

Inquiry on effective summarization strategies for adolescent/secondary students

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Introduction : Why summary writing?

Summarization is not just repeating what has been read. It requires the reader's complex cognitive strategies and organizing skills. Therefore, summary writing assignment may not be easy for some students who don't have appropriate comprehension ability and strategies. Many students feel pressure when they have to summarize a page of a history book so they prefer just copy a page in a dictionary. (Wormeli, 2005) Summarization may be viewed as a beginning step of higher level of writing because it doesn't require us to create something. It sounds easy that all we have to do is rewrite based on a given text. But many students feel it complicated. Research indicates that main reason may be they don't know where thesis statement is and they are not taught how to locate thesis statement. "Teaching summary writing has been overlooked compared to other writing instruction". (Frey, Fisher & Hernandez, 2003) What is summarization? Summarization can be defined in various ways:

- 1) It is to give a brief statement of the main points of something. (Oxford dictionary)
- 2) It is restating the essence of text or an experience in as few words as possible or in a new, yet efficient manner. (Wormeli, 2005)
- 3) It is a complex task in which students are required to use their prior knowledge to perform cognitive processes on the information that is read. ... include evaluating to distinguish key ideas from supporting or unimportant ideas, constructing logical connections between those key and supporting ideas, and condensing the ideas or information to present the gist in students' own words. (Jitendra & Garjria, 2011)

- 4) It is a synthetic strategy that requires readers to determine the degree of importance of the information included in the text. (Hayes, 1989)

Summarization can work as a bridge between reading and writing. “Reading and writing have traditionally been treated as separate processes, but some research on the relationship suggests that the two processes should be taught together. Good summarizing requires thorough understanding of the text, mastery of reading strategies, ability to remove unnecessary details, the skill to draw conclusions from the outset of reading, and focus on the main idea”. (Havola, 1987) If students are instructed on how to summarize effectively, then they could not only improve their writing skills but also learn important reading ability. Summary writing itself is not an end purpose. Various cognitive strategies and activities occurring during the process of summarization have meaningful benefits especially for adolescent/secondary students. One of the most required academic performances in college is summary writing to report or inform knowledge. Summary writing comes before analyzing, discussing or solving problems. “The ability to write accurately and efficiently for the purpose of reporting information is a gateway skill for other types of writing, particularly research reports and persuasive essays”. (Frey, Fisher & Hernandez, 2003)

Elements of Effective Summary Writing: A Look on Rubric

To find out what kind of elements should be considered to be effective summarization, it is necessary to consult the rubric for assessing summary writing. (Table 1) It shows four major traits except conventions: length, accuracy, paraphrase,

and focus. Other rubrics have the similar traits with this.

Table 1. Rubric for Assessing Summary Writing (Frey, Fisher & Hernandez, 2003)

Rubric for Assessing Summary Writing				
Name: _____		Summary Title: _____		
Date: _____		Period: _____		
	4	3	2	1
Length	6-8 sentences	9 sentences	10 sentences	11+ sentences
Accuracy	All statements accurate and verified by story	Most statements accurate and verified by story	Some statements cite outside information or opinions	Most statements cite outside information or opinions
Paraphrase	No more than 4 words in a row taken directly from story	One sentence contains more than 4 words in a row taken directly from story	Two sentences contain more than 4 words in a row taken directly from story	3+ sentences contain more than 4 words in a row taken directly from story
Focus	Summary consists of main idea and important details only	Summary contains main idea and some minor details	Summary contains main idea and only minor details	Main idea of story is not discussed
Conventions	No more than one punctuation, grammar, or spelling error	2-3 punctuation, grammar, or spelling errors	4-5 punctuation, grammar, or spelling errors	6+ punctuation, grammar, or spelling errors
Overall Grade: _____				
Comment: _____				

According to the rubric, summarization should be condensed or abridged to certain amount of sentences and should not be outside information of a given text. It would be more preferable to paraphrase than directly borrow words. Summarizers need to distinguish which is main idea, major/minor details. In short, good summary writing should have main idea and major details from a given text in a paraphrased or rewritten form.

Students often wonder and ask teachers how long a summary should be and what should be included in it. (Peretz, 1986) Taylor(1984)'s suggestion that a summary should be about "one-third the length of the original" may be widely-accepted one for the proper length of summary. Students should be taught that summary writing is related to conciseness and abstraction. If the original text should be abridged to

smaller portion of writing, less important details need to be dropped to include central ideas and major supporting details. Accuracy, Paraphrase, and Focus may be related to each other. Summary writing should be from the original text to have accuracy, but not directly copy the idea from the text to fulfill the requirement of Paraphrase, and should be major idea not minor to meet the criterion of Focus. Adolescent/secondary students are expected to have academic writing skills. If they practice summary writing by considering these elements, they can acquire ability of comprehending and analyzing texts naturally.

What Research Says about It: Benefits and Strategies of Summarization

It is natural that summarizing should be closely related to reading ability. “Writing and reading skills tend to be intertwined in practice.” (Fitzgerald & Shanahan, 2000) Without understanding of the text through proper reading strategies, we cannot expect good summarizing. Studies suggest that summary writing and reading instruction should go hand in hand. “Poor summarizers spend little time reading, do not draw conclusions, do not plan their writing during reading, and have difficulty finding the main idea.” (Havola, 1987)

According to Radmacher and Latosi-Sawin (1995) research, it finds that participating [in summary writing exercises] student scores on the final examination were eight percent higher than nonparticipating students. Students who received summary writing instruction could identify main ideas better. Culler(2010)conducted the research on the relationship between improvements in passage retell fluency and summarization skills. The research said that participants increased their scores on a post-test summarization measure indicating that there is a possible functional

relationship between the students' passage retell fluency strategy use and higher-level summarization skills. Many research data show that summary writing strategies can improve reading comprehension as well as quality writing of summary.

Here are five benefits of summary writing strategies collected through results of other researches:

- 1) It facilitates reading comprehension. (Jeong, 2009, Peretz, 1986)
- 2) Summary writing activities can be used as a learning tool. (Tsai, 1995)
- 3) It works as a good way of cooperative learning. (Jeong, 2009, Wichadee, 2010)
- 4) It has positive effect on test-preparation and its result for adolescent/secondary students due to developmental nature in summary writing. (Radmacher & Latosi-Sawin, 1995, Lia, 1993)
- 5) It prepares students to demonstrate good understanding of a text, which will be useful in practical situations. (Peretz, 1986)

It may be helpful to look inside more of these.

1) It facilitates reading comprehension.

Summarization is closely related to comprehension skills because it requires the ability to extract or construct the gist of text, and summary writing has been considered a technique for enhancing comprehension and retention of written text. (Hidi & Anderson, 1986) Summary writing cannot be done with reading the source text just once, especially when the purpose of summary is to explain with accuracy. That is, it is necessary for students to cover several readings to completely understand the text.

2) Summary writing activities can be used as a learning tool.

Summary writing is considered to be one of the powerful generative learning strategies. (Tsai, 1995) When designing summary writing activities, many variables that promote meaningful learning can be included: learning vocabularies and expressions in meaningful context, activating learner's prior knowledge, fostering content knowledge, and differentiating type of summary writing according to the type of text.

3) It works as a good way of cooperative learning.

Collaborative summarization activity with peers can improve students' summarizing ability. According to the research (Jeong, 2009), the collaborative summarization group's performance was significantly improved on identification of main ideas and writing quality in comparison to the control group. Another research studied and compared Bangkok University students' English(L2) summary writing ability before and after they were taught in a collaborative setting of summarization work. (Wichadee, 2010) The results revealed that after the students were taught in a cooperative way (the participant of the research worked through editing and revising together until they got a final paper), their summary writing score of the post-test was higher than that of the pretest and they had positive attitudes toward this learning.

4) It has positive effect on test-preparation and its result for

adolescent/secondary students due to developmental nature in summary writing.

Research studies comparing college and older high school students indicate that high school and college students outperform younger students in their propensity to plan ahead and, in their sensitivity to find the main idea in the text. (Lia, 1993) With strategic summarization instruction, students can get higher score on their examination as research suggests. (Radmacher and Latosi-Sawin, 1995)

5) It prepares students to demonstrate good understanding of a text, which will be useful in practical situations.

Adolescent/secondary students' academic performance is closely related to the job demands of their future profession. Summarizing ability is the basic and essential skill to be required for professional life. Therefore, once they are equipped with effective summarizing strategies, they will benefit from those for their satisfactory results.

Summarization Strategies: Gist, Rule-based, and GRASP

Braxton (2009) study shows that two summarization strategies – GIST and Rule-based – can improve the expository reading comprehension and summary writing. Interesting point is that there is a significant gender difference; GIST group males outperformed the females, while Rule-based group females outperformed males. The research indicated that the both strategies have significant effect on improving

summarizing ability and promote reading comprehension.

Table 2. Two summarization strategies (Braxton, 2009)

GIST (Generating Interactions between Schemata and Text)	Rule-based
STEPS	
<p>GIST Summaries require students to pare down information into a 20-word summary. The process helps students better comprehend content material. Frey, Fisher, and Hernandez (2003), offer the following strategy for creating GIST Summaries.</p> <ol style="list-style-type: none"> 1. Distribute a short piece of text that is divided into four or five sections. Sections should mark logical summarizing spots. The end of each section should be identified with the word STOP. 2. Explain the GIST format—Read a portion of the text, stop, write a summarizing statement for each portion so that at the end of the reading, students should have a concise summary. 3. Introduce the text by connecting with students’ prior knowledge. Identify key vocabulary words. 4. Read aloud the first passage. 5. Lead class discussion and make note of key ideas. 6. Craft a GIST statement. Students write the sentence in notebooks or journals. 7. Read aloud the remaining passages and complete the above sequence for each section. 8. Combine the GIST statements into a concise summary of the material. 	<p>The strategy focuses on the concept of requiring students to follow a set of rules or steps that leads them to produce an organized summary. Before assigning the students to work on the strategy independently, take the time to make the strategy “come alive” for the students. Demonstrate the steps with a model passage.</p> <ol style="list-style-type: none"> 1. Select a content-related passage. Read with students or assign to students. 2. Require students to go through the passage and delete trivial or unnecessary material. 3. Tell students to delete redundant material. 4. Remind students to substitute subordinate terms for lists (for example, substitute flowers for daisies, tulips, and roses). 5. Ask students to select or create a topic sentence.

Secondary students would need to be prepared to read more complex text when they become college students and perform many presentations in professional areas after graduating from a college. More often than not, reporting skills which often requires in writing form is most often needed ability, which means identifying, emphasizing, and summarizing main point in a concise and clear manner. (Peretz, 1986)

Another summarizing strategy is GRASP. (Hayes, 1989) The basic steps needed to implement the procedure are: (1) preparing the students for the lesson; (2) reading for information; (3) organizing remembered information; and (4) writing the summary. While it gives an idea of general procedure for summary writing, it sounds too broad to implement for ESL students.

These three summarization strategies might be combined according to target students, students' and texts' levels. For beginner students it will be helpful to start more specific approach like Rule-based than general one. As the students develop their skills and get used to the strategies, it is important to encourage them to move forward and experiment with other strategies so that they can benefit from different aspect of skills.

The three strategies mentioned above are general way of summarizing. There are supportive strategies to promote effective summary writing: notetaking, mapping and margin-marking. (Lia, 1993) Teachers can encourage students to use these tips for effective summary writing.

What I have done in my classroom and its potentials

I implemented reading and summarizing instruction on 11th and 12th ESL students for two semesters last year 2011 and this year 2012. Reading comprehension is most assessed area for secondary students in Korea when it comes to English language test. But soon the reformed test which will test the four skills is going to begin in a few years. Therefore, I thought that summarization would be the best way to check out their understanding of a text as well as strengthen their comprehension

further. Here’s what I have done:

Participants and summary writing format used

Figure 1. Summary Writing Format (Designed for Classroom Use) Students were instructed to write summary under small portion of each paragraph.

The figure shows two versions of a summary writing format. The left version is a grid layout with the following sections:

- Title: _____
- Name: _____ Date: _____
- Paragraph 1
- Paragraph 3
- Summing-up 1
- Summing-up 3
- Paragraph 2
- Whole Summary Writing
- Summing-up 2
- Your Own Questions

The right version is a vertical layout with the following sections:

- Title: _____
- Name: _____ Date: _____
- Paragraph 1 (with a Key word bubble)
- Paragraph 2 (with a Key Word bubble)
- Summary

There were about 15 to 20 students participating in 90-minute summary writing activity after school once or twice a week except mid-term and final test period. First, I chose articles from New York Times and Harvard Business Review in which main ideas are well-expressed and paragraphs are well-divided so that students may start summarizing comfortably. The articles were columns, editorials, and many research

ideas or results related to psychology or many other inspirational topics, such as “Nine Things Successful People Do Differently”, “Sorry, Strivers; Talent Matters”, “Willpower – It’s in Your Head” and so on. The order of articles covered in the class was in logical flow to make students have reading experience in an organized way. While they were summarizing the articles, they were more likely to concentrate on the reading. The students were provided with organized format as in Figure 1. for summary writing. They wrote summary writing in the space under each short paragraph in one or two sentences. Another format is to let students write key words of each paragraph first and then have them summarize using key words. At first, they wrote summaries in Korean (L1), and after some practices, some advanced students could summarize in English (L2). As an article noted (Williams, 2011), the students that experienced difficulties constructing summaries of the entire article without summarizing individual paragraphs first, found it difficult to identify the main idea of the entire article. For those who haven’t summarized a text very often, it is important to start the task by splitting into small units of paragraphs. Then it will be much easier to see the main idea of the whole text.

Hard to paraphrase

Paraphrasing is essential part of summary writing. But my students couldn’t paraphrase much. Studies indicate that L2 learners’ summary writings contain much less paraphrasing than those of L1 writers. (Keck, 2006) According to his classification of four major Paraphrase Types: Near Copy, Minimal Revision, Moderate Revision, and Substantial Revision, it was found that L2 writers used significantly more Near Copies than L1 writers. I found that my students wrote their

summaries in Near Copy type. So I had to teach them what paraphrase is but it was really difficult to let them paraphrase a given text, for they are not used to writing in English in the first place. Naturally I turned to Rule-based summarizing strategy in which one deletes unnecessary/redundant material and selects/invents a topic sentence. (Perin, 2007) This simple-looking strategy worked really well with my students. Their summary writing improved and sounded comprehensible with main points and important supporting details. To facilitate their summary writing, students were allowed to summarize under small portion of paragraph and later be checked their understanding of how well they summarized. This activity could be extended as a collaborative learning by comparing their summary writings with peers and discussing content. In light of writing as collaborative aspect, summary writing activity can also be done as a group work, since every writing work has audiences.

Audiences of summary writing

Summaries can be of two kinds, reader-based and text-based (writer-based). (Hidi & Anderson, 1986) In classroom situations, reader would be teachers or peers, but in the real world, students face different audiences. (Peretz, 1986) Summarization method can be different according to the target audience. For example, if audience is mostly teachers in a classroom setting, students would need to include supporting details in their summary writings to demonstrate their understanding of a text and knowledge. But real world audiences prefer generalization under possibly distracting circumstances, when summary has to be conveyed in oral form. Therefore, teachers need to remind students that their summary writing should be done differently under different purpose, that is,

different audiences.

Source Text: Another variable on effective summarization

According to the journal article (Yu, 2009), source text had significant and relatively larger effects than the summarizers' language abilities on summarization performance. Participants in the test were asked to write summaries of one of three extended English texts of similar length and readability, but different level of words and organization. The more familiar the students were with the text, the better they performed on the summarization task. It may imply that teachers need to consider organization and level of the text to promote summarizability for the beginning step of summary task when selecting source text.

A conclusion

“Answering questions and answers regarding a text would only promote recall. In contrast, summarizing would provide students with opportunities for comprehending, evaluating, condensing, and transforming ideas”. (Hidi & Anderson, 1986) Adolescent/secondary students would need to use summarizing skills very often in real situations which may be directly related to academic performances for some or jobs for others. Clearly it would be beneficial that if one has capability to summarize any subjects in a concise and accurate manner. Summarizing is viewed as active learning rather than passive one according to many researches, since it entails recalling, organizing, reordering, elaborating and activating one's prior knowledge.

Summary writing gives students a lot of benefits in terms of language learning in

general as well as important writing skills for specific purpose. It provides with meaningful vocabulary learning through opportunities of reading various context. Students can benefit from the activity of summary writing in a wide variety of aspects. Teacher role is thus crucial in instructing and guiding students to have them fully experience effective summarization strategies and thereby they can write different types of summaries so that “they will be prepared for the real world”. (Peretz, 1986)

When reading a text, more or less readers would use their own strategies to understand the text on the whole. But with the effective strategies in mind, students will be able to present their summaries in more elaborated way. To make that happen, teachers should provide students with sufficient model writing and the use of strategies in the process. The effect of learning summary writing can be expanded with collaborative work in which students compare and discuss their work in pairs or small group. Summarization activity is not a linear task but multidimensional one depending on the use of strategies with various source texts in different setting.

Appendix A

HARVARD BUSINESS REVIEW

Nine Things Successful People Do Differently

by Heidi Grant Halvorson | February 25, 2011

Why have you been so successful in reaching some of your goals, but not others? If you aren't sure, you are far from alone in your confusion. It turns out that even brilliant, highly accomplished people are pretty lousy when it comes to understanding why they succeed or fail. The intuitive answer — that you are born predisposed to certain talents and lacking in others — is really just one small piece of the puzzle. In fact, decades of research on achievement suggests that successful people reach their goals not simply because of who they are, but more often because of what they do.

1. Get specific.

When you set yourself a goal, try to be as specific as possible. "Lose 5 pounds" is a better goal than "lose some weight," because it gives you a clear idea of what success looks like. Knowing exactly what you want to achieve keeps you motivated until you get there. Also, think about the specific actions that need to be taken to reach your goal. Just promising you'll "eat less" or "sleep more" is too vague — be clear and precise. "I'll be in bed by 10pm on weeknights" leaves no room for doubt about what you need to do, and whether or not you've actually done it.

2. Seize the moment to act on your goals.

Given how busy most of us are, and how many goals we are juggling at once, it's not surprising that we routinely miss opportunities to act on a goal because we simply fail to notice them. Did you really have no time to work out today? No chance at any point to return that phone call? Achieving your goal means grabbing hold of these opportunities before they slip through your fingers. To seize the moment, decide when and where you will take each action you want to take, in advance. Again, be as specific as possible (e.g., "If it's Monday, Wednesday, or Friday, I'll work out for 30 minutes before work.") Studies show that this kind of planning will help your brain to detect and seize the opportunity when it arises, increasing your chances of success by roughly 300%.

3. Know exactly how far you have left to go.

Achieving any goal also requires honest and regular monitoring of your progress — not by others, then by you yourself. If you don't know how well you are doing, you can't adjust your behavior or your strategies accordingly. Check your progress frequently — weekly, or even daily, depending on the goal.

4. Be a realistic optimist.

When you are setting a goal, by all means engage in lots of positive thinking about how likely you are to achieve it. Believing in your ability to succeed is enormously helpful for creating and sustaining your motivation. But whatever you do, don't underestimate how difficult it will be to reach your goal. Most goals worth achieving require time, planning, effort, and persistence. Studies show that thinking things will come to you easily and effortlessly leaves you ill-prepared for the journey ahead, and significantly increases the odds of failure.

5. Focus on getting better, rather than being good.

Believing you have the ability to reach your goals is important, but so is believing you can get the ability. Many of us believe that our intelligence, our personality, and our physical aptitudes are fixed — that no matter what we do, we won't improve. As a result, we focus on goals that are all about proving ourselves, rather than developing and acquiring new skills. Fortunately, decades of research suggest that the belief in fixed ability is completely wrong — abilities of all kinds are profoundly malleable. Embracing the fact that you can change will allow you to make better choices, and reach your fullest potential. People whose goals are about getting better, rather than being good, take difficulty in stride, and appreciate the journey as much as the destination.

6. Have grit.

Grit is a willingness to commit to long-term goals, and to persist in the face of difficulty. Studies show that gritty people obtain more education in their lifetime, and earn higher college GPAs. Grit predicts which cadets will stick out their first grueling year at West Point. In fact, grit even predicts which round contestants will make it to — at the Scripps National Spelling Bee. The good news is, if you aren't particularly gritty now, there is something you can do about it. People who lack grit more often than not believe that they just don't have the innate

abilities successful people have. If that describes your own thinking ... well, there's no way to put this nicely: you are wrong. As I mentioned earlier, effort, planning, persistence, and good strategies are what it really takes to succeed. Embracing this knowledge will not only help you see yourself and your goals more accurately, but also do wonders for your grit.

7. Build your willpower muscle.

Your self-control "muscle" is just like the other muscles in your body — when it doesn't get much exercise, it becomes weaker over time. But when you give it regular workouts by putting it to good use, it will grow stronger and stronger, and better able to help you successfully reach your goals. To build willpower, take on a challenge that requires you to do something you'd honestly rather not do. Give up high-fat snacks, do 100 sit-ups a day, stand up straight when you catch yourself slouching, try to learn a new skill. When you find yourself wanting to give in, give up, or just not bother — don't. Start with just one activity, and make a plan for how you will deal with troubles when they occur ("If I have a craving for a snack, I will eat one piece of fresh or three pieces of dried fruit.") It will be hard in the beginning, but it will get easier, and that's the whole point. As your strength grows, you can take on more challenges and step-up your self-control workout.

8. Don't tempt fate.

No matter how strong your willpower muscle becomes, it's important to always respect the fact that it is limited, and if you overtax it you will temporarily run out of steam. Don't try to take on two challenging tasks at once, if you can help it (like quitting smoking and dieting at the same time). And don't put yourself in harm's way — many people are overconfident in their ability to resist temptation, and as a result they put themselves in situations where temptations abound. Successful people know not to make reaching a goal harder than it already is.

9. Focus on what you will do, not what you won't do.

Do you want to successfully lose weight, quit smoking, or put a lid on your bad temper? Then plan how you will replace bad habits with good ones, rather than focusing only on the bad habits themselves. Research on thought suppression (e.g., "Don't think about white bears") has shown that trying to avoid a thought makes it even more active in your mind. The same holds true when it comes to behavior — by trying not to engage in a bad habit, our habits get strengthened rather than broken. If you want to change your ways, ask yourself, What will I

do instead? For example, if you are trying to gain control of your temper and stop flying off the handle, you might make a plan like "If I am starting to feel angry, then I will take three deep breaths to calm down." By using deep breathing as a replacement for giving in to your anger, your bad habit will get worn away over time until it disappears completely. It is my hope that, after reading about the nine things successful people do differently, you have gained some insight into all the things you have been doing right all along. Even more important, I hope you are able to identify the mistakes that have derailed you, and use that knowledge to your advantage from now on. Remember, you don't need to become a different person to become a more successful one. It's never what you are, but what you do.

Summing-up

Your Own Qs

Figure 2. Source from Harvard Business Review “Nine Things Successful People Do Differently” By Heidi Grant Halvorson (Edited for Classroom Use)

New York Times Willpower: It's in Your Head

By GREG WALTON and CAROL DWECK
Published: November 28, 2011

IS willpower an illusion? Is the traditional notion of a deep mental reservoir of strength a fiction?



In recent years, the popular answer has been yes. Our abilities, according to this argument, are constrained by the narrow limits of our biology. In her 2008 book, "Health at Every Size," the nutritionist Linda Bacon argues that, because of how the brain's hypothalamus works, it is a "myth" that anyone can will himself to lose weight by maintaining a diet. "It's not your fault!" she writes. "Biology is so powerful it can 'make' you break that diet."

This year, in their book "Willpower: Rediscovering the Greatest Human Strength," the social psychologist Roy F. Baumeister and the New York Times science writer John Tierney survey a large body of scientific research to conclude that willpower is limited and depends on a continuous supply of the simple sugar glucose. When glucose is depleted, you fall prey to impulse shopping, affairs and cookies. The solution? "Try to get some glucose in you," Mr. Tierney told NPR.

Such theories have an obvious appeal: attributing failures of willpower to our fixed biological limits justifies our procrastination as well as our growing waistlines. Not only that, we also get to consume more sugar. But are these theories correct?

We don't think so. In research that we conducted with the psychologist Veronika Job, we confirmed that willpower can indeed be quite limited — but only if you believe it is. When people believe that willpower is fixed and limited, their willpower is easily depleted. — But when people believe that willpower is self-renewing — that when you work hard, you're energized to work more; that when you've resisted one temptation, you can better resist the next one — then people successfully exert more willpower. It turns out that willpower is in your head.

In one study, we first gave people either an easy, rote task (like crossing off every letter in a page of typewritten text) or a more difficult task that involved self-control (like crossing out some e's but not others according to a complex set of rules). Then everyone performed a tricky cognitive task in which they had to exert self-control to avoid making mistakes.

When the initial task was easy and willpower wasn't required, people did well on the tricky cognitive task, making few mistakes. But when the initial task was hard and involved self-control, people who believed that willpower was limited made almost twice as many mistakes on the tricky cognitive task as did the group that performed the initial easy task. This finding replicates many studies by Dr. Baumeister and others that have been interpreted as evidence that willpower is limited and easily depleted. But, strikingly, we found that people who believed that willpower was not limited continued to perform well on the second task, making few mistakes, even after facing the difficult initial task. They were not "depleted" and kept on doing well.

You may contend that these results show only that some people just happen to have more willpower — and know that they do. But on the contrary, we found that anyone can be prompted to think that willpower is not so limited. When we had people read statements that reminded them of the power of willpower like, "Sometimes, working on a strenuous mental task can make you feel energized for further challenging activities," they kept on working and performing well with no sign of depletion. They made half as many mistakes on a difficult cognitive task as people who

read statements about limited willpower. In another study, they scored 15 percent better on IQ problems.

We also studied this phenomenon in the real world. In one study, we followed 130 college students over five weeks. During stressful times, like final-exam week, students who believed that willpower was not limited reported eating less junk food and procrastinating less than students who did not share that belief. They also showed more academic growth, earning better grades that term than their "pessimistic" counterparts.

Furthermore, when we taught college students that willpower was not so limited, they showed similar increases in willpower. They reported procrastinating only once or twice a week instead of the two to three times a week reported by students in a control condition, and they cut down on excess spending, going beyond their budgets less than once a week instead of once or twice a week.

How does this happen? People who think that willpower is limited are on the lookout for signs of fatigue. When they detect fatigue, they slack off. People who get the message that willpower is not so limited may feel tired, but for them this is no sign to give up — it's a sign to dig deeper and find more resources.

What about the glucose idea, which seems supported by so much science? Dr. Baumeister and Mr. Tierney describe studies showing that giving people glucose (in the form of a sugar drink) restores their willpower. But in our latest research we found that when people believe in willpower they don't need sugar — they perform well whether they consume sugar or not. Sugar helps people only when they think that willpower is sharply limited. It's not sugar we need; it's a change in mind-set.

To be sure, willpower is not completely unlimited. Food and rest are of course necessary for functioning, and many

struggles that people face are quite difficult. The question is how often we need extra sugar boosts. Messages suggesting that willpower is severely limited and that we need constant sugar boosts are bound to further inflate the American waistline and hinder our ability to achieve our goals.

At stake in this debate is not just a question about the nature of willpower. It's also a question of what kind of people we want to be. Do we want to be a people who dismiss our weaknesses as unchangeable? When a student struggles in math, should we tell that student, "Don't worry, you're just not a math person"? Do we want him to give up in the name of biology? Or do we want him to work harder in the spirit of what he wants to become?

Summing-up

Your Own Qs

Figure 3. Source from New York Times, “Willpower – It's in Your Head” By Greg Walton and Carol Dweck (Edited for classroom use)

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