Students' Self-regulation when Learning through Reading in Schools Located within Disadvantaged Neighborhoods

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Abstract

The goal of this study was twofold: (1) to describe the learning through reading profiles of high school students from underprivileged neighbourhoods and (2) to compare students' functioning at five different years of high school. To that end, based on the *Self-Regulated Learning in Complex Activities* model, a self-report questionnaire was administered to 38,191 students from 69 francophone high schools in Quebec that are situated in the most underprivileged areas. Analyses of patterns in students' responses suggested that, in general: (1) students' interpretation of task requirements underemphasized in-depth learning; (2) students reported using a low level of self-regulation strategies, including planning, self-evaluation, and adjustment along with a limited number of reading and learning strategies; and (3) students' self-regulation profiles reflected coherence between their interpretation of the activity, personal goals, and the monitoring strategies employed. However, we also found numerous differences between the youngest and the oldest students in high school in favour of the youngest, who were actually more likely to report positive profiles of engagement in Learning through Reading than were their older peers. Further cluster analyses revealed: (1) four profiles that characterized distinguishable patterns in students' responses: a positive profile that represented responses of about 20% of students; a "high stress/actively inefficient" profile (33% of students); an "avoidance" profile (25% of students); and a "passive" profile (22% of students). Overall, 80% of students, across the second, third, and fourth clusters, reported understandings about their engagement in Learning through

Reading that put them at risk of disengaging from learning; and (2) there was a greater proportion of avoidance and passive profiles among the older students.

Purpose and Objectives

Among all the school contexts that students experience (Weinstein, 1994), one appears particularly significant for success in courses: Learning through Reading (LTR). In virtually all courses, students are required to gain knowledge through reading texts. For example, 90% of the time dedicated to homework in high school requires use of a textbook (Armbruster & Anderson, 1988). Students read textbooks to learn new concepts and technical terms (Laparra, 1986) and to develop a better understanding of social and natural phenomena (Johnson & Giorgis, 2001).

In Quebec, many high school students from underprivileged neighbourhoods have fallen behind in school (CSE, 1996), and difficulties with reading and writing may in part account for their repeated failures and dropping out (Charest, 1997). Such difficulties can limit knowledge acquisition when LTR and impair success in school. Indeed, exploratory studies on LTR with small groups of underprivileged students have shown that they report using a limited number of strategies, which are not sufficient for effective learning (Cartier, 2003). More generally, studies about students falling behind in school show that they are doing poorly at activating and using their cognitive and metacognitive strategies (Bos & Anders, 1992; Laparra, 1991), lack knowledge about strategies (Bos & Anders, 1988; Stetson & Williams, 1992), and display a limited strategic profile (Cartier & Butler, 2004). It follows that more research is necessary to better understand the strategic profiles of students in underprivileged areas when LTR, to identify factors that might put them at-risk for a lack of success in school.

It is also important to consider that how students approach reading or learning tasks (e.g., their strategy use) may vary considerably by school level (Chan, 1994, Chouinard, Bowen, Cartier, Desbiens, Laurier, Plante, & Butler, 2005). For example, it has been documented that students in the upper elementary grades may actually engage in more strategic learning that do students who enter the middle school or high school context (e.g., Chan, 1994). In a longitudinal study, Chouinard , & al. (2005) found that students reported using a smaller number of strategies frequently while LTR at the end of their first year at secondary level than those same students had at the end of the elementary school.

In sum, considering that many students from underprivileged areas fall behind in school and experience difficulties when reading and learning that might be associated with a lack of success, coupled with findings from studies showing that use of strategies varies by school level (Chan, 1994), one can ask: what is the profile of LTR among underprivileged high school students (12 to 17 years old) and how does that profile vary across grades? Further insight into these questions appears critical to better understanding these students' difficulties with LTR and developing tailored approaches to help them in the light of increased risk of failure and dropping out of school.

The present study has the potential to advance understanding by providing a descriptive account of LTR profiles of a large sample of secondary students in Quebec. The goals of this study were twofold: (1) to describe the LTR profiles of high school students from underprivileged neighbourhoods; and (2) to compare students' profiles of LTR engagement at five different years of high school.

Theoretical framework

LTR can be defined as "a process and a learning situation during which the reader/learner's goal is to learn a topic through reading texts while managing their work environment and task progress" (Cartier, 2000, p. 93). LTR is both a situation organized by a teacher and a process activated by students that encompasses reading, understanding, learning, self-regulation, experiencing positive feelings and/or managing challenging ones, and fostering and sustaining motivation.

In our research, we employ a model of self-regulated learning to characterize students' engagement in important kinds of academic work, such as LTR. To define the key constructs to consider when describing learning profiles of underprivileged students, we developed the *Self-Regulated Learning in Complex Activities* model (Butler & Cartier, 2004; Cartier & Butler, 2004) (see Figure 1). This model depicts the links between learning and the academic environment where learning takes place. The environment includes teaching and evaluation practices along with activities designed to guide students' learning. This model also acknowledges the role of the individual in shaping self-regulation, by examining core components of the learning process (Wang, Haertel & Walberg, 1993) — emotional, motivational, cognitive, and metacognitive — and by considering students' background and school history (e.g., experience with this type of activity in the past). In the rest of this section, we highlight key components of learning engagement that are encompassed in our model. We then describe how we construct learning profiles to characterize students' engagement in LTR.

As our model depicts, the way in which students approach an LTR activity is mediated by their knowledge about the topic under study and the activity (Alexander & Judy, 1988; Cartier, 2000;

Flavell, 1979; Pressley & Afflerbach, 1995; van Dijk & Kintsch, 1983), their motivational beliefs, such as self-efficacy perceptions and attributions for successful performance (Bandura, 1993; Borkowski, 1992; Pintrich & Schrauben, 1992; Schiefele, 1991; Schunk, 1991; 1994; Viau, 1994; 1999), and the emotions they experience when confronting a task (Corno, 1993; 1994; Meichenbaum & Biemiller, 1992; Zimmerman, 2000) These three components of engagement (knowledge, motivational beliefs, emotions) are important because they are shaped by students' learning history and act as a filter between the current context/learning activity and the processes enacted by the learner.

Our model also depicts how the LTR process is cyclic. At the beginning of the activity, students interpret the activity to clarify what is expected (Butler, 1995; 1998; Butler & Cartier, 2004; Butler & Winne, 1995). Interpreting activities requires students to search for clues that suggest activity demands, analyze written and/or oral instructions, think about what they know about the activity assigned, consider priorities and expectations of teachers, and then draw these various types of information together to define expectations. Students must recognize the expectations within an LTR activity to self-regulate accordingly, which is challenging for some high school students (Stetson & Williams, 1992).

In light of this more or less specific interpretation of activity demands (and in light of mediating variables, such as motivational beliefs and emotions), students identify personal objectives (Butler & Cartier, 2004; Corno, 1993; 1994; Linnenbrink & Pintrich, 2001; Meichenbaum & Biemiller, 1992; Pintrich 2000). The objectives pursued by students reflect the priorities they have while they are working on a given activity. Various options are available, some of which are task-centered (e.g., tackle the task carefully, understand what I read), some of which are

peripheral to the task (e.g., work with friends), and some of which work against engaging in learning (e.g., read as little as possible). Thus, in our model, task interpretation and personal goals are two critical components of LTR engagement that set the direction for students' further learning activities.

If students elect to engage in an LTR activity, ideally, they should manage their learning by using various self-regulatory strategies (Butler, 1998; Butler & Winne, 1995; Cartier, 2000; McKeachie, 1988; Pressley & Afflerbach, 1995; Zimmerman, 2000). Self-regulating strategies are an ensemble of thoughts and actions oriented towards orchestrating and managing engagement in activities. These strategies are used by students to plan learning approaches, manage resources, monitor the advancement of their work, make adjustments to learning, monitor and manage motivation and emotions, and self-evaluate outcomes. Thus, in our approach to understanding LTR, we identify and assess how students think about and manage their engagement in learning activities (by planning, self-monitoring, self-evaluating, adjusting approaches to learning, and managing motivation and emotion). We also recognize the importance of the criteria students set for self-monitoring and self-evaluating outcomes. These criteria are in part influenced by students' task interpretation. But students might also judge the success of their efforts in relation to their personal objectives, or based on whether they effectively managed their learning (e.g., used good strategies). How students judge the success of their efforts is critical to driving further self-regulation (e.g., to decisions about how to adjust learning approaches to better achieve criteria) (Butler & Winne, 1995).

Finally, a central component of students' engagement in LTR is their use of cognitive strategies, which comprise the thoughts and actions that learners engage when completing an activity

(Cartier, 2000; Smith, 1982; Weinstein & Mayer, 1986; Vauras, 1991). For example, in an LTR activity, students might employ cognitive strategies to understand what they are reading, to link new information with existing knowledge, to integrate information across sources, or to help them remember what they have learned. Many cognitive strategies exist for accomplishing these kinds of intentions, including strategies for organizing (e.g., regroup information by theme or subject), elaborating (e.g., summarize in their own words), remembering (e.g., reread underlined information), and selecting (e.g., pay attention to underlined words). Ideally these strategies are used flexibly and adaptively to achieve intentions as appropriate to a specific activity, domain, and topic. Successful students are often those who have a large repertoire of strategies at their disposal, and who can draw on and adapt those strategies as needed in different situations. Successful students select strategies well matched to activity demands, but different students can select different kinds of strategies to achieve the same intentions.

It is clear from our model that creating a descriptive profile of a learner's engagement in an LTR activity is a complex endeavor that requires understanding the quality and interrelationships among multiple factors. In our research program, our aim is to use a range of complementary methodological tools to capture learners' perceptions about and engagement in learning (Butler & Cartier, 2005). In the present study, we present results garnered through use of one of our newly developed assessment tools, the *Learning through Reading* questionnaire. This self-report tool is useful, not for examining actual learning behaviour (for which other types of measures are more appropriate), but rather for understanding how students think about and interpret their engagement in LTR activities. Our tool provides a very nuanced analysis of students' perceptions about LTR tasks and about how they engage in this type of academic work.

From the data that we collect with our self-report questionnaire, we are able to construct two different kinds of LTR engagement profiles. At a first level, we are able to construct multidimensional profiles of student responses related to each component of our model. For example, we can create profiles of students' personal goals to see relationships between task-related, peripheral, and non-engaged objectives. Similarly, we can construct a profile of strategy use that encompasses students' self-reported use of cognitive and self-regulating strategies. These profiles represent the kinds of strategies students recognize as characterizing their performance in this kind of academic activity.

At a second level, we are also able to construct profiles of student engagement that interrelate the various components of our model (rather than looking component by component). For example, we are able to examine whether there are identifiable profiles for learners that encompass particular patterns in motivational beliefs, emotional reactions to tasks, task interpretation, personal goals, self-regulation, criteria, and cognitive strategy use. These kinds of profiles are useful for understanding in a more integrated fashion how these multiple components combine to define students' engagement in learning.

As an example of the kind of profiles we can construct at this second level, in related research on first-year university students' approaches to learning in Science (building from our more general model of self-regulation in context and using a parallel type of self-report tool), we identified four profiles that characterized students' perceptions about their engagement in inquiry learning. One cluster included students who had a very positive profile, who reported using productive cognitive and self-regulating strategies, along with positive motivation and emotions. They appeared to be excited and challenged by what they perceived as a relatively complex learning

task. Students in a second cluster appeared to have a moderately positive SRL profile but to experience a bit more stress. Students in a third cluster reported the lowest use of cognitive and self-regulating strategies, experienced the greatest amount of stress, and had the lowest self-perceptions of competence and of task value. These students were clearly at-risk for disengaging in learning. Finally, we described students in the fourth cluster as "indifferent." These students reported moderate to low use of cognitive and self-regulating strategies, and were generally relaxed and/or neutral while participating in learning. Our results in this prior study illustrate the value of examining cross-componential profiles of learner engagement. It became apparent that it was necessary to capture emotions, motivation, cognition, and metacognition in tandem to best characterize students' perceptions about tasks and themselves as learners in a complex activity.

Given this brief introduction to our theoretical framework, it is now possible to elaborate on the research questions central to the research reported here. More specifically, our two goals in this research were to: (1) describe the learning profiles of high school students from underprivileged areas, with particular attention to how these students perceive their engagement in LTR, and with attention to creating multidimensional profiles for each component of our model along with cross-componential profiles of engagement; and (2) compare students' LTR profiles across five grade levels.

Method

This study took place in the context of the evaluation of a governmental intervention strategy called "New Approaches, New Solutions" implemented to foster the success of high school students in underprivileged areas of Quebec (Janosz & al., 2002-2007). This larger project aims at assessing the implementation of the intervention strategy and consequences for students. The

data we report here derived from the first year of this five-year study, and represent students' responses to a large set of assessment tools administered at the start of the project, one of which was our LTR questionnaire. At the time of this assessment (Fall 2003), participants were 38,191 students from 69 francophone high schools of the 199 in Quebec that are situated in the most underprivileged areas. Students were distributed across high school years in the following way: 7,852 in the first year (12 years old), 7,003 in the second year (13 years old), 6,564 in the third year (14 years old), 5,700 in the fourth year (15 years old), and 5,178 in the fifth year (16 years old). Among the students who indicated their gender (*n*=36,038), 49 % were male (*n*=17,672) and 51 % were female (*n*=18,366).

Measure

Participants completed the questionnaire *Lire pour apprendre* (the French language version of the LTR Questionnaire) (Cartier & Butler, 2003) which assesses all of the components of the *Self-regulated Learning in Complex Activities* model. Students and experts were involved in various steps to establish content validity of the questionnaire (Cartier & Butler, 2004) which can be adapted to multiple activities and knowledge domains. It is important to note that students respond to the questionnaire within a particular context and with a specific task in mind, so that students' responses can be situated in a school, classroom, domain, subject, and task.

The questionnaire consists of 22 main questions that capture students' perceptions about each of our model components, including knowledge, motivation, emotions, task interpretation, personal goals, performance criteria, and cognitive and self-regulation strategies, at three specific stages of an activity (beginning, during, and end). For each model component (i.e., each main question), students respond to a series of items to describe their self-perceptions related to the model

component. For example, a broad question focused on task interpretation asks students what they are "being asked to do" within an LTR activity. Items associated with this main question present a set of options (e.g., read the texts, find important details or facts, see how information about the subject goes together, memorize information) to which students respond separately. As can be seen in our results section, we build from these item level data to create separate multidimensional profiles of students' responses for each component of our model.

For most questions, students rate on a scale from one to four the *frequency* with which an item reflects their approaches to LTR (again, with the specific example of an LTR activity in mind so as to situate the assessment). For example, in the question on task interpretation, students consider whether they are being asked to memorize information "almost never", "sometimes", "often", or "almost always." For other questions (e.g., assessing background knowledge), students think about the activity they were shown and then provide a response on a dimension appropriate to the question. For example, when judging how much they know already about the topic within the example activity, students rate their knowledge on a four-point scale that ranges from "very little" to "a lot".

Across our various projects, much data have been collected that attest to the validity and reliability of our LTR questionnaire (Butler & Cartier, 2003; Cartier & Butler, 2003). As a validation check on our model and questionnaire in this project, and to create a more streamlined set of variables for conducting additional analyses (e.g., cluster analyses), we conducted factor analyses on the item-level data to identify stable and reliable dimensions that characterized students' responses to the questionnaire (see Table 1). We chose Principal Axis Factoring with oblique rotation (oblimin, delta = 0) as our method of analysis puisqu'il est attendu que les

échelles entretiennent des liens entre elles (Tabachnick & Fidell, 2001), celles-ci ayant pour objet commun les perceptions quant à différents aspects cognitifs que l'on croit reliés. Factor analyses were conducted first using a sample of students for whom the language of instruction was French (and who responded to the French language version of the LTR questionnaire). The analyses were then repeated with a sample of students who responded to the English language version and whose language of instruction was English. The results were 11 dimensions that capture key constructs assessed by our questionnaire (see Table 1). Note that we repeated the analyses with both samples to make sure that our dimensions were robust, but only data from the students receiving instruction in French are included this report.

Consistent with our model of *Self-Regulated Learning in Complex Activities* (Butler & Cartier, 2004; Cartier & Butler, 2004), our factor analysis showed that certain items fell into categories consistent with distinct components within our theoretical model, namely motivation (perceptions of competence and control), emotions (worry & stress; well-being), and self-regulation (positive task interpretation; planning strategies; criteria for judging performance).We also found coherent cross-component dimensions that captured specific foci (on memory; on pleasing or impressing others; on avoiding the task), or strategies (for help-seeking; cognitive strategies for working with text and information) that students might adopt during LTR.. For example, we found a "memory" dimension that showed a consistency in focus across students' self-reported interpretation of the task, strategy selection for adjusting approach of learning, and criteria for self-evaluating performance. We also found a help-seeking dimension that captured students' self-reported frequency of asking for help during planning, when facing challenges during learning (adapting performance), and when experiencing frustration (i.e., emotion/motivation control).

Procedures

Data collection was completed within one classroom block. Teachers in schools were provided with detailed instructions on questionnaire administration. While completing the questionnaire, students were asked to refer to an LTR activity example from the curriculum on social studies appropriate to their level in school. They were prompted to think of similar activities they engaged in at school when answering the questionnaire. Instructions for the questionnaire were read aloud to all students. Students in their first year in high school completed the questionnaire while questions and possible answers were read to them. The more advanced cohorts responded to the questionnaire independently.

Data analysis

To respond to the two objectives central to this research, two main types of data analysis were conducted: (1) analysis of frequency distributions for each main question (to create profiles of item-level responses for each component); and (2) cluster analyses (to identify cross-componential learning profiles). Each analysis strategy is described in turn.

Analysis of item-level frequency distributions for each main question (i.e., model component): Frequency analyses were used to construct multidimensional profiles of students' perceptions across the various items/options presented for each of our model components. For each item separately, we calculated the percentage of students who selected one of the top two ratings (e.g., using a particular strategy "often" or "almost always"). In our report of findings, we describe component-level profiles for the entire sample that encompass responses to the presented items. Note that, to visually represent student emphases within and across components, we created a table that lists only the items for which at least 60% of students (overall) gave one of the top two

ratings (see Table 2). From this table it is possible to view the quality of items endorsed by the majority of students for each component. We also report the full range of students' responses to key components in the text and in a set of three figures (see Figures 2, 3, and 4).

Next, to examine grade level differences in frequency distributions at the component level we used non-parametric, chi-square analyses appropriate for categorical and ordinal data. Note that, because of the large sample, most grade-level differences were statistically reliable even if relatively small. Therefore, when reporting our findings on grade-level differences, we only discuss findings that were statistically reliable and where differences between at least two of the five groups were 9% or more (which we judged to be most practically significant). These items are presented component by component in Table 3.

Cluster analysis: We used cluster analysis to examine whether we could identify distinct learning profiles among the students (in the entire sample and then at each grade level), this time considering potential linkages in responses across motivation, emotion, cognition, and metacognition. To that end, we used the dimensions identified in our Factor Analysis as input into a Two-Step (SPSS) cluster analysis. The two-step clustering procedure was use with a log-likelyhood distance measure. This method first classifies subjects into different subgroups using a sequential process. Then it regroups those subgroups using a hierarchical method. The outliers were taken out of the analyisis. Because the BIC (Bayesian information criterion) continues to decline continually, we used theoretical criteria and face value to select the number of clusters. Some ad ditional analysis remain to be done to determine how the clusters discriminate among the subjects.

Results

Results are presented to describe the two types of profiles we generated to characterize students' perceptions of their engagement in LTR activities. We start by presenting component-level profiles obtained through analyses of item-level frequency distributions. This is followed by a report of findings of cross-componential profiles derived through cluster analysis. In each section, we first describe profiles that characterize response patterns across all participants. These general portraits are followed by comparisons of profiles across students at different grade levels.

Component-level Profiles Derived from Analyses of Item-Level Frequency Distributions

Our analyses of students' responses to items associated with each component in our model are presented in Table 2. The table is divided into 9 sections, each associated with one key component of our model (e.g., perceptions of competence and control; task interpretation; personal goals). For each component, we report the percentage of students who gave one of the top two ratings (e.g., "often" or "almost always") at each grade level and then overall. However, as described earlier, we include in this table only items where at least 60% of students overall endorsed the item at one of the top two levels. For example, we show that only four of the 8 personal objective items were described as "often" or "almost always" pursued by students in an LTR activity.

Looking first at the pattern of responses across the entire sample, several conclusions are supported. First, the majority of participants reported positive perceptions of competence and control over learning outcomes (frequencies greater than 70% for 7 out of the 9 items associated with this component). The only two items infrequently endorsed reflected negative perceptions of competence and control ("this activity is too difficult," endorsed by 8.8% of students on average;

"I cannot succeed at this activity," endorsed by 7.2% of students on average) These findings are encouraging given research associating positive perceptions of competence and control with more positive learning profiles. At the same time, it is possible to question whether learners are well calibrated in their perception of their success at complex LTR activities, suggesting a need for better monitoring and self-evaluation. Further, if we consider that just 7.2% of our sample of 38,191 comprises 2,750 students, it is clear that a good number of our participants hold negative self-perceptions that put them at-risk for disengaging when faced with LTR activities.

A second finding is that students reported using a low level of self-regulation strategies, particularly strategies for planning, self-evaluation, and adjustment. For example, only one of the eight items that focused on planning was endorsed as "often" or "always" used by over 60% of the students, and that was to simply read the text (i.e., reflecting an absence of planning). While 55% of students reported thinking about instructions prior to beginning work, and 58% reported checking the length of the readings, few reported planning their time, choosing a method to complete the activity, or "making a plan" (30%, 39%, and 19%, respectively). Only three of the 12 positive strategies for adjusting performance in the face of difficulties were endorsed by at least 60% of students (look back at text features; read more slowly; reread), none of which involved actively working with information (e.g., "finding links between information", reported by only 48% of students) or better work management (e.g., "try to use my time more effectively", reported by only 47% of students). Students reported using monitoring strategies more frequently, but still only 6 out of 15 positive items were reported as being used "often" or "almost always" by more than 60% of students. These findings are discouraging given the demands of complex task like LTR that requires students to self-regulate learning in order to be successful.

A third conclusion is that students' responses across different components consistently emphasized reading and understanding more than deeper learning. For example, when interpreting the demands of an LTR activity, students most frequently reported that they were being asked to read the texts, understand, and find information. However, as is depicted in Figure 2, they were less likely to associate the task with a need to see how information fit together, to apply what they were reading, or to memorize information. Similarly, when defining personal goals, students reported wanting to understand the readings and get good grades more frequently than they wanted to learn about the subject (see Figure 3). When self-reporting their usage of different kinds of cognitive strategies, students more frequently reported using strategies for working with text features than for selecting or elaborating. But active meaning-making strategies such as summarizing, making links, thinking of examples, or regrouping ideas were reported by many fewer students (38%, 45%, 37%, and 28%, respectively). Strategies for working with text, such as looking at titles, reading the text word for word, or looking at bold and underlined words, are valuable but insufficient for an LTR activity that demands building meaning from multiple texts to learn about a subject. Finally, although students were more likely to report using monitoring than other self-regulating strategies, the most common strategies endorsed by students related to reading texts, understanding, and following instructions (see Figure 4). Students were less likely to focus on deeper learning outcomes (e.g., describing information about the subject; remembering; applying information), These consistent trends illustrate how students' responses to the questionnaire were coherent across components. Taken together, our findings provide a nuanced portrait of how these secondary students were thinking about the demands of and their participation in LTR activities.

Analyses by grade level are summarized in Table 3 (see also Figures 2, 3, and 4), which presents findings component by component just for those items where differences between at least two groups were statistically reliable and were greater than 9%. Our data suggest that significant differences were principally between the youngest (sec. 1 or 2) and oldest (sec. 4 or 5) students. In general, younger students focused more than did older students on learning and memorizing information (in responses related to task interpretation, monitoring, adjusting, self-evaluation, and performance criteria) and were more likely to report using strategies for self-regulating learning (planning, monitoring, self-evaluating). Further, they were more likely than older students to describe tasks as asking them to find interesting information. Older students, in this situation, were more likely than younger students to focus on understanding and obtaining a general idea about the subject (in responses related to task interpretation, monitoring, and performance criteria). While in planning younger students were more likely to report "making a plan" and "choosing a method for completing the activity," older students were more likely to check the length of the readings. They also depended more than did younger students on reading more slowly or rereading when they experienced problems. In terms of strategies for self-evaluation, younger students were more likely to focus on the quality of their learning and on whether they could improve their methods in the future (more active approaches), while older students focused more generally on comparing their work to the instructions and whether they did a good job on the activity.

Summary of Main Findings Obtained from our Analyses at the Component Level

In our component by component analyses, we observed many gaps in the profile of students' LTR engagement when considering the full set of participants, most notably in their low self-reported use of self-regulating strategies such as planning, adjusting, and self-evaluating. These

results suggest that students do not recognize the importance of these kinds of strategies to success in a complex learning activity like LTR. The patterns we observed in task interpretation and personal goals, where students focused more on understanding and reading than on deeper learning, also revealed problems in students' understanding of the demands of LTR activities. A similar conclusion is also suggested by the profile of cognitive strategies students identified as central to their engagement in LTR. The cognitive strategies that students endorsed most frequently focused on working with text and selecting information, with just a few targeting elaboration. While use of these types of strategies provides a good foundation for learning through reading, they are at the same time insufficient for engaging in LTR efficiently and effectively.

When comparing profiles of students by grade level, it appears that the younger students held an understanding of LTR that focused more on learning (with an emphasis on memorizing) and their ways of accomplishing these objectives. Older students, in contrast, placed an emphasis on understanding and obtaining a general idea from the readings. It seems, then, that the profiles of responses among older students was less well adapted to an LTR activity than were the profiles of younger students, even though the latter also suggested weaknesses.

Analysis of Cross-Componential Learning Profiles

Through cluster analysis we identified four learning profiles that provide an integrated view of relationships for students between motivation, emotion, cognition, and metacognition. A first cluster represented responses from 20.3% of the sample and reflected a very positive learning profile that we called "actively engaged" (see Figure 5). This cluster included students who reported positive self-perceptions of competence and control, positive emotions, constructive

perceptions of task demands, use of productive cognitive and self-regulating strategies, and task-focused criteria for self-monitoring and self-evaluation. These students also reported experiencing low levels of worry or stress and little task avoidance.

We defined the profile of students in a second cluster (32.8%) as both "high-stress" and "actively-inefficient" (see Figure 6). These students reported very low perceptions of competence and control, low levels of positive emotions, and high levels of worry and stress. Although these students reported using strategies for planning and for working with text and information, they were at the same time less focused on productive goals when interpreting tasks and defining criteria for judging performance. As a result, we wondered if these students would know how to invest effort strategically, or might instead be "actively inefficient" in their efforts (Swanson, 1990). We note that these students were more likely to report disengaging from learning in the face of difficulties or challenges. They also reported frequent use of help-seeking strategies, with a focus on pleasing and impressing others. Taken together, this profile seems to include students with a low sense of control over outcomes who rely on others and are at-risk for disengaging in learning.

Students in a third cluster (24.8%) had the least positive profile of engagement in LTR (see Figure 7). These students were not highly stressed or worried, but were likely to report being disengaged from learning. They reported very low self-perceptions of competence and control and low levels of positive emotions. They reported low levels of positive task interpretation and few positive criteria for monitoring or self-evaluating performance. They reported the lowest use of cognitive, self-regulating , and help-seeking strategies, and were not interested in pleasing or impressing others. This profile is suggestive of students who are disengaged from learning.

Finally, we described students in the fourth cluster (22%) as having a "passive" learning profile (see Figure 8). These students were generally happy and relaxed while participating in learning and reported positive self-perceptions of competence and control. They had some positive sense of task demands and positive criteria for judging their performance. However, they also reported a lower use of cognitive and self-regulating strategies.

To compare students' profiles at five different years of high school, we calculated the percentage of students in each cluster by grade level (see Table 4). A first, general observation is that, across grade levels, the largest percentage of students fell into the "high stress / actively inefficient" profile, even though the percentage here was higher in the first two years and declined across years (36.3%, 35.3%, 33.4%, 29.6%, and 27.3 %, respectively). Another general tendancy that can be observed is that the percentage of students in the "actively engaged" profile was relatively low (only roughly 1/5th of students) and was similar across grade levels (23.7%, 19.7%, 17.4%, 18.5%, and 21.8%, respectively). The avoidance profile included a greater proportion of students in years 2 to 5 (25.9%, 27.9%, 26.8%, and 24.2%, respectively) in contrast to the proportion of students in this cluster from year 1 (20.2%). Finally, the percentage of students in the "passive"profile was greater for students in the more advanced grades (19.7%, 19.1%, 21.3%, 25.0%, and 26.7%, respectively).

Considering trends more specifically for students in the first year of secondary school, results indicated that, after the "high stress / actively inefficient" profile (36.3%), the next most frequent profile was that of being "actively engaged" (23.7%), followed by "avoidance" (20.2%) and

"passive" (19.7%) profiles. At this grade level, if one combines the two most frequent profiles, it appears that 60% of students held a perception of their learning that reflected some engagement in LTR. However, even among these students, the largest number of students fell into the "high stress / actively inefficient" profile, suggesting considerable challenges to their engagement in LTR activities.

The results differed for students in the second to fifth years of secondary education. Although results showed that the largest proportion of students at each of these grade levels were also included in the "high stress / actively inefficient" cluster (35.3%, 33.4%, 29.6%, and 27.3%, respectively), the second most frequent profile was "avoidance" for students in years 2, 3, and 4 (25.9%, 27.9%, and 26.8%, respectively), and was "passive" for students in year 5 (26.7%). The fewest students fell into the "actively engaged" profile at each of these four grade levels (19.7%, 17.4%, 18.5%, and 21.8%, respectively). Combining the two most frequent profiles at these grade levels showed that the self-reported engagement in LTR activities for between 55 and 60% of students reflected substantial weaknesses and/or disengagement in learning.

Summary of Main Findings Obtained from our Cluster Analyses

Results from our cluster analyses revealed that only 20% of the students in our sample described understandings consistent with positive, deep, and active engagement in LTR activities, a relatively low number. The profile that included the largest proportion of students was "high stress / actively inefficient" (32%). Learners who were grouped in this cluster perceived themselves as engaged in the activity, but at the same time their self-reports revealed challenges and gaps in the quality of that engagement (e.g., recognition of strategies important to successful

task completion). Finally, 47% of students fell into profiles that were reflective of deficient understandings about LTR tasks and low levels of engagement, with ¼ of students overall (9,548 students within our sample of 38,191) providing self-descriptions suggesting substantial disengagement from learning (e.g., personal goals to "read as little as possible"; "giving up" when faced with challenges or frustration).

Comparisons across grade levels showed that it was the first year secondary students who most positively represented their engagement in LTR activities, although even at that grade level the largest proportion of students fell into the "high stress / actively inefficient" profile. The proportion of students within the "avoidance" and "passive" clusters was higher for students in the second to fifth years. In general, these older students reported less positive profiles of understanding and engagement in LTR than did students in their first year of secondary school.

Conclusions and Implications

The purpose of this investigation was to create profiles of students' perceptions of and understandings about their engagement in LTR activities. As part of our on-going research program, we will utilize multiple complementary methods (such as combinations of our self-report questionnaire, think alouds, observations, collection of performance traces, and performance-based assessments) to examine the interface between students' perceptions about their engagement in LTR activities, their actual employment of strategic approaches while learning (and the meaning students ascribe to those actions), and associated outcomes. We recognize that use of a wide range of complementary tools is necessary to find these kinds of relationships between perceptions, engagement, and learning. Nonetheless, from both a scientific and educational standpoint, the research project described in this paper provides important

information relevant to understanding how students in disadvantaged neighbourhoods may be at-risk for lack of success in school .

The first goal of the research described here was to construct descriptive profiles of how students from disadvantaged neighborhoods perceive the demands of and their engagement in LTR activities. Our component by component profiles across the full sample of students allowed us to identify a number of troubling patterns. For example, key findings were that (1) students' interpretation of task requirements and personal goals underemphasized in-depth learning; (2) students reported using a low level of self-regulation strategies, including planning, self-evaluation, and adjustment, and (3) that, corresponding with their interpretation of LTR tasks, students reported using limited types of reading and learning strategies. But our cluster analyses allowed us to create more nuanced profiles of engagement for subgroups of students. Those analyses revealed four different cross-componential profiles, only one of which was uniformly positive while the other three revealed different kinds of potentially troublesome patterns. These results are consistent with those obtained in studies with a less grand scope also conducted in disadvantaged areas (Cartier, 2003; Cartier & Théorêt, 2001; 2002). They are also coherent with other studies that have identified different learning profiles in students' self-regulation of learning. For example, in his work on self-regulation, Zimmerman (2000) has defined two learning profiles: skillful self-regulation and naïve self-regulation. The first of these is similar to what we have labeled "actively engaged," while the second is similar to the profile we have called "high stress /actively inefficient". This latter profile is also consistent with Swanson's (1990) description of "actively inefficient" learners (from which we borrowed the descriptor), although with the addition of an affective, high stress component. Our finding of four different

profiles suggests examining the potential of tailoring interventions for students in different groups.

The second goal in the present research was to compare students' profiles of LTR engagement at five grade levels. Our component level analyses suggested that, although profiles for younger students evidenced some gaps and less than optimal understandings, their profile was nonetheless better matched to a LTR activity than were those constructed from responses by their older peers. These findings were corroborated in our cluster analyses that showed greater numbers of passive and avoidant students in the more advanced grades. These results are consistent with those obtained by Chan (1994) and Chouinard & al. (2005), who also found that self-reports from students in higher grade levels revealed less adaptive learning profiles than did reports from younger students. These kinds of discrepencies in engagement profiles found as a function of school level (generally favouring the younger) suggest that more research should be done to evaluate linkages between pedagogical context (school level, domain, teaching and evaluation practices) and individuals' engagement in LTR.

Taken together, our findings of coherent relationships between students' self-reports related to the various components of our model, including motivation, emotion, task interpretation, personal objectives, self-regulated and cognitive strategy use, and performance criteria, provide evidence for the validation of our model of *Self-Regulated Learning in Complex Activities*, thereby enhancing theoretical understanding about SRL in LTR tasks. Further, our findings that such a substantial number of disadvantaged students evidenced problematic perceptions of their engagement in LTR activities (i.e., only 20% falling into our "actively engaged" profile) are simply alarming. Given that students' perceptions about academic work mediate their

engagement in learning, these findings call for additional research into how to support development of more positive LTR profiles so as to better support students from disadvantaged settings who are so often at risk for dropping out of school.

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Figure 1. A model of Self-Regulated Learning in Complex Activities (Butler & Cartier, 2004; Cartier & Butler, 2004)

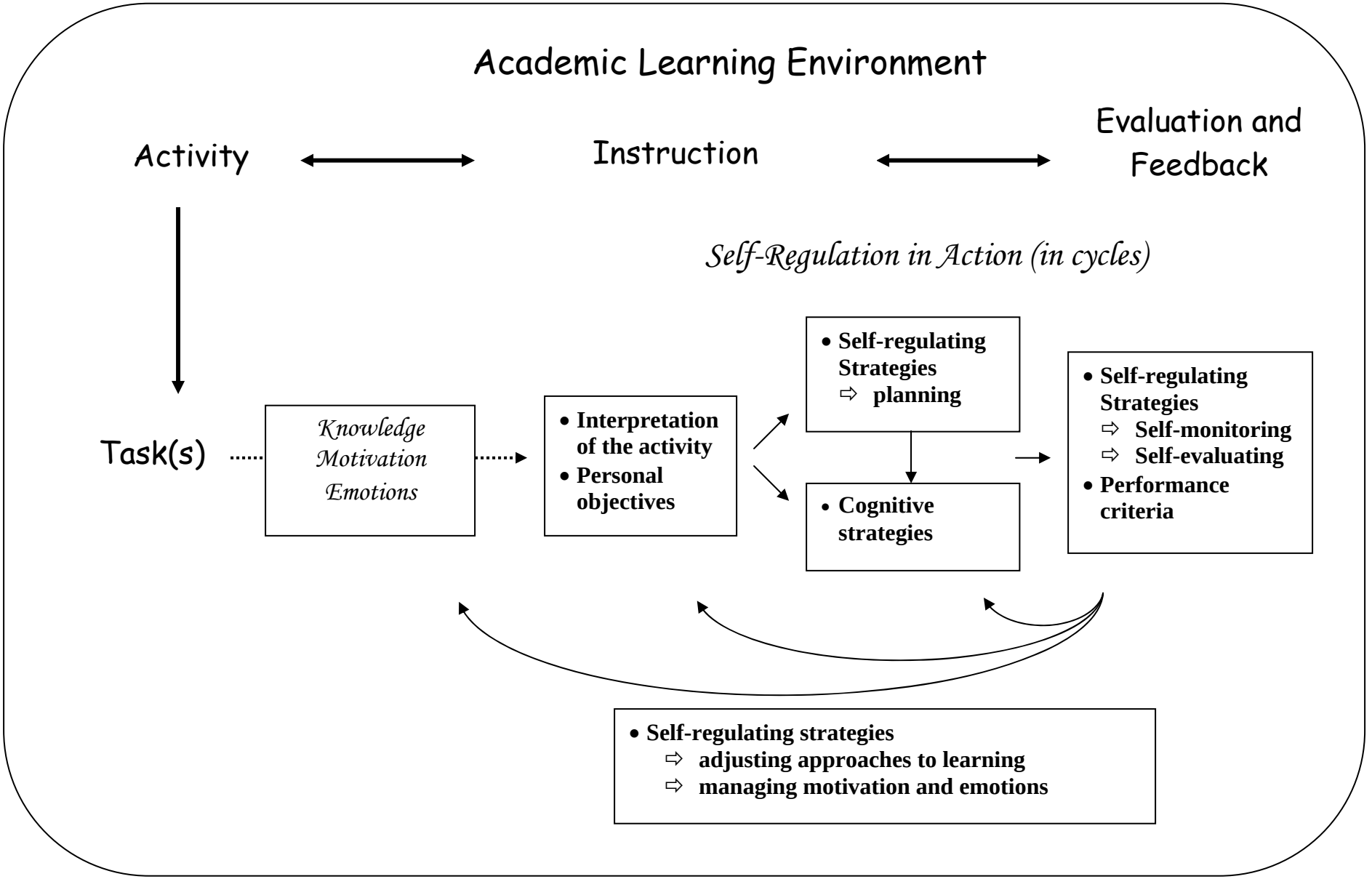


Table 1. Results from our exploratory Factor Analysis.

Dimensions	Number of items	Alpha de Cronbach					
		tous	sec 1	sec 2	sec 3	sec 4	sec 5
1. Worry & stress *e.g.,When I find out that I will have to read in order to learn, I am stressed.*	6	.85	.84	.85	.86	.86	.86
2. Well-being *e.g.,When I find out that I will have to read in order to learn, I am relaxed*	5	.66	.66	.66	.66	.66	.67
3. Perceptions of competence and of control *e.g.,When I am asked to read in order to learn, I think that I can succeed.*	16	.82	.80	.83	.82	.83	.83
4. Positive task interpretation *e.g.,When I have to read in order to learn,,I am being asked to find important details or facts.*	7	.79	.76	.80	.80	.79	.79
5. Planning strategies *e.g.,Before I begin the activity of reading to learn, I start by planning my time.*	3	.70	.65	.70	.70	.72	.72
6. Strategies for working with text and information *e.g.,While I am reading to learn, I reread paragraphs in the text.*	6	.78	.75	.78	.79	.78	.78
7. Focus on memory *e.g.,At the end of the reading to learn activity, I know I have done a good job when I memorized the information .*	3	.65	.63	.64	.65	.67	.69
8. Help-seeking strategies *e.g., Before I begin the activity of reading to learn, I start by asking someone to explain the activity*	4	.64	.62	.63	.64	.63	.65
9. Focus on pleasing or impressing others *e.g.,At the end of the reading to learn activity, I know I have done a good job when I pleased or impressed someone else.*	3	.65	.64	.64	.64	.66	.66
10. Avoidance *e.g.,At the end of the reading to learn activity, I know I have done a good job when I did as little as possible*	7	.77	.77	.77	.77	.76	.77
11. Criteria for judging performance *e.g.,At the end of the reading to learn activity, I know I have done a good job when I understood what I read*	13	.89	.88	.91	.89	.89	.89

Table 2– Items associated with main components for which at least 60% of students responded "often" or "almost always," by grade level and overall.

Motivation: Perceptions of competence & control (7/ 9 items)	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Follow any instructions	89	86	88	89	92	88.8
Understand what I am reading	84	83	84	85	88	84.8
Find the important information in the readings	74	73	75	78	80	76
Judge the quality of my work	73	72	72	73	76	73.2
Remember information read	69	68	68	71	75	70.2
I can succeed	82	79	78	80	84	80.6
I can get a good mark	75	73	71	73	74	73.2

Task interpretation (7/10 items)	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Read the texts	80	80	81	84	86	82.2
Find important details	71	73	71	77	76	73.6
Find the main ideas	67	66	69	74	82	71.6
Understand the information read	83	81	83	86	88	84.2
Understand the subject better	72	73	75	78	81	75.8
Get a general idea about the subject	65	65	67	70	74	68.2
Memorize information	66	63	62	60	53	60.8

Personal objectives (4/8 items)	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Get good marks	89	86	87	87	87	87.2
Understand what I am reading	85	83	85	88	90	86.2
Do a good job on the activity	80	75	76	78	80	77.8
Learn about the subject	72	68	67	70	74	70.2

Planning strategies (1/8 items)	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Just read the text	65	65	69	72	73	68.8

Cognitive strategies (6/ 24 items)	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Working with text: pay attention to underlined or bolded words	73	71	74	78	82	75.6
Working with text: look at the titles, subtitles, key words, pictures, charts, or graphs in the text	69	69	72	75	79	72.8
Working with text: read the text word for word	67	66	68	74	77	70.4
Working with information: pay attention to important ideas or themes	63	61	64	70	75	66.6
Working with information: search for the meaning of what I am reading	71	67	69	75	78	72
Working with information: make a drawing that represents the information	65	63	65	68	70	67

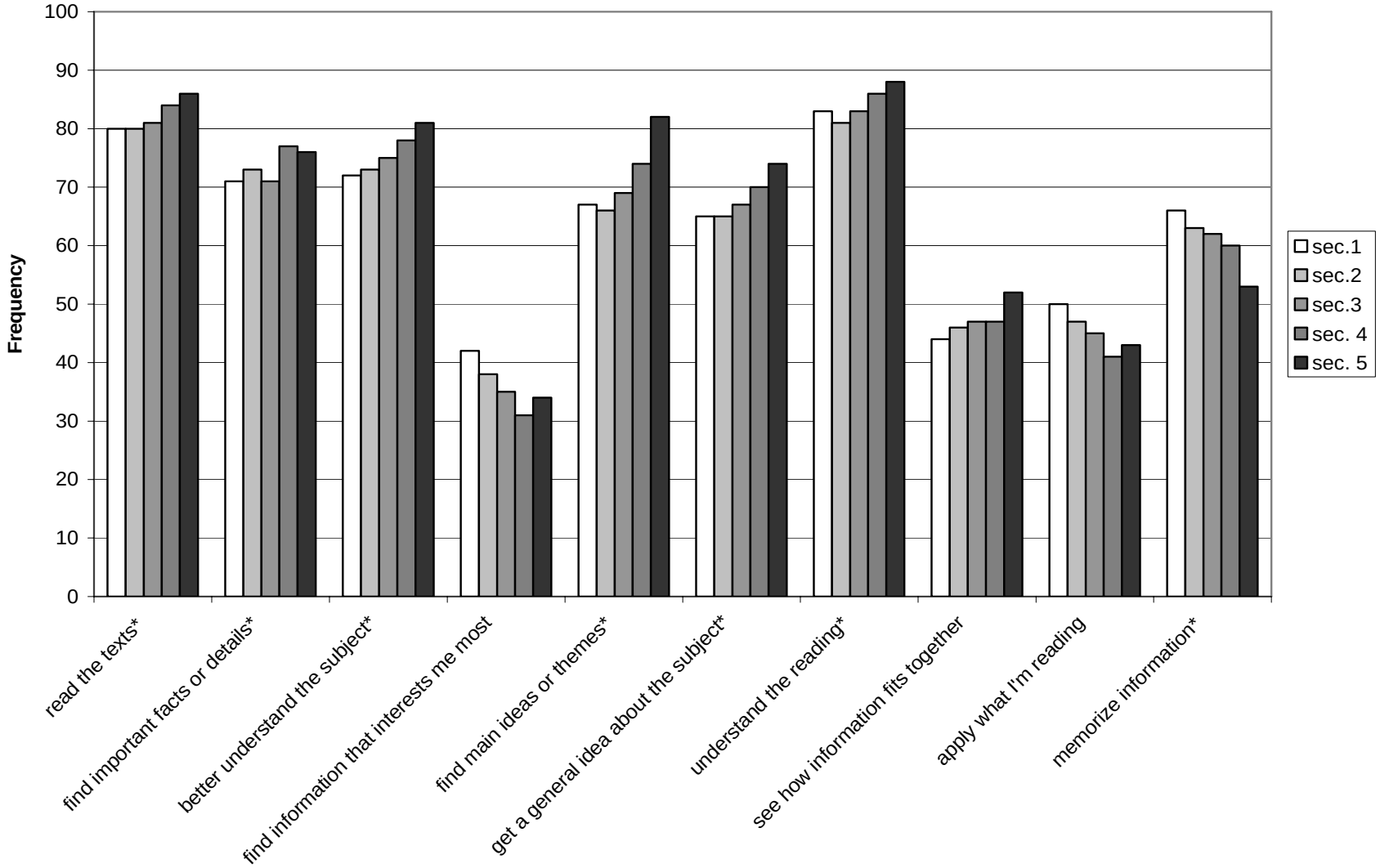
Monitoring strategies 6/16 items	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Work management: check to make sure I have completed all the readings	70	66	66	68	73	68.6
Work management: look back at the instructions	66	59	59	60	65	61.8
Work management: think of the time I have left	57	58	59	61	65	60
Work management: check that I have found all the important information	70	64	65	68	73	68
Work management: identify what I do and don't understand in the readings	62	58	58	61	65	60.8
Outcomes: ask myself whether I will get a good grade	72	69	71	71	70	70.6

Adjusting strategies (3/13 items)	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Working with text: look at titles, subtitles, graphs…	63	63	67	68	70	66.2
Working with text: read more slowly	57	55	59	62	67	60
Working with text: reread information in the text	66	63	65	70	73	67.4

Self-evaluation strategies (1/7 items)	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
Work management: : assure myself that I have done a good job on what I was supposed to do	71	65	66	70	74	69.2

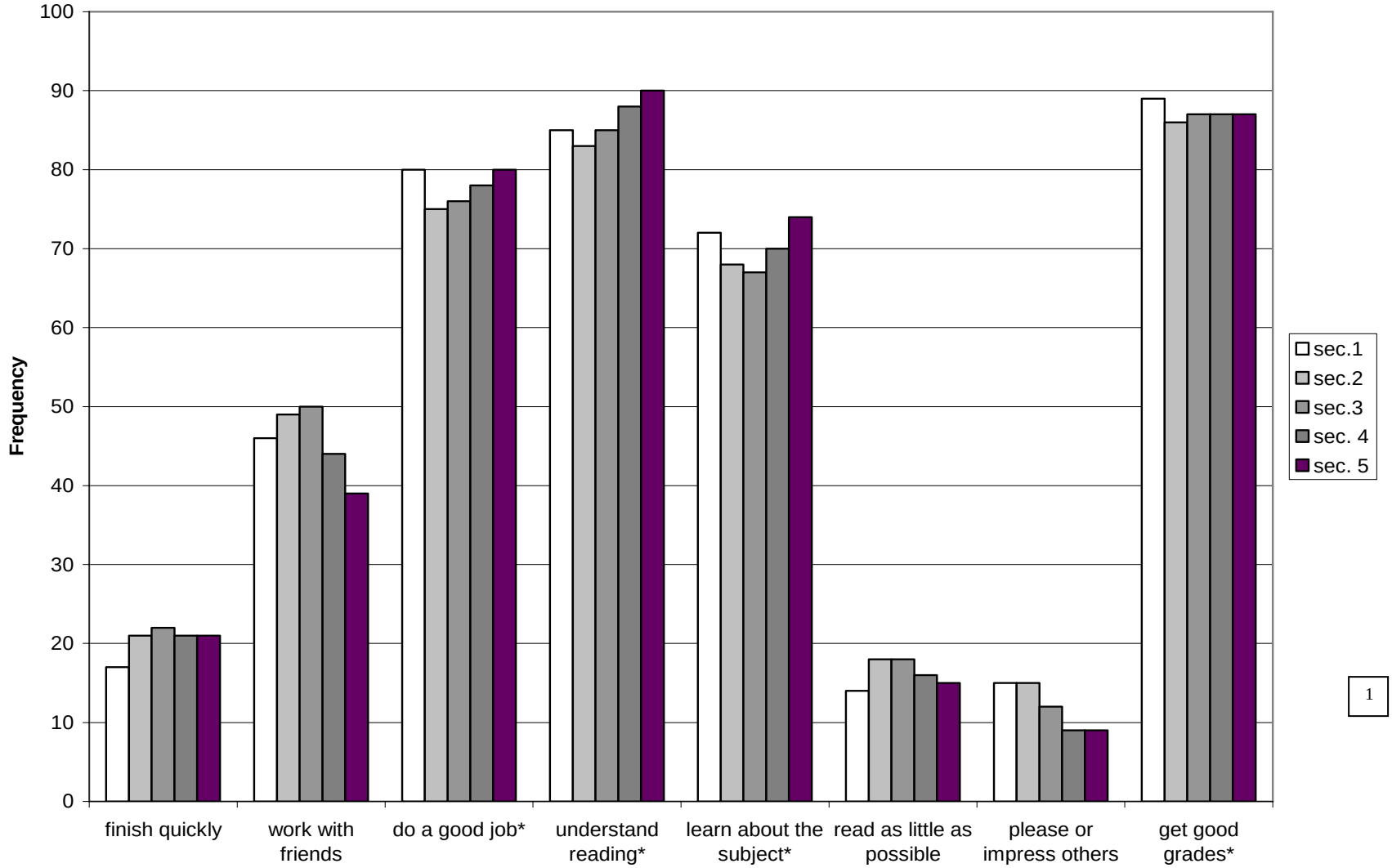
Criteria for judging performance **(12/19 items)**	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Mean
General: did my best	80	75	77	79	81	78.4
Work management: did everything asked of me in the instructions	74	71	72	75	77	73.8
Work management: used good methods for working	74	70	71	71	73	71.8
Work management: concentrated on my work	72	68	68	71	74	70.6
Work management: finished on time	69	68	69	69	72	69.4
Work management: read all the texts	66	66	65	64	64	65
Working with ideas: understood what I read	74	73	75	79	82	76.6
Working with ideas: better understood the subject	71	69	71	76	79	73.2
Working with ideas: succeeded at getting a general idea about the subject	61	62	65	69	73	66
Working with ideas: found important details or facts	61	63	61	65	66	63.2
Outcomes: got a good mark	75	72	74	78	81	76
Outcomes: learned what I needed to learn	73	68	69	69	69	69.6

Figure 2. A construct-level profile of students' task interpretation while reading to learn.



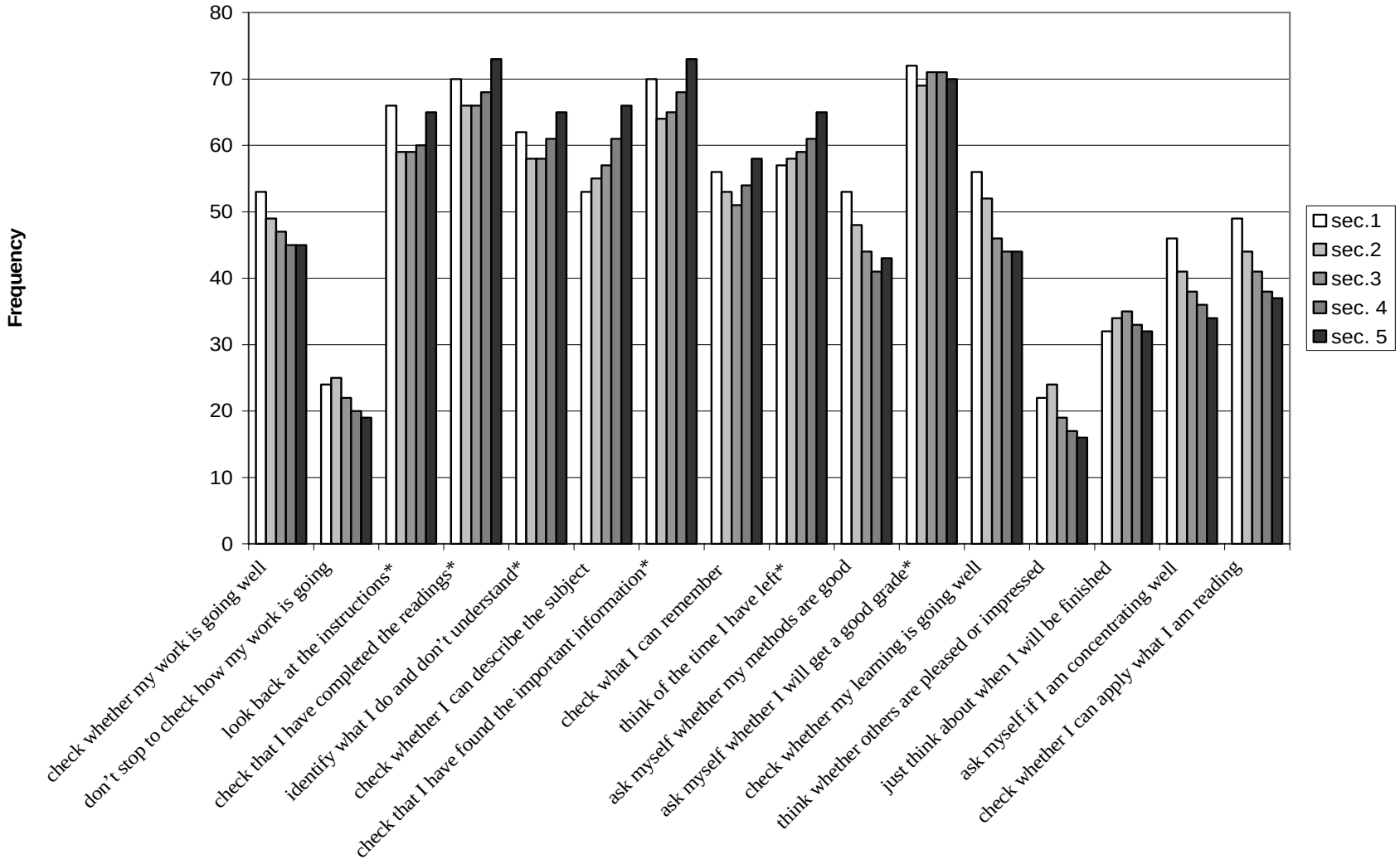
* Dimensions included in Table 2, with over 60% of students responding "often" or "almost always".

Figure 3. A construct-level profile of students' personal objectives while reading to learn.



* Dimensions included in Table 2, with over 60% of students responding "often" or "almost always".

Figure 4. A construct-level profile of students' monitoring strategies while reading to learn.



* Dimensions included in Table 2, with over 60% of students responding "often" or "almost always".

Table 3. Percentage of students, by grade level and overall, who responded "often" or "almost always."

Task interpretation 4/10 items	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Difference
Find information that interests me most	42	38	35	31	34	11
Understand the subject	72	73	75	78	81	9
Get a general idea about the subject	65	65	67	70	74	9
Memorize information	66	63	62	60	53	13
Apply what I read to different situations or problems	50	47	45	41	43	9

Personal objectives 1/ 8 items	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Difference
Work with my friends	46	49	50	44	39	11

Planning strategies 3/ 8 items	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Difference
Check the length of the readings to be done	48	51	54	56	58	10
Choose a method for completing the activity	47	41	39	38	39	9
Make a plan	31	25	21	19	19	12

Monitoring strategies 5/16 items	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Difference
Work management: ask myself whether my methods for working are good	53	48	44	41	43	12
Work management: ask myself if I am concentrating well	46	41	38	36	34	12
Working with ideas: check whether I can describe the main topic in the readings	53	55	57	61	66	13
Working with ideas: check whether I can apply what I am reading to solve a problem or respond to questions	49	44	41	38	37	12
Outcomes: check whether my learning is going well	56	52	46	44	44	12

Self-adjustment of approach strategies 3/13 items	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Difference
Working with text: read more slowly	57	55	59	62	67	12
Working with text: reread information in the text	66	63	65	70	73	10
Working with ideas: try to memorize information	53	48	45	45	41	12

Self-evaluation strategies 5/7 items	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Difference
Work management: assure myself that I have done a good job on what I was supposed to do	71	65	66	70	74	9
Work management: compare what I have done with the instructions	48	44	44	47	54	10
Work management: think about how I could do this kind of activity better next time	51	42	36	34	32	19
Work management: ask myself if I learned everything I needed to learn	46	39	35	33	32	14
Ask for help: compare what I have done with other students	21	24	25	27	30	9

Criteria for judging performance **5/19 items**	Sec.1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Difference
Working with ideas: understood what I read	74	73	75	79	82	9
Working with ideas: better understood the subject	71	69	71	76	79	10
Working with ideas: succeeded at getting a general idea about the subject	61	62	65	69	73	12
Working with ideas: memorized the information	54	52	49	49	44	10
Outcomes: got a good mark	75	72	74	78	81	9

Figure 5. Cluster profile for "actively engaged" students.

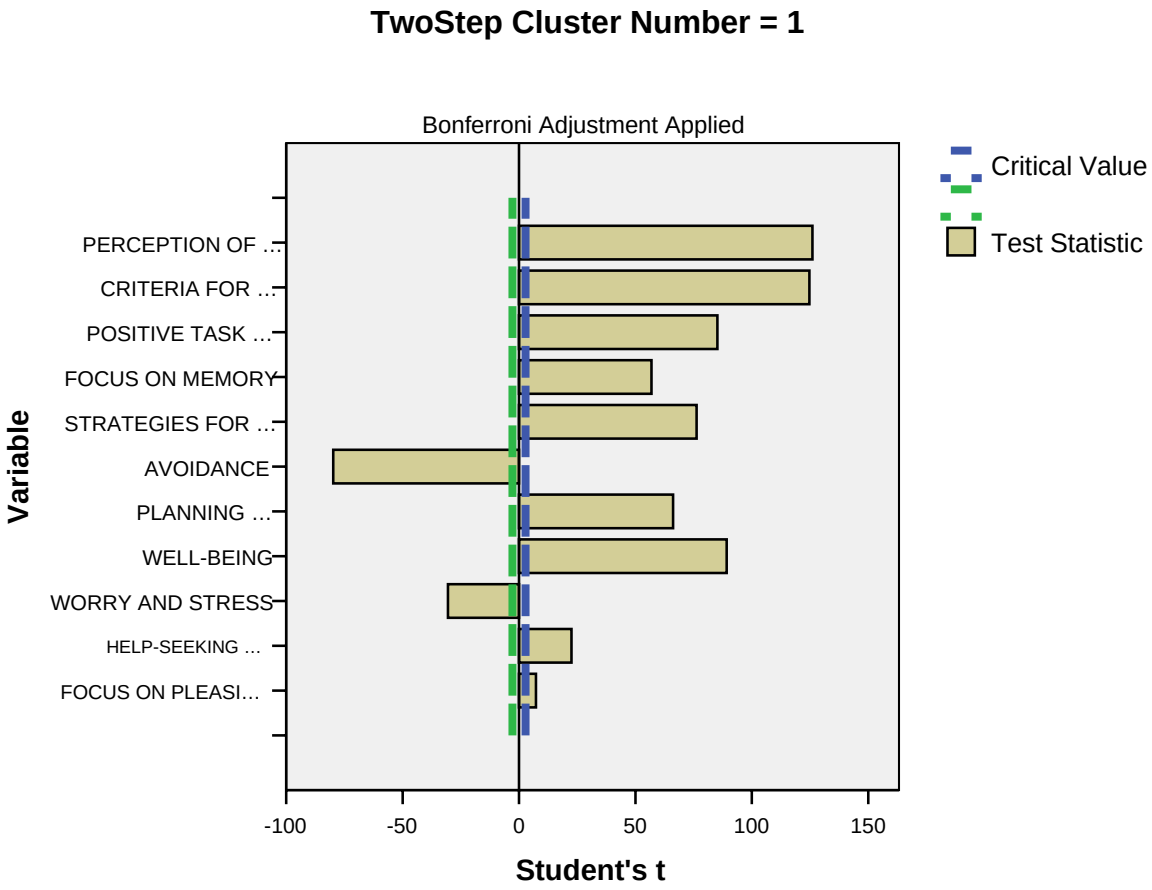


Figure 6. Cluster profile for "high stress /actively inefficient" students.

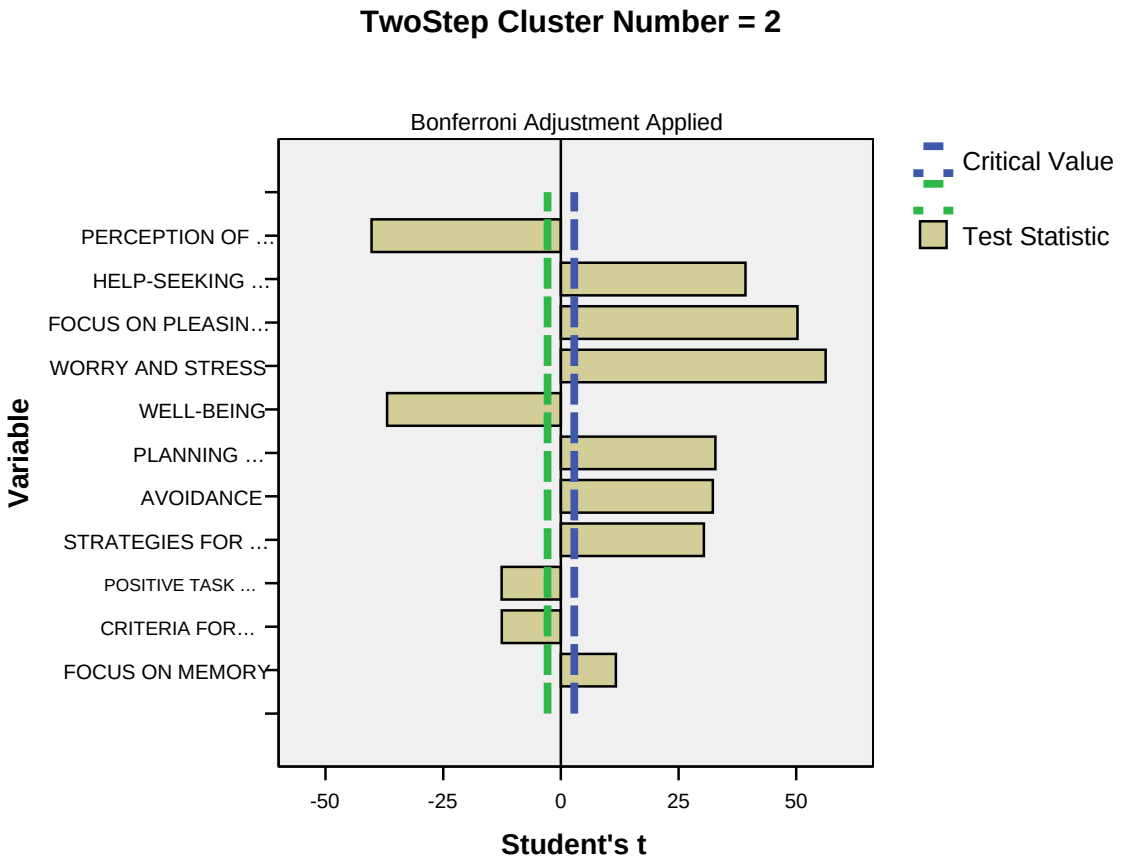


Figure 7. Cluster profile for "avoidance."

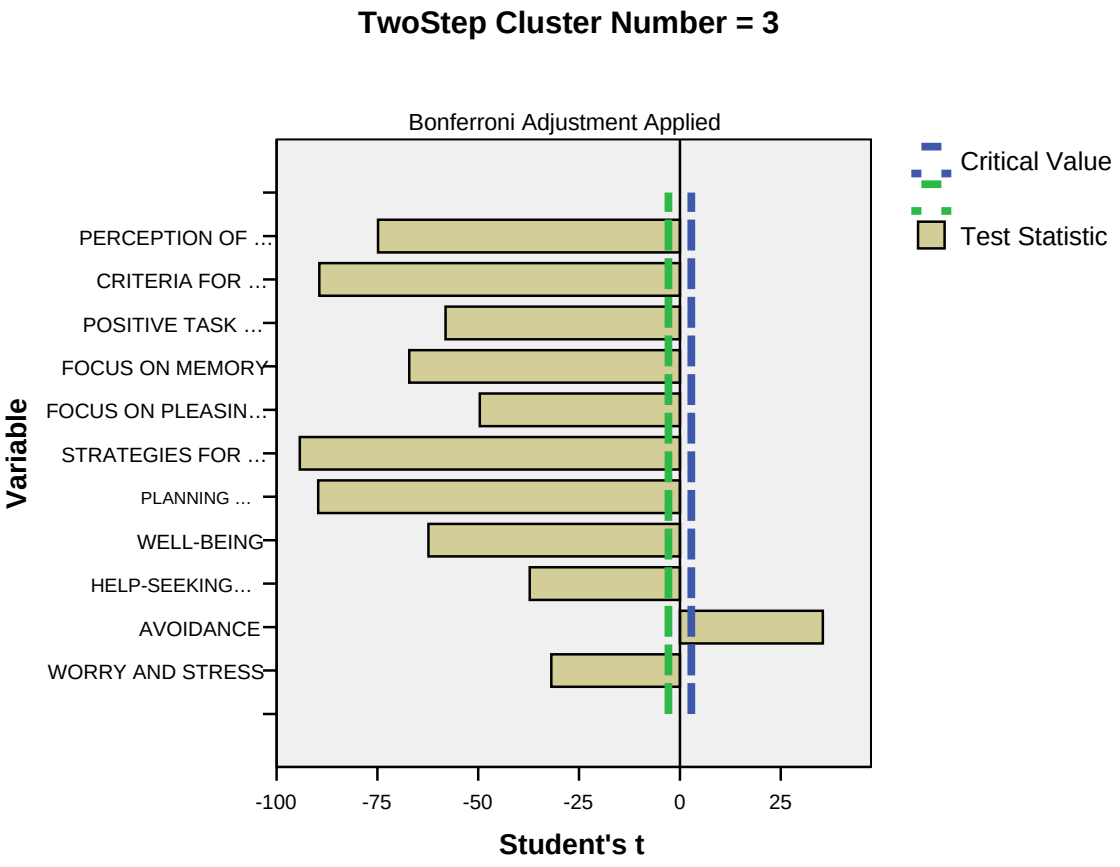


Figure 8. Cluster profile for "passive" students.

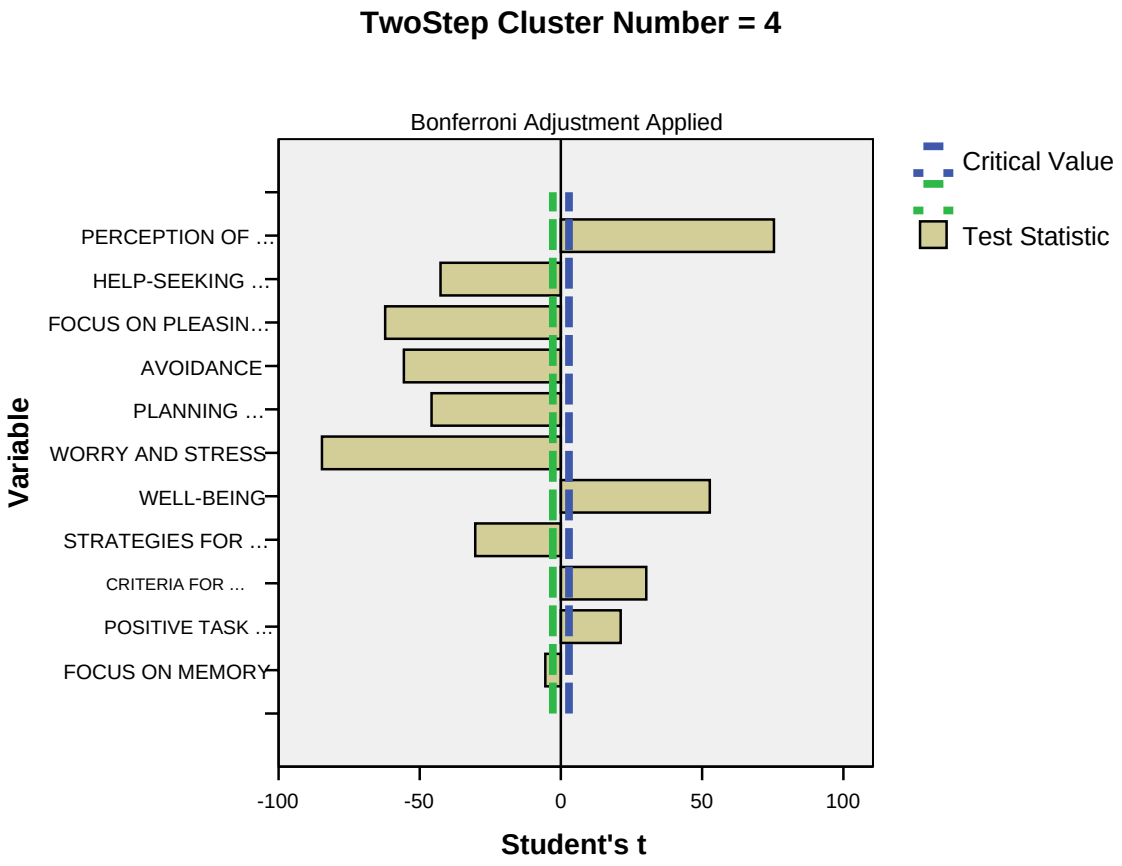


Table 4. Percentage of participants within each profiles of engagement in LTR by grade level and overall.

			4 CLUSTERS				Total
			1 actively engaged	2 high stress/ actively inefficient	3 avoidance	4 passive	
Grade level	Secondary 1	Count	1406	2152	1197	1167	5922
		% within	23.7%	36.3%	20.2%	19.7%	100,0%
	Secondary 2	Count	1077	1934	1416	1046	5473
		% within	19.7%	35.3%	25.9%	19.1%	100,0%
	Secondary 3	Count	889	1712	1430	1092	5123
		% within	17.4%	33.4%	27.9%	21.3%	100,0%
	Secondary 4	Count	846	1353	1223	1143	4565
		% within	18.5%	29.6%	26.8%	25.0%	100,0%
	Secondary 5	Count	865	1082	958	1057	3962
		% within	21.8%	27.3%	24.2%	26.7%	100,0%
Total		Count	5083	8233	6224	5505	25045
		% within	20.3%	32.9%	24.9%	22.0%	100.0%