational interest, it is also important to examine how the experience of situational interest can enhance key academic outcomes. One of the most important outcomes of situational interest is its potential for supporting interest in academic-related topics (Hidi, 2001). Indeed, the four-phase model of interest development focuses on how situational interest can develop into individual interest (Hidi & Renninger, 2006). However, much of the prior research on the development of interest examines shifts in interest or value across time without considering the role of situational

interest in explaining these shifts (e.g., Fredricks & Eccles, 2002; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002).

A growing body of research provides initial evidence that situational interest can develop into individual interest (Del Favero et al., 2007; Harackiewicz et al., 2000, 2002, 2008; Linnenbrink-Garcia et al., 2010; Randler & Bogner, 2007; Renninger & Hidi, 2002). For instance, Randler and Bogner (2007) examined interest development for eighth and ninth graders studying ecology. After controlling for initial individual interest, situational interest was a significant predictor of individual interest at the end of the unit. In a series of studies conducted in introductory psychology classes, Harackiewicz and her colleagues (2000, 2002, 2008) examined how the sub-components of situational interest predicted course choices and majoring in psychology (indicators of individual interest). Across these studies, interest in the course (similar to maintained-SI), but not enjoyment of lectures (similar to triggered-SI), predicted the number of psychology courses students took as undergraduates as well as their decision to major in psychology. Linnenbrink-Garcia et al. (2010) also examined changes in adolescents' individual interest in mathematics as a function of the three sub-components of situational interest. Both triggered-SI and maintained-SI-feeling, but not maintained-SI-value, were related to increases in individual interest in the spring, controlling for initial levels of interest.

These studies provide evidence for the importance of situational interest in supporting individual interest and suggest that maintained-SI-feeling may be the most likely form of situational interest to develop into individual interest, although there was some evidence that triggered-SI was associated with individual interest. While there is not clear empirical support, it also seems reasonable to suggest that maintained-SI-value could also support interest development. As individuals come to see the domain as useful and valuable for their understanding of the world, this should increase their longer-lasting enjoyment and value of the domain (Hidi & Renninger, 2006; Schiefele, 2009). Thus, we hypothesize that all three components of situational interest can support interest development.

Situational interest may also lead to other types of motivation such as perceived competence. As students come to enjoy a domain, they may become increasingly confident of their skills in that domain. Thus, situational interest may increase perceived competence. Perceived competence may also be an intermediary step leading to individual interest (Lipstein & Renninger, 2007; Renninger & Hidi, 2002). If situational interest can support perceived competence, it may be especially instrumental in helping students to shift from situational to individual interest. Indeed, perceived competence is often viewed as a precursor to interest (Marsh, Trautwein, Ludtke, Koller, & Baumert, 2005; Silvia, 2003; Wigfield & Eccles, 2001).

While this question has not been extensively studied, there is some evidence that situational interest supports perceived competence. Nieswandt (2007) found that situational interest in the fall predicted changes in academic self-concept in the spring among ninth grade chemistry students. Similarly, Durik and Harackiewicz (2007) reported that participants with high interest working on a task designed to enhance relevance had higher reports of perceived competence at the end of the task; however, they did not find a significant effect

of visually stimulating materials for supporting perceived competence. Del Favero et al.'s (2007) research provides some evidence that situational interest may predict perceived competence. Using structural equation modeling, the authors reported that in classrooms designed to enhance situational interest via group discussions, situational interest predicted perceived competence; however, these effects were only observed for one set of lessons. For the other set of lessons, perceived competence predicted interest directly, but not via situational interest. Overall, there is growing evidence that situational interest may help to support perceived competence, however, the exact nature of this relation and the role of the subcomponents of situational interest remains unclear. As such, our investigation of the relation of triggered-SI, maintained-SI-feeling, and maintained-SI-value to perceived competence is more exploratory.

Finally, there is a growing body of literature providing evidence for the benefits of situational interest in supporting engagement and cognitive processing (for reviews see Hidi, 1990, 2001; Schiefele, 2001, 2009; Schraw & Lehman, 2001). However, the majority of this research is conducted for text-based processing. This research suggests that situational interest supports increased attention, cognitive processing, and persistence (see Hidi, 1990, 2001). However, as Hidi notes, findings may vary depending on whether one examines intentional engagement versus voluntary, spontaneous effort, with situational interest more likely to support the latter. That is, situational interest may support engagement in such a way that one is not readily aware of one's engagement. In this case, the use of student self-reports may be particularly problematic. Thus, in the current study we employed instructor ratings of students' engagement in the course materials. Moreover, we conceptualized engagement as encompassing both behavioral and cognitive engagement in order to capture both increased persistence and deeper cognitive engagement with curricular concepts.

Moving beyond the text processing literature, Durik and Harackiewicz (2007) examined how collative features (triggered-SI) and a relevance manipulation (maintained-SI-value) related to task involvement for undergraduates learning a new mathematics technique. Their results suggest that both triggered-SI (for participants low in initial interest) and maintained-SI-value (for participants high in initial interest) were associated with increased task involvement; neither experimental condition was significantly related to task performance. In several recent studies, Hulleman and colleagues (Hulleman & Harackiewicz, 2009; Hulleman et al., 2010) found that experimentally enhancing the relevance of the content supported higher achievement among students with lower perceived competence or low prior achievement and that these effects could be explained through an increase in perceived utility value (similar to maintained-SI-value) as a result of experimentally induced relevance.

Taken together, this recent research on classroom-based situational interest coupled with the prior research on situational interest during text-processing suggests that situational interest has the potential to shape students' engagement in the classroom. Notably, the majority of this research has not differentiated among various forms of situational interest. Drawing from this research as well as theoretical descriptions of situational interest, we hypothesize that all three forms of situational interest will support students' engagement during class activities. However, the relation for triggered-SI is expected to be weaker than that observed

for maintained-SI-feeling or maintained-SI-value, as the maintained forms of situational interest should be more likely to sustain persistence and cognitive engagement even when it is not immediately supported at that moment by the format of the instruction. In contrast, triggered-SI is likely to be more fleeting. When students experience triggered-SI, they are likely to engage, but it is unlikely that triggered-SI is experienced consistently throughout a course and thus its relation to overall engagement across a course should be weaker than that observed for maintained-SI.

Current Study

In summary, there is a growing body of literature examining both the antecedents and consequences of situational interest. The current study extends this prior research by examining the antecedents and consequences of three forms of situational interest in the context of a three-week summer residential program for talented adolescents in which students were enrolled in one of several intensive, advanced science courses. By differentiating among triggered-SI, maintained-SI-feeling, and maintained-SI-value, we aim to better understand how situational factors differentially predict these forms of situational interest and thus shed greater clarity on the ways in which classroom contexts shape interest development. This may be especially important for helping educators determine how to not only trigger situational interest, but also how to maintain situational interest in an effort to support the development of individual interest as well as perceived competence and engagement. Specifically, we ask:

1. What is the relation of classroom practices (perceived choice, instructor approachability, connection of course material to real life, and opportunities for student involvement) to triggered-SI, maintained-SI-feeling, and maintained-SI-value? We hypothesize that perceived choice, instructor approachability, and involvement will predict triggered-SI. Perceived choice and involvement will predict maintained-SI-feeling, while connections to real life and involvement will predict maintained-SI-value.
2. Do triggered-SI, maintained-SI-feeling, and maintained-SI-value predict individual interest, perceived competence, and engagement? Prior research provides grounding for the hypothesis that situational interest will relate positively to these outcomes, but it is not clear if the relations will be differentiated among the three forms of situational interest. As such, this research question is exploratory. We expect that all three situational interest sub-components will relate positively to individual interest, perceived competence, and engagement; however, the strength of the relations may vary such that the two forms of maintained-SI more strongly predict individual interest and engagement.
3. As a third step, we hypothesize that situational interest will mediate the relation between classroom practices and individual interest, perceived competence, and engagement.

Method

Participants and Setting

Participants in this study were adolescents attending a summer residential academic program for talented youth. Adolescents qualified to take science courses in the summer program by scoring well above average on the mathematics portion of standardized ability tests taken in seventh grade (SAT ($M = 576.97$); ACT ($M = 21.10$)). The academic program was designed to provide advanced, accelerated coursework for academically gifted adolescents and combined elements of enrichment and acceleration. All participants were enrolled in one science course during one of three summer sessions; each session lasted three weeks. Students attended the course for seven hours on weekdays and three hours on Saturday for a total of 120 class hours during the summer session. Class sizes for their courses were small, ranging in size from 11–20 students. The topics of the courses in which students enrolled varied, but included subjects such as Aerospace Engineering, Introduction to Medical Science, Marine Biology, and Pharmacology. Class activities also varied and included activities such as lecture, small group work, experiments and other hands-on and/or inquiry activities, and discussion. There was an emphasis on encouraging collaboration and creativity; grades were not assigned. When students were not in class, they participated in social activities that were offered as part of the residential program (students were housed in dorms on a college campus throughout the three-week session).

Course instructors varied in experience. About 70% of the instructors had taught as part of the summer program in previous years; all instructors were required to have at least one year of experience at the graduate or secondary level or in professional employment related to the instructional topic. Instructors were selected based on experience level and their knowledge in the course-specific material. Each instructor was required to create a course syllabus, develop a challenging course curriculum, and attend an orientation session prior to the summer program. As part of the training, instructors were provided with information on general principles of effective instruction and curriculum, as well as information on the unique characteristics of gifted students and the instructional approaches that might be particularly well suited to their needs. Instructors were encouraged to be aware and responsive to the aptitude of gifted students for mastering the content of classes, to ensure that the pace at which content is presented is appropriately accelerated and that content is economically presented, to focus on content that is not traditionally covered in school, and to make use of independent or self-directed learning, tasks that encourage creativity, and tasks that make use of higher level thinking skills and concepts. Detailed explanations of how these goals could be accomplished were provided.

Potential participants were contacted in May, after students enrolled in the summer program but before they began courses. The first phase of data collection involved a survey that was mailed to each potential participant's home; 126 participants completed this first wave. In the second phase of data collection, trained research assistants administered a questionnaire to all participating students during the final week of the summer academic program (June or July); 110 of the 126 participants from phase 1 completed phase 2. Participants were in eighth, ninth, and tenth grades at the beginning of the study ($M_{\text{age}} = 14.6$). About half of the

participants were male (54%). The sample was primarily Caucasian (71%), with the remaining participants identifying their race or ethnicity as Asian American (11%), Latino or Hispanic (6%), or African American (3%). Nine percent of participants were of other ethnicities or did not provide information about their race/ethnicity. There were no statistically significant differences in gender, ethnicity, age, or any of the variables in this study among individuals who continued to participate in the study at time 2 and those who did not. The total number of participants included in any particular analysis varied from one analysis to another as analyses were conducted using participants with available data for all variables included a particular analysis; missing data were not imputed.

Measures

Students' ratings of individual interest and perceived competence were assessed at both phases of data collection (May, June/July). Student-reported situational interest, provision of choice, instructor approachability, connection of course content to real life, instructor support for student involvement, and opportunities for group work were assessed via a self-report questionnaire administered during the last week of the summer program (time 2, June/July). Course instructors provided ratings of engagement during the summer program at the end of the program (time 2, June/July). Unless otherwise noted, all response scales ranged from 1 to 5.

Situational interest—We measured the three components of situational interest (triggered-SI, maintained-SI-feeling, maintained-SI-value) using the Situational Interest Survey (Linnenbrink-Garcia et al., 2010). Each sub-scale was assessed with four items. *Triggered-SI* measured participants' experiences of instruction during summer program as exciting ($\alpha = .81$; e.g., "When we do science, my instructor does things that grab my attention"). *Maintained-SI-feeling* assessed participants' excitement for and enjoyment of the content of the course ($\alpha = .93$; e.g., "I like what we are learning in this class"). *Maintained-SI-value* measured participants' value for course content ($\alpha = .89$; e.g., "We are learning valuable things in this class"). In line with prior findings regarding the structure of this measure (Linnenbrink et al., 2010), model fit indices from a confirmatory factor analysis suggested that the three factor solution provided an acceptable fit for the data ($\chi^2(51) = 93.24, p < 0.001$; CFI = 0.948; SRMR = 0.055).²

Provision of choice—The provision of choice subscale of the Rochester Assessment Package for Schools (Connell, 1990; Wellborn & Connell, 1987) was used to measure autonomy support. Seven items, such as "My instructor allows me to choose how to do my work in the classroom," assessed students' perceptions of the choice in the classroom. We added one item to this scale to provide a very explicit measure of the provision of choice: "I feel that my instructor provides me with choices and options." In an exploratory factor analysis, one problematic item with a low initial communality ("When the instructor gives

²The three-factor structure fit significantly better than a one factor structure. The three-factor solution also fit better than either a two-factor solution in which a triggered-SI and maintained-SI factors were modeled or a two-factor solution in which SI-feeling (combining triggered-SI and maintained-SI-feeling) and SI-value were modeled. More details regarding these analyses can be obtained from the authors.

us an assignment, he or she allows us to choose which questions to answer”) was dropped from the scale ($\alpha = 0.84$).

Instructor approachability—As part of the time 2 survey, participants indicated the extent to which their instructors were approachable or personable. The four items (friendly, humorous, approachable, and enthusiastic) in this scale were introduced with the stem, “To what extent does your instructor demonstrate the following qualities?” We examined this scale in exploratory factor analysis by itself and with all other items included in the antecedent analyses; details may be obtained from the authors. The scale had an acceptable factor structure and reliability ($\alpha = 0.74$).

Connections to real life—Students’ perception of the connection of course content to real life ($\alpha = 0.75$) was rated with three items during the summer program survey. The items assessed the inclusion of stories that relate course material to real life, personal anecdotes told by the instructor, and examples that relate course material to real life. Details of the exploratory factor analysis may be obtained from the authors.

Opportunities for involvement—Two measures of opportunities for involvement were employed. The first measure, *instructor support for involvement*, assessed students’ perceptions that their instructor supported their involvement using two items. These items assessed whether instructors asked open-ended questions and asked students’ opinions ($\alpha = 0.64$). The second measure of involvement was a single item measuring students’ perceptions of *opportunities to engage in group work*. In exploratory factor analysis, this item did not load on the same factor as the instructor support for involvement scale, so it was included as a single item.

Individual interest—We assessed participants’ individual interest in science using Linnenbrink-Garcia et al.’s (2010) individual interest scale. This scale consisted of eight items including “Science helps me in my daily life outside of school” and “Science is exciting to me.” In both phases, reliability was high (time 1 $\alpha = 0.90$; time 2 $\alpha = 0.91$).

Perceived competence—Perceived competence was measured with the Academic Self-Efficacy in Science scale, which we adapted from the Patterns of Adaptive Learning Survey (PALS, Midgley et al., 2000) to focus specifically on science. The scale included five items (time 1 $\alpha = 0.86$, time 2 $\alpha = 0.88$) such as “Even if the work in science is hard, I can learn it.”

Engagement—Summer program instructors provided a combined assessment of each participant’s behavioral and cognitive engagement in the classroom. This scale consisted of three items, including measures of students’ participation in class activities, participation in class discussions, and having thought-provoking questions or comments. The response scale ranged from 1 to 5, but in practice the measure ranged from 3 to 5 ($\alpha = 0.82$).

Results

Preliminary Analyses

We began by examining the distribution of scores on each variable for statistical outliers. Grubbs' (1950) test was applied and when outliers were identified, these values were set at the value of their next nearest neighbor. One outlier was found on each of the following measures: individual interest at time 1, maintained-SI-feeling and maintained-SI-value. Means and standard deviations for all variables and Pearson correlation coefficients are presented in Table 1.

Overview of Primary Analyses

The primary aim in the analyses that follow was to examine our hypotheses that classroom practices (perceived provision of choice, instructor approachability, course material connections to real life, instructor support for involvement, and opportunities for group work) would predict components of situational interest (triggered-SI, maintained-SI-feeling, and maintained-SI-value) and that situational interest would, in turn, predict other learning outcomes (individual interest, perceived competence, and engagement). For these analyses, we utilized the test of joint significance criteria recommended by MacKinnon and colleagues (e.g., MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) for determining mediation and conducted a series of hierarchical regression analyses. In line with these recommendations, a mediated pathway exists when: (1) the relation between the independent and mediating variable is statistically significant and (2) the relation between the mediating and dependent variable is statistically significant, controlling for the independent variables. Notably, a direct effect between the independent variable and the dependent variable is not a requirement for mediation using this approach. In addition, we (3) tested whether the indirect effect was significantly different from zero using the Sobel (1982) test.³

We thus conducted a series of hierarchical regression models for each mediator (each component of situational interest) and each academic outcome separately. In the first set of models, we regressed each component of situational interest on classroom practices, controlling for individual interest at time 1. This model provided the first part of the indirect effect estimates. In a second set of analyses, we regressed each learning outcome on both classroom practices and each component of situational interest (using a separate model for each component of situational interest), controlling for individual interest and the outcome at time 1 when it was available. We decided to examine the mediating role of the three components of situational interest in three distinct models because we observed a high level of interrelatedness of triggered-SI, maintained-SI-feeling, and maintained-SI-value (see Table 1, r ranges from .52 to .71).⁴ These models provided the second part of our indirect effect estimates, as well as estimates of the direct effects of classroom practices on each outcome. Finally, we tested the significance of this indirect path using the Sobel (1982) test.

³This approach for testing mediation is preferred to the Baron and Kenny (1986) method as it has greater statistical power and reduces the Type II error rate, especially in the case of a small sample size.

⁴The reader is referred to the discussion of the situational interest measure in the method section for information regarding confirmatory factor analyses indicating the preferred fit of a three-factor solution over alternatives.

This three-step approach to examining mediation is more appropriate for small samples than are other potential approaches, such as structural equation modeling.

Because of the large number of analyses conducted, we used the Bonferroni method to adjust the p-value for statistical significance. Specifically, we divided the standard p-value of 0.05 by the number of tests in each model or for each set of similar research questions. Accordingly, the p-value for evaluating statistical significance was 0.008 for variables predicting triggered-SI, maintained-SI-feeling and maintained-SI-value; 0.007 for variables predicting individual interest and engagement; and 0.006 for variables predicting perceived competence. When conducting the Sobel (1982) test of indirect effects, we only examined relations that were statistically significant in earlier analyses. We used p-values of 0.013 as the criteria for statistical significance of the 4 possible mediators of individual interest, 0.025 for the 2 possible mediators of perceived competence, and 0.05 for the 1 possible mediator of engagement.

Antecedents of Situational Interest

As part of the first step for testing the indirect effects for mediation, we conducted a series of multiple regression analyses to identify the contribution that perceived provision of choice, instructor approachability, course material connections to real life, instructor support for involvement, and opportunities for group work made in predicting triggered-SI, maintained-SI-feeling, and maintained-SI-value, above and beyond the contribution of initial individual interest in science. The results for these analyses can be seen in Table 2.

Triggered-SI—The first multiple regression analysis examined the antecedents of triggered-SI. As expected, both perceived choice and instructor approachability significantly predicted triggered-SI, controlling for initial individual interest and other instructional techniques; course connections to real life was unrelated (see Table 2). Contrary to our hypotheses, instructor support for involvement and opportunities for group work were not statistically significant predictors of triggered-SI.

Maintained-SI-feeling—The second multiple regression analysis examined the antecedents of maintained-SI-feeling. As hypothesized, perception of choice was significantly related to maintained-SI-feeling, while instructor approachability and course connections to real life were unrelated (see Table 2). Contrary to our hypotheses, opportunities for involvement (support involvement, group work) did not significantly predict maintained-SI-feeling.

Maintained-SI-value—In the regression analysis predicting maintained-SI-value, course connections to real life was the only statistically significant predictor (see Table 2). This observed relation was in line with our hypotheses, but we also expected involvement (support for involvement, group work) to predict maintained-SI-value. As hypothesized, perceived choice and instructor approachability were not statistically significant predictors.

Predicting Learning Outcomes

Our next step was to conduct a series of regression analyses in order to obtain estimates of the second part of our indirect effects of triggered-SI, maintained-SI-feeling, and maintained-SI-value on individual interest, perceived competence, and engagement, as well as estimates of the direct relation of classroom practices for each learning outcome (see Table 3).

Individual interest—We began by examining predictors of individual interest. Each regression controlled for time 1 individual interest and the five classroom practices. In line with our hypotheses, triggered-SI, maintained-SI-feeling and maintained-SI-value were each positively related to individual interest at time 2 (see Table 3), thus meeting the second criteria for mediation (e.g., mediator variable significantly predicts the dependent variable after controlling for the independent variables).

These regression analyses also enabled us to examine direct effects of the classroom practices on individual interest, controlling for each sub-component of situational interest. Notably, these direct effects of classroom practice to individual interest are not a necessary requirement for mediation (MacKinnon et al., 2002), but are still informative regarding the direct effects of classroom practices. After accounting for triggered-SI, the only statistically significant direct relation of the classroom practices to individual interest was that of instructor approachability. However, this relation reflected an example of inconsistent mediation such that the direct relation of instructor approachability on individual interest was negative, while each part of the indirect effect estimate (instructor approachability to triggered-SI; triggered-SI to individual interest) was positive. Notably, the correlation between instructor approachability and individual interest was also positive, which, as we discuss later, suggests that the negative relation may be due to statistical suppression. After accounting for maintained-SI-value, the direct relation of perceived choice on individual interest was statistically significant and positive. There were no other significant direct relations of classroom practice to individual interest after accounting for the SI component mediators.

The Sobel (1982) test was employed for the indirect pathways that met MacKinnon et al.'s (2002) two criteria for mediation, that: (1) the independent variable significantly predicts the mediator (situational interest) and (2) the mediator significantly predicts the dependent variable (T2 individual interest). Thus, we conducted Sobel tests for those four pathways that met these criteria. The indirect path from perceived choice to individual interest via triggered-SI was a statistically significant ($z = 2.97, p < .001$), as were the indirect paths from perceived choice to individual interest via maintained-SI-feeling ($z = 2.62, p < .01$) and from instructor approachability to individual interest via triggered-SI ($z = 2.83, p < .001$). Using the Bonferroni correction, the indirect path from connections to real life to individual interest via maintained-SI-value was not statistically significant ($z = 2.25, p = .024$). Thus, there was evidence for mediation for three of the four potential pathways of classroom practices to individual interest.

Perceived competence—Next, we examined whether situational interest predicted changes in perceived competence (see Table 3). After controlling for time 1 perceived competence, time 1 individual interest, and classroom practices, triggered-SI was significantly related to time 2 perceived competence. Both maintained-SI-feeling and maintained-SI-value were significantly correlated with perceived competence at time 2 (see Table 1), but did not account for a significant portion of the variance after controlling for the other variables in the model. There were no significant direct relations between the classroom practices and perceived competence.

For perceived choice, two pathways met MacKinnon et al.'s (2002) criteria for mediation; thus the Sobel (1982) test was employed to test the statistical significance of the indirect effect. Both of the indirect paths from perceived choice and instructor approachability to perceived competence via triggered-SI were statistically significant ($z = 2.62, p = 0.009$ and $z = 2.52, p = 0.012$). Thus, we found evidence that the triggered-SI mediated the positive relation of both perceived choice and instructor approachability to perceived competence.

Engagement—Finally, we examined the contribution of each of the three forms of situational interest in predicting engagement (see Table 3). These analyses controlled for individual interest at time 1 and classroom practices. Although we expected all three forms of situational interest to predict engagement, with the strongest relations for the maintained-SI components, maintained-SI-feeling was the only statistically significant predictor of engagement. There were no significant direct relations of classroom practices to engagement after accounting for situational interest. With respect to mediation, there was only one pathway (perception of choice to maintained-SI-feeling to engagement) that met MacKinnon et al.'s (2002) criteria for mediation. The Sobel (1982) test indicated that the indirect path from perceived choice to engagement via maintained-SI-feeling was statistically significant ($z = 2.68, p = 0.007$). Together, these analyses suggest that maintained-SI-feeling mediated the positive relation between perceived choice and engagement.

Discussion

Overall, our results provide evidence that classroom practices differentially predict triggered-SI, maintained-SI-feeling, and maintained-SI-value. Moreover, these three forms of situational interest were differentially associated with individual interest, perceived competence, and engagement and mediated the relation of classroom practices to these outcomes. Our results suggest that situational interest can develop into individual interest, and that there may be other positive consequences of supporting situational interest in the classroom. They also extend prior research, which primarily focused on composite measures of situational interest, by identifying unique antecedents and consequences of the three situational interest sub-components.

With respect to classroom practices, autonomy support assessed via perceived choice was clearly the most important classroom predictor of situational interest. In line with our hypotheses, it was associated with high levels of triggered-SI and maintained-SI-feeling. Moreover, the relations of perceived choice to changes in individual interest, perceived competence, and engagement were mediated via situational interest. This beneficial pattern

associated with perceived choice is not surprising and is consistent with the broader literature highlighting the importance of perceived choice for supporting situational interest (Ciani et al., 2010; Palmer, 2009; Renninger & Hidi, 2002; Tsai et al., 2008; Zahorik, 1996).

As expected, instructor approachability enhanced triggered-SI, but was not related to either form of maintained-SI. This highlights the importance of the instructor in grabbing students' attention. The relations of instructor approachability to both individual interest and perceived competence were mediated through triggered-SI. Interestingly, there was also a statistically significant negative direct relation of instructor approachability to individual interest. This finding should, however, be interpreted cautiously as the correlation between instructor approachability and individual interest was positive, suggesting that the observed negative relation may be due to statistical suppression. The exact pattern of possible suppression is difficult to identify because many variables were included in this model. However, moderate correlations between instructor approachability, perceived choice, and triggered-SI suggest that these three variables are likely to share variance relevant and irrelevant to explaining individual interest. This shared variance could have led to an erroneous negative relation between instructor approachability and individual interest. That said, it is also worth noting that there was no case in this analysis (or any other) in which suppression appeared to have inflated observed positive effects for any predictor variable. Thus, alternatively, it is possible that instructor approachability relates to individual interest through multiple pathways and when shared variance is removed, this becomes apparent. While on one hand instructor approachability leads to an enhanced individual interest through greater triggered-SI, there may be other mechanisms through which instructor approachability might detract from individual interest development. Overall, our findings highlight that specific aspects of instructors, such as their affective tone and approachability, may play an important role in triggering but not maintaining situational interest. This helps to clarify earlier findings in which instructor characteristics were related to more general measures of situational or individual interest (e.g., Dohn et al., 2009; Frenzel et al., 2010; Rotgans & Schmidt, 2011b).

Our findings regarding course connections to real life highlight the potentially unique role of relevance for supporting specific aspects of situational interest; course connections to real life were significantly associated with maintained-SI-value, but not with the other two forms of situational interest. These findings are aligned with prior research highlighting the positive relation between real world connections and composite measures of situational interest (Dohn et al., 2009; Hoffman, 2002; Hulleman & Harackiewicz, 2009; Zahorik, 1996) as well as the few studies that considered the sub-components of situational interest (Mitchell, 1993; Hulleman et al., 2010). However, our results extend beyond these studies by suggesting that relevance specifically targets the value component of maintained-SI. Surprisingly, while maintained-SI-value was associated with increased individual interest and connections to real life significantly predicted maintained-SI-value, the Sobel (1982) test of the indirect effect was not statistically significant using the Bonferroni adjusted significance levels. This suggests that real world connections may not enhance individual interest via situational interest; however, it will be important to replicate these findings with a larger sample.

Contrary to our hypotheses, neither indicator of involvement (classroom support for involvement or opportunities for group work) was associated with triggered-SI, maintained-SI-feeling, or maintained-SI-value. Prior research has suggested that involvement is an important component for supporting interest development (Del Favero et al., 2007; Dohn et al., 2009; Freeman et al., 2002; Mitchell, 1993; Palmer, 2009; Renninger & Hidi, 2002; Zahorik, 1996). Thus, our failure to find a significant relation in the current study may be the result of a weak measure of involvement. Indeed, we had originally conceptualized involvement as consisting of instructor support via the use of open-ended questions, asking for students' opinions, and opportunities for group work. However, our exploratory factor analyses did not support this conceptualization. Our difficulty in measuring this component as well as the somewhat unexpected pattern of findings may also be due to the particular classroom environment studied. All students were in summer courses that lasted approximately 7 hours each day. Due to the length of daily course sessions and the small class size, instructors were able to use a variety of classroom activities that supported active student involvement. This, coupled with the residential aspect of the program, may have meant that all students had high feelings of relatedness and involvement with their peers. As such, there may not have been enough variability in students' reports of involvement to adequately model its relation to situational interest. Thus, we would caution the interpretation of the involvement findings as suggesting that involvement does not support situational interest; additional research is needed to more carefully examine this issue.

Our findings further suggest that situational interest is an important predictor of several relevant educational outcomes. All three forms of situational interest were associated with increases in individual interest during the course. We find it encouraging that situational interest is associated with changes in individual interest during three weeks of intense instruction. This suggests that instructional practices support interest development and also lends support for current conceptualizations of interest development via situational interest (Hidi & Renninger, 2006; Krapp, 2002).

Our finding that triggered-SI and perceived choice (via triggered-SI) supported perceived competence is also noteworthy, especially given the potential role of perceived competence in interest development (Lipstein & Renninger, 2007; Renninger & Hidi, 2002). It is interesting, however, that triggered-SI was the only form of situational interest that significantly predicted increases in perceived competence during the course. This suggests that targeting students' enjoyment of the instructional method may be more important than enhancing interest in the material itself. Perhaps, as Durik and Harackiewicz (2007) suggested, when students view the content taught as personally relevant or important, this undermines their perceived competence, especially if they are already questioning their abilities. When receiving challenging and advanced course content, as was the case in the current study, excitement and enjoyment surrounding the form of instruction may enable students to engage in a less threatening way than when they find the content itself to be valuable or enjoyable.

Our perceived competence findings are generally aligned with Nieswandt's (2007) and Del Favero et al.'s (2007) results, and help to extend their work by suggesting that triggered-SI may be the most important sub-component of situational interest for supporting perceived

competence. Our results, however, are in direct contrast to Durik and Harackiewicz's (2007) finding that the collative features condition (triggered-SI) was not significantly related to perceived competence, but the relevance condition (maintained-SI-value) significantly predicted perceived competence among individuals with high initial interest in the domain. One explanation may be that we assessed triggered-SI more broadly. Durik and Harackiewicz changed the appearance of a lab task by adding bright colors and pictures, whereas we assessed students' more general feelings of excitement in relation to the science instruction. With respect to relevance, the difference between these two studies may be due to Durik and Harackiewicz's examination of interactions with initial interest; we lacked the statistical power to test these interactions. Overall, the mixed findings suggest the need for more research to unpack the potential pathways through which the various forms of situational interest shape perceived competence. Future research should also examine whether perceived competence mediates the relation between situational interest and individual interest.

With respect to academic engagement, maintained-SI-feeling was associated with high levels of instructor-reported engagement during the summer session and mediated the positive relation of perceived choice to engagement. Our results are in keeping with the text-based literature, which suggests that situational interest alters the way in which students engage with texts (Hidi, 2001). Our findings help to extend this work by considering engagement in a classroom setting, and by highlighting the particular role of choice and maintained-SI-feeling in supporting academic engagement. Contrary to our hypotheses, neither triggered-SI nor maintained-SI-value was associated with engagement. The findings for triggered-SI are not entirely surprising in that we expected the relation of maintained-SI-feeling to engagement to be stronger than triggered-SI, as the maintained-SI-feeling form of situational interest would be more likely to sustain engagement even when instruction itself was not exciting within a particular moment. However, our results contradict Durik and Harackiewicz's (2007) findings that use of collative features supported task involvement among participants low in initial interest. It is more surprising that maintained-SI-value was not associated with engagement, especially in light of prior research suggesting that relevance significantly predicts achievement (Hulleman & Harackiewicz, 2009; Hulleman et al., 2010) or task involvement (Durik & Harackiewicz, 2007). Our reliance on teacher ratings of engagement may explain this discrepant pattern. That is, teachers may be more likely to interpret enthusiasm and positive affect as signs of engagement, which might be observed in the way in which students with high levels of maintain-SI-feeling engage in class activities. Continued research on the potentially unique roles of the two forms of maintained-SI is needed to further clarify these findings.

Finally, our results lend support to the importance of differentiating among triggered-SI, maintained-SI-feeling, and maintained-SI-value. In particular, triggered-SI was uniquely predicted by instructor approachability and uniquely associated with changes in perceived competence. And, maintained-SI-value was uniquely predicted by course connections to real life. In line with research based in self-determination theory suggesting that provision of choice may often do little to support value-based motivation outcomes (e.g. Patall et al., 2010), perceived choice predicted both triggered-SI and maintained-SI-feeling, but not maintained-SI-value. While all three forms of situational interest were associated with

heightened individual interest, only maintained-SI-feeling was significantly related to engagement and only triggered-SI was related to changes in perceived competence. This suggests that triggered-SI, maintained-SI-feeling, and maintained-SI-value may play somewhat unique roles in shaping students' interest, perceived competence, and engagement and that classroom practices may differentially influence these three forms of situational interest. Thus, although these forms of situational interest are similar and highly correlated, it is useful and important to differentiate these forms, as doing so provides a more nuanced picture regarding the mechanisms for supporting situational interest (see also Linnenbrink-Garcia et al., 2010 for a similar argument).

Directions for Future Research

Future research using classroom observations of teacher practices, especially in classes with varying levels of triggered-SI, maintained-SI-feeling, and maintained-SI-value, would be useful for expanding on the current findings. For example, observational studies could further confirm that there is actual variation in instructional practices, rather than variation in students' perceptions of classroom practices. Moreover, by conducting a qualitative analysis of instructional practices in classrooms with varying levels of situational interest, additional mechanisms that help to support situational interest might be identified.

Future research is also needed to determine whether various instructional practices and subsequent situational interest leads to lasting changes in individual interest and perceived competence in the target domain. Future work with multiple assessments of situational interest across time would also allow the examination of the relations among the situational interest components. For example, with multiple assessments, one could investigate whether triggered-SI predicts both forms of maintained-SI. Finally, future work should also consider whether instructional supports for situational interest are equally beneficial for all students, as there is preliminary experimental work suggesting that the pattern may vary based on initial differences in interest, perceived competence, and prior achievement (Durik & Harackiewicz, 2007; Hulleman & Harackiewicz, 2009; Hulleman et al., 2010).

Conclusion

The results of the current study are encouraging; they suggest that there are practices teachers can implement within their classrooms that may relate to the development of interest, both immediate and enduring, and in turn, other adaptive learning outcomes. We hope that the findings of this study provide a basis for further theoretical and empirical work on interest development while also educational guidelines for supporting interest development.

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Table 1

Means, Standard Deviations, and Bivariate Correlations among Variables

Measure	N	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Individual Interest T1	117	4.17(.61)	—												
2. Perceived Competence T1	117	4.42(.53)	.67***	—											
3. Perceived Choice	109	3.54(.67)	.27**	.21	—										
4. Instructor Approachability	108	4.47(.51)	.26	.20	.47***	—									
5. Connections to Real Life	110	3.88(.90)	.07	.04	.21	.32***	—								
6. Supports Involvement	109	4.12(.83)	.23	.19	.32***	.24	.10	—							
7. Group Work	110	4.53(.67)	.06	.00	.17	.18	.13	.22	—						
8. Triggered-SI	110	4.11(.63)	.32***	.29**	.61***	.59***	.26**	.27**	.15	—					
9. Maintained-SI-Feeling	109	4.31(.67)	.43***	.46***	.51***	.39***	.30**	.14	.05	.71***	—				
10. Maintained-SI-Value	109	4.17(.72)	.37***	.31**	.41***	.30**	.35***	.29**	.02	.52***	.63***	—			
11. Individual Interest T2	110	4.16(.62)	.83***	.66***	.44***	.26**	.20	.21	.10	.55***	.63***	.57***	—		
12. Perceived competence T2	110	4.34(.56)	.56***	.64***	.38***	.27**	.06	.11	-.01	.53***	.56***	.40***	.68***	—	
13. Engagement	125	4.32(.63)	.19	.24**	.15	.18	.22	-.02	.06	.29**	.48***	.28**	.35***	.23	—

Notes.

 $p < .01$,***
 $p < .001$.

T1 = Time 1, T2 = Time 2.

Table 2

Regression Analyses for Predictors of Situational Interest (n = 99)

Predictor	Triggered-SI			Maintained-SI-Feeling			Maintained-SI-Value					
	R ²	B	SE	β	R ²	B	SE	β	R ²	B	SE	β
Model	.49**				.38**				.31**			
Individual Interest T1		.10	.07	.11	.32	.09	.31**	.29	.11	.26*		
Perceived Choice		.31	.07	.38**	.32	.09	.35**	.21	.10	.21		
Approachability		.41	.11	.35**	.12	.13	.09	.03	.15	.02		
Connections to Real Life		.05	.05	.08	.13	.06	.19	.21	.07	.27*		
Supports Involvement		.02	.06	.02	-.06	.07	-.07	.11	.08	.13		
Group Work		-.02	.07	-.03	-.09	.08	-.09	-.16	.09	-.15		

Notes.

* $p < .008$,** $p < .001$.

T1 = Time 1.

Table 3
Regression Analyses for Predictors of Individual Interest, Perceived Competence, and Engagement (n = 99)

Predictor	Individual Interest T2				Perceived Competence T2				Engagement			
	R ²	B	SE	β	R ²	B	SE	β	R ²	B	SE	β
Triggered-SI Model	.79**				.54**				.10			
Perceived Competence T1	n/a				.48	.11	.46**		n/a			
Individual Interest T1	.74	.05	.77**		.13	.10	.15		.07	.11	.07	
Perceived Choice	.13	.05	.15		.07	.07	.09		.03	.11	.04	
Approachability	-.28	.08	-.23**		-.07	.11	-.06		.04	.17	.03	
Connection to Real Life	.06	.03	.09		-.02	.05	-.03		.10	.07	.16	
Supports Involvement	-.05	.04	-.06		-.10	.05	-.15		-.08	.08	-.11	
Group Work	-.03	.04	-.03		-.06	.06	-.07		.00	.09	.01	
Triggered-SI	.29	.07	.28**		.33	.10	.33**		.18	.15	.16	
Maintained-SI-Feeling Model	.78**				.52**				.22			
Perceived Competence T1	n/a				.44	.11	.42**		n/a			
Individual Interest T1	.70	.05	.73**		.12	.10	.14		-.06	.10	-.06	
Perceived Choice	.15	.05	.17		.11	.07	.13		-.06	.10	-.07	
Approachability	-.19	.07	-.15		.04	.10	.04		.06	.14	.04	
Connection to Real Life	.04	.03	.06		-.03	.05	-.05		.05	.07	.08	
Supports Involvement	-.03	.04	-.04		-.08	.05	-.12		-.06	.07	-.08	
Group Work	-.02	.05	-.02		-.05	.06	-.06		.04	.09	.04	
Maintained-SI-Feeling	.22	.06	.24**		.21	.08	.24		.46	.11	.48**	
Maintained-SI-Value Model	.78**				.50**				.10			
Perceived Competence T1	n/a				.50	.11	.48**		n/a			
Individual Interest T1	.72	.05	.75**		.12	.10	.14		.05	.11	.05	
Perceived Choice	.18	.05	.21**		.15	.07	.19		.06	.11	.07	
Approachability	-.17	.07	-.14		.07	.11	.06		.11	.15	.08	
Connection to Real Life	.03	.04	.05		-.02	.05	-.04		.09	.07	.13	

Predictor	Individual Interest T2			Perceived Competence T2			Engagement					
	R ²	B	SE	β	R ²	B	SE	β	R ²	B	SE	β
Supports Involvement	-.06	.04		-.08	-.11	.06		-.16	-.10	.08		-.13
Group Work		-.01	.05	-.01		-.05	.07	-.06		.02	.10	.02
Maintained-SI-Value		.18	.05	.21**		.10	.07	.12		.13	.10	.15

Notes.

** $p < .001$.

T1 = Time 1, T2 = Time 2.