Language Research Bulletin, 35, ICU, Tokyo

Exploring Debiasing Strategies to Improve Small Group Reasoning and Decision Making Outcomes

John Peloghitis and Guy Smith
English for Liberal Arts Program
International Christian University

Abstract

This exploratory paper aims to reflect on and consider how recent research into cognitive bias and debiasing could help teachers facilitate improved small group discussion work in their classrooms. The paper first reviews the research supporting the benefits of small group discussion. We then describe three cognitive biases that can potentially negatively impact on the openness and diversity of small group work involving problem-solving, consensus building, and decision making. These cognitive biases have been shown to result in a lack of debate, unhealthy convergence, and polarization. Based on strategies that have been found to be effective in combating and mitigating these biases, some potential ideas for teachers to implement in classroom activities that involve small group work are then looked at. Examples of two classroom tasks involving problem-solving, consensus building, and decision making are then discussed. In the conclusion, some thoughts are offered on the future direction and potential of integrating cognitive bias research and debiasing into improving student reasoning in small group class discussion work.

The success of language teachers in utilizing group activities can have a significant carry-over impact on the progress of language learning and other skills taught in their class. In general, if teachers can organize and implement successful group work in their classes, then their students will have increased and more effective access to learning opportunities. Small group discussion work such as consensus building and problem-solving is a valuable pedagogical tool often employed by foreign language teachers as it not only creates discussion opportunities and promotes communication in the target language, but also offers a range of other benefits. For example, asking students to work in groups to solve a problem enhances analytical and critical thinking skills because it requires students to share ideas, discuss and evaluate options, and make decisions on complex topics (Soranno, 2010). Importantly for language teachers, discussion can foster and develop communication skills (Dallimore, Hertenstein & Platt, 2008) and access improved student learning (Huerta, 2007). Small group interaction also seems to improve immediate reasoning while at the same time promoting better solitary reasoning (Mercier, Boudry, Paglieri & Trouche, 2017). Other research on class discussion work has indicated a connection between student discussion work and improved problem-solving skills (Murphy et al., 2009). A meta-analysis that looked at what classroom activities improve critical thinking skills concluded that dialogic group

work, especially teacher-led discussion work, was a crucial factor in developing critical thinking skills (Abrami et al., 2014).

The studies cited above show robust evidence supporting the benefits of small group work in pedagogical contexts. This paper focuses on exploring some new potential avenues for how teachers can further enhance the effectiveness of their student small group work. This focus is based on the growing body of research into *cognitive bias*. Specifically, we look at some ideas for how to improve key elements of small group reasoning found in the processes of problem-solving, consensus building, sharing of opinions, and decision making. Within these processes, cognitive biases can emerge in a number of stages and can negatively affect group work performance, which we will discuss later. Recent studies on cognitive bias have found some specific biases that have a strong potential for negatively impacting the quality of small group work. However, the uncovering and examination of these biases have led to new windows of thought that can be explored into how teachers can manage and practice small group discussion more effectively than ever before.

A Brief Introduction to Cognitive Bias and Debiasing

A cognitive bias refers to a distorted or unbalanced cognitive interpretation of reality that offers some kind of benefit or advantage. In the evolutionary context, these biases often evolved to improve or increase the chances of survival or mating. Depending on the situation, the brain sometimes interprets information via a bias, not objectively, but in a way that is advantageous or preferential for its needs or desires. Many biases are hardwired into our thinking and are largely invisible to us; thus, we are not aware of them for the most part. The research into cognitive bias has been rapidly expanding, especially since the release of *Thinking, Fast and Slow* by Nobel Prize for Economics winner Daniel Kahneman which presented a strong case for the dangers of cognitive bias supported by an abundant body of evidence (2011). There is now a complex and growing body of research on cognitive bias in a wide range of fields, including economics (Thaler & Sunstein, 2009), medicine (Groopman, 2008) and critical thinking education (Maynes, 2015). However, for the purpose of this article, it is sufficient for the reader to understand that the brain is subject to a range of biases that influence how it views and reacts to situations.

An example of a socially-oriented bias is the attribution of danger to harmless out-group members and the tendency to avoid contact with them (Maner et al., 2005; Park et al., 2003). This bias is an example of error management in which the potentially devastating error (possibly being killed by a hostile stranger) outweighs the small error (missing out on creating a new contact). In hunter-gatherer societies, meeting unknown out-group members when alone represented a significant danger. It was much safer to assume danger and flee the unknown out-group member and report back to the tribe. In this case, this social bias of paranoia reduces the exposure to danger and is one of various evolutionary biases that continue to play an unconscious role in our modern in-group/out-group interactions. These evolutionarily evolved hard-wired biases which were relevant in the hunter-gatherer lifestyle have become in some ways problematic for modern lifestyles in which a different environment has lessened the immediate importance of mating and survival. For example, the bias towards one's own in-group has been partly the cause of racism, tribalism, and discrimination. In a similar way a cultural or learned bias can be effective in the respective cultural or educational context but become problematic outside of these original contexts.

Because cognitive biases can lead to undesirable outcomes, an interest in *debiasing* across fields such as medicine, economics and education has grown considerably over the past ten years.

Debiasing aims to combat the negative outcomes of cognitive biases by implementing strategies, frameworks, and awareness-raising activities that prevent or reduce the potentially negative impact of a bias. The next two sections look in more detail at some cognitive biases that are specifically of relevance to teachers and also ways to improve small group student discussion through debiasing strategies that work to counteract the negative impact of these biases.

Groupthink, the Halo Effect, the Authority Bias - Three Cognitive Biases that Potentially Have a Negative Impact on Small Group Student Discussion

The cognitive bias, *groupthink*, was popularized by Psychologist Irving Janis to describe the outcomes of what often can happen when people are grouped together to discuss a problem or to attempt to reach consensus. Janis (1972) defined the groupthink tendency as "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action" (p. 9). This indicates the possibility that groups can make poorer choices because they become more concerned with reaching a consensus and preserving the harmony or norms of the group by offering relatively conservative viewpoints (Janis, 1982; Packer, 2009). Further, Kerr and Tindale (2004) described a number of weaknesses in decision-making attributed to the effect of groupthink. For example, groups can form an "us-against-them" mentality, and they can become dominated by belligerent and more authoritative group members. Second, groups can develop into a pecking order of extroverts and introverts, with the former leading and controlling the conversation while the latter's ideas are often held back in the interest of not "rocking the boat".

Another socially-oriented cognitive bias, the *halo effect* (Nisbett & Wilson, 1977; Bak, 2010) describes a bias in which a positive impression of a person (for example, attractiveness, confidence, or perceived expertise) has an influence on how the views of that person are viewed and evaluated. For example, if someone is viewed as generally being very well informed and smart, then their opinion could receive more weight than it deserves.

The third bias this paper looks at, the *authority bias* (Milgram, 1963; Cialdini, 2007), is a social bias in which people give greater accuracy and weight to an authority figure, i.e., someone who is perceived to have significant power in, for example, an educational, military, or legal context. An example of the authority bias can be found in the highest-paid person effect (HPPC) which describes the tendency to give more weight than would be deserved to a highly paid advisor's opinion (Kaushik, 2007). In the classroom context, the authority bias can emerge when teachers assign a leader thus conveying power on a student, or when students who have significantly stronger communicative skills become figures of power, or through other social processes.

Some Potential Strategies to Mitigate the Negative Impact of Cognitive Bias on Small Student Group Discussion

In real-world small group work, it is feasible that any of the above biases could come into play at any time and at any stage of student discussion. Therefore, it is better to put in place frameworks and strategies for small group dialogic work that are likely to counter the possibility of these biases affecting the discussion. It is very difficult for individual actors to recognize their own biases; however, if the preventative strategies are in play *before* the bias even appears, they are able to preemptively debias the context, which prevents the bias from occurring. It is very difficult to specifically aim at countering one particular bias when in such a complex environment as a classroom situation. In a classroom situation, sorting out what specific cognitive bias is in play in each individual and is impacting on what would involve trying to interpret a huge range of variables. In other words, it is not practical for a teacher to try and control for a single specific bias.

One way to effectively control for bias is to use debiasing strategies that prevent or mitigate the common impact of a family of biases (Beaulac & Kenyon, 2018). For example, if we put the authority bias, halo effect, and groupthink in a family of biases, then one common outcome of all of them is a reduced diversity and range of argument. The narrow range of argument occurs because when people are being influenced by these biases, many arguments are simply not offered. This could be due to a desire to maintain harmony (groupthink), a positive image of another participant which creates hesitation to refute them (the halo effect), or over respect for a person's power (the authority bias). This family of three biases have a common negative outcome, and this negative outcome can then be countered by a strategy that is designed to increase and expand the range of arguments and perspectives. Another common outcome of the three biases is the polarization of opinion.

We would like to suggest some strategies, or interventions, that teachers can use to address the common effects of these three biases and thus raise significantly the chances that their student small group work retains diversity and vigor in its range of ideas and perspectives and avoids extreme polarization of views.

First, due to the influence of these biases there is a possibility that when one or two opinions are shared, group members either decide to simply agree with one of the opinions without voicing their own ideas, water down their own opinions to move closer to the average or dominant position, or pretend to agree while inwardly disagreeing but not voicing their opinion. If students take any of the above actions, it reduces the diversity of the ideas, and results in a group perspective controlled by a need for harmony, or by those with more perceived power or popularity. The optimal course of action is to have a framework in place that will prevent these potential problems from emerging. To do this, before the small group work teachers could ask students to write down their opinions and bring them to class. Students should be encouraged to note down ideas for a few days before the small group work so that various ideas and arguments have time to come to mind. In class, all of the ideas would be collected by the teacher, put into a document and distributed to the class to be discussed. This largely prevents the chance that potential arguments would be withheld due to worry or hesitation of contradicting an important or popular person, or to a desire to conform, or simply that the argument seems so ridiculous and so "out there" that the student does not present it to the group. The ideas are shared and presented anonymously therefore nobody is at risk of personal discomfort.

Secondly, if the authority, halo and groupthink biases are influencing the individual or group, then it is less likely that objections to the ideas will be presented for the same reasons covered above. To prevent this from happening, teachers can employ the idea of Red Teams. Red Teams are individuals or groups within the group whose job it is to challenge, attack or defeat a plan or proposal (Sunstein & Hastie, 2015). In small group work, Red Teams can be students whose set role it is to challenge or question the opinions or ideas that come up. There are two main advantages of assigning such a role. One is that the biases are countered before they emerge because rather than relying on individual team members to present objections, a team member (or members) is given the role of challenging all ideas and must come up with objections. The other advantage is that realistically, disagreement can often be taken as personal attack and be perceived as unpleasant. However, if it is assigned as a role that everyone recognizes and takes turns in adopting, the disagreement is seen as a role or duty required of a group member instead of a personal attack. This kind of exercise focuses the discussion more on the idea than the person.

Thirdly, one other common issue all teachers should be aware of that can emerge from this family of biases is polarization. Group polarization occurs when group members alter their initial views to follow the majority view leading to the group adoption of extreme views (Brauer, Judd & Gliner, 2006; Zhu, 2013). Kogan and Wallach (1967) suggest that group polarization exists because there can be a diffusion of individual responsibility found in group-based decisions. Individuals can adopt riskier decisions because if a poor choice is made, blame is then shared among the group members. The strategy that could be applied to diffuse this bias is to give the flow of argument time to reset. One of the most effective ways to address this is through perspective-taking (Sunstein & Hastie, 2015). This teacher intervention can come at any time; however, it is probably better in the late stages of the discussion. At this point, the teacher will stop the discussion and assign random perspectives. For example, if a class is discussing the ethics of parental sex-selection of babies, group members could be assigned different roles such as a doctor, a parent, a politician, or a baby. Each group member's goal is to frame and explore the issue from the perspective of their new role, and then share their ideas with the group. This activity returns some responsibility to the individual and opens up the range of perspectives which can prevent the emergence of unhealthy polarization.

Finally, another useful strategy to address the negative impact of these biases is to assign the leader a set of behaviors to follow. For example, group leaders can be directed not to propose a course of action or an opinion at the start of an activity which would allow the group to avoid the temptation to "follow the leader." Silencing the leader until all other opinions have been given can also give more space for different perspectives. Furthermore, the leader can split the group into pairs and have each pair discuss and present their ideas to decentralize the discussion. Effective leadership can have a powerful impact on reducing and mitigating a large number of biases, and there are many strategies students could be introduced to; however, this is beyond the scope of this paper.

Two activities will be presented in detail to illustrate how these preventive measures can be implemented in the actual classroom. The first exercise is a problem-solving activity by the Northwest Association for Biomedical Research (2012) that asks students to decide who should receive a vaccine for a deadly flu virus. Students read a scenario and individually rank who should receive the vaccine. Students then form groups and explain how they reached their decisions. The purpose of this exercise is to practice using reasoning skills in a

difficult, hypothetical situation in which there is no clear answer. Students are presented with the following information:

Scenario
A severe worldwide outbreak of the flu caused by a respiratory virus has occurred. It threatens everybody in your community—healthy young people as well as the very old and very young. You cannot count on receiving federal assistance during this pandemic. This deadly flu has already killed people in your community and exposure to the flu is expected. Anybody who has not been vaccinated will succumb to the flu and most likely die. Effective vaccines exist in limited supply. There are enough vaccines to treat more than half of the community members during the first wave of the pandemic. Ten people require the vaccine at this time and you can only treat six. The four individuals who do not receive the vaccine will most likely die.

Which six should receive the flu vaccine?

- A woman who thinks she is six weeks pregnant
- A recently orphaned two-year-old
- A nurses' aide who works at a nursing home
- A senior citizen who has 15 grandchildren
- Thirteen-year-old twins
- A doctor
- An elementary school teacher
- A mother and son; the mother is refusing treatment so her son will be treated

A handout is distributed that has students rank the people in the scenario and provide reasons for how they made their decision. This step encourages each group member to share their own ideas in the actual discussion. Students can then share this information with the teacher, who would make these ideas anonymous and redistribute them to the groups. By implementing this simple intervention, students would feel less inhibited to argue for less common viewpoints. The Red Teams strategy can also be employed in this activity by assigning one group member to challenge each viewpoint to ensure that multiple perspectives are considered. For example, if the group moves toward a decision to save the doctor, then the Red Team member can challenge the group by pointing out that no specific information is provided about the doctor's specialty. The doctor could be a dentist and, in this case, would likely be perceived as less favorable in this life and death scenario. Lastly, teachers can assign a role for students to avoid polarization. Below is a list of roles that can be assigned to individual group members:

- Role 1: A student argues to save the youngest, maximizing the life span for the greatest number of people.
- Role 2: A student argues for randomizing the selection. This option values fairness.
- Role 3: A student values saving the weakest. This option considers the special needs of vulnerable populations.
- Role 4: A student encourages saving the most useful. Saving someone who has special knowledge and/or may be able to save others benefits a larger number of people.
- Role 5: A student values respecting relationships. Honoring the dignity of human beings includes acknowledging their relationships.

By assigning specific roles within a group, each member has a responsibility creating a more robust discussion of the ethics underpinning this activity.

A second activity to highlight how biases in group work can be prevented through teacher intervention can be observed in the creation of rubrics. Typically, teachers control the assessment process; however, research has found advantages in allowing students to be involved in developing and applying rubrics (Panadero & Jonsson, 2013; Reddy & Andrade, 2010). As a first step, students need exposure to several examples of rubrics, then additional measures are put in place that enable them to work toward creating their own rubric. In formulating a rubric for a presentation, for example, students may decide to choose from elements such as eye-contact, use of language, gestures, transitions between points, evidence presented, pronunciation, clarity, content, and slide design. Teachers could then use these student-generated rubrics for assessing student presentations adding real-world application to the task.

As discussed in the vaccine problem-solving activity, students would work individually to generate various criteria and descriptors (i.e., poor, average, good, excellent) for grading an assignment, which are then collected by the teacher. The teacher would remove any names to create an anonymous list of criteria that students would use to discuss their rubric. This provision would ensure that all ideas would be considered and that certain viewpoints would not be silenced. Teachers can also assign Red Teams to one or two members in each group. These students would raise issues during the discussion so that alternate choices are given consideration. Another option would be to outline a procedure for leaders to follow, discouraging strong personalities from dominating the discussion. One approach would be to break the groups into pairs to generate a particular rubric component, such as delivery or content. The members would go back to the larger groups to discuss their ideas. Certain people can also be silenced from giving an opinion until the activity reaches a particular stage in the discussion. These types of interventions placed within the procedure increase the likelihood for students to acquire a more balanced perspective.

Let Students in on the Secrets

The issue of to what extent teachers need to inform students about how cognitive bias works and how to prevent and reduce the negative impacts is important. The interventions will be more likely to be successful if students understand why they are being put in place. Teachers could simply inform students of how the strategic interventions will act to improve small group work, or they could go one more step further and introduce the biases and why the interventions are effective. For teachers who wish to add an element of metacognition to their lessons, interventions can be put in place at a certain point in a discussion activity, which would encourage students to identify how a specific cognitive bias could be interfering with the group work. Students would be asked to reflect on and analyze their thinking in the discussion work from this perspective.

Conclusion

This paper has attempted to explore some ideas for what teachers could potentially do to mitigate the harmful impact of cognitive bias, particularly focusing on the area of small

group work. For teachers, small group work involving problem-solving, consensus building, and decision making is a valuable and useful classroom tool that offers significant benefits for student learning and growth. In recent years a robust body of research is available that supports the benefits of using small group work in the classroom and methods for implementing it successfully. However, classroom approaches applying the growing research into cognitive bias and debiasing offer exciting new potential for discoveries about how to further ensure and improve the effectiveness and quality of small group discussion. The current interest in cognitive bias and debiasing means that many new studies are increasing our current understanding of how cognitive bias works and leading to subsequent research and discussions on how we can debias or mitigate the bias in cases when the bias is potentially detrimental. The exploration and applications of these findings by teachers in educational contexts promise to lead to new educational perspectives and approaches, and improve the quality and outcomes of student small group dialogic work. Following on from initial exploratory discussions as in this paper needs to be further empirical studies to identify and understand more clearly which strategies to mitigate and prevent cognitive bias in educational contexts are the most suitable.

References

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2015). Strategies for teaching students to think critically: A meta-analysis. *Review of Educational Research*, *85*(2), 275-314

Bak, P. M. (2010). Sex differences in the attractiveness halo effect in the online dating environment. *Journal of Business and Media Psychology*, *1*(1), 1-7

Beaulac, G., & Kenyon, T. (2018). The scope of debiasing in the classroom. *Topoi*, *37*(1), 93-102

Brauer, M., Judd, C. M., & Gliner, M. D. (2006). The effects of repeated expressions on attitude polarization during group discussions. *Key Readings in Social Psychology*, *1*, 265.

Cialdini, R. B., (2007). *Influence: The psychology of persuasion* . Collins.

Dallimore, E. J., Hertenstein, J. H. & Platt, M. B. (2008). Using discussion pedagogy to enhance oral and written communication skills. *College Teaching*, *56*(3): 163–172.

Groopman, J. (2008). *How doctors think*. Houghton Mifflin Harcourt.

Huerta, J. C. (2007). Getting active in the large lecture. *Journal of Political Science Education*, *3*(3), 237-249

Janis, I. L. (1972). *Victims of groupthink*. Houghton Mifflin.

Janis, I. L. (1982). *Groupthink: Psychological studies of policy decisions and fiascoes* (Vol. 349). Houghton Mifflin.

Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan

Kaushik, A. (2007). *Web analytics: an hour a day*. John Wiley & Sons.

Kerr, N.L., & Tindale, R.S. (2004). Group performance and decision making. *Annual Review of Psychology, 55*, 623–655. (doi:10.1146/annurev.psych.55.090902.142009)

Kogan, N., & Wallach, M. A. (1967). Group risk taking as a function of members' anxiety and defensiveness levels 1. *Journal of Personality*, *35*(1), 50-63.

Maner, J. K., Kenrick, D. T., Becker, D. V., Robertson, T. E., Hofer, B., Neuberg, S. L., Delton, A. W., Butner, J., & Schaller, M. (2005). Functional projection: How

fundamental social motives can bias interpersonal perception. *Journal of Personality and Social Psychology, 88*(1), 63–78. https://doi.org/10.1037/0022-3514.88.1.63

Maynes, J. (2015). Critical thinking and cognitive bias. *Informal Logic*, *35*(2), 183-203

Mercier, H., Boudry, M., Paglieri, P. & Trouche, E., (2017) Natural-Born arguers: Teaching how to make the best of our reasoning abilities, *Educational Psychologist*, DOI: 10.1080/00461520.2016.1207537

Milgram, S. (1963). Behavioral study of obedience. *The Journal of Abnormal and Social Psychology*, *67*(4), 371..

Murphy, P. K., Wilkinson, I. A., Soter, A. O., Hennessey, M. N., & Alexander, J. F. (2009). Examining the effects of classroom discussion on students' comprehension of text: A meta-analysis. *Journal of Educational Psychology*, *101*(3), 740

Nisbett, R.E., & Wilson, T.D. (1977). The halo effect: evidence for unconscious alteration of judgments. *Journal of Personality and Social Psychology*. *35*(4), 250.

Northwest Association for Biomedical Research. (2012). Lesson 1: Introduction to Bioethics. Retrieved November 22, 2020 from https://www.nwabr.org/sites//default/files/NWABR_ Bioethics

Packer, D. J. (2009). Avoiding groupthink: Whereas weakly identified members remain silent, strongly identified members dissent about collective problems. *Psychological Science*, *20*(5), 546-548.

Panadero, E., & Jonsson, A. (2013). The use of scoring rubrics for formative assessment purposes revisited. *Educational Research Review, 9*, 129-144.

Park, J. H., Faulkner, J., & Schaller, M. (2003). Evolved disease-avoidance processes and contemporary anti-social behavior: Prejudicial attitudes and avoidance of people with physical disabilities. *Journal of Nonverbal Behavior*, *27*(2), 65-87

Reddy, Y.M., & Andrade, H. (2010). A review of rubric use in higher education. *Assessment & Evaluation in Higher Education, 35*, 435-448.

Soranno, P. A. (2010). Improving student discussions in graduate and undergraduate courses: Transforming the discussion leader. *Journal of Natural Resources and Life Sciences Education*, *39*(1), 84-91.

Sunstein, C. R., & Hastie, R. (2015). *Wiser: Getting beyond groupthink to make groups smarter*. Harvard Business Press.

Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. Penguin.

Zhu, D. H. (2013). Group polarization on corporate boards: Theory and evidence on board decisions about acquisition premiums. *Strategic Management Journal*, *34*(7), 800-822.