

Myside bias in thinking about abortion

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Abstract

College-student subjects made notes about the morality of early abortion, as if they were preparing for a class discussion. Analysis of the quality of their arguments suggests that a distinction can be made between arguments based on well-supported warrants and those based on warrants that are easily criticized. The subjects also evaluated notes made by other, hypothetical, students preparing for the same discussion. Most subjects evaluated the set of arguments as better when the arguments were all on one side than when both sides were presented, even when the hypothetical subject was on the opposite side of the issue from the evaluator. Subjects who favored one-sidedness also tended to make one-sided arguments themselves. The results suggests that “myside bias” is partly caused by beliefs about what makes thinking good.

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The opposing sides in the abortion debate in the United States are often accused of poor thinking and poor argumentation. It is easy to find examples of poor argumentation. For example, a pro-choice article in the *Daily Pennsylvanian* (the student newspaper at my university) said, “If government rules against abortion, it will be acting contrary to one of the basic rights of Americans, . . . the right to make decisions for oneself.”

Just what makes such arguments seem weak? And what can they tell us about people’s thinking about such contentious issues? I shall suggest here that much of the problem is the absence of “active open-mindedness” (Baron, 1994a). In particular, people fail to search for arguments on both sides. This causes them to neglect counterarguments that undercut the claims they make to others and themselves. For example, the argument in the last paragraph neglects an obvious counterargument: if abortion really is murder, then the government is no more taking rights away than it does when it bans homicide, so Americans do not and should not have the right to make decisions that cause harm to others.

Note that this counterargument weakens the force of the original claim. I distinguish this kind of counterargument from one that leaves the implication of the original argument alone but adds a claim with the opposite implication, e.g., that the fetus has rights of its own, so the question is one of conflicting rights. In Toulmin’s (1958) terms, the first kind of weakness is in the warrant for the claim. The original argument was based on the warrant that Americans have the right to make decisions for themselves. The counterargument holds that this warrant is weak, since it already has many exceptions. When a neglected counterargument leaves the implication intact but weighs in on the other side, Toulmin would say that the problem is in neglecting a potential rebuttal. Arguments in discourse leave room for the rebuttal with phrases such as “other things being equal.” When people fail to add such qualifiers, however, we cannot tell whether they have just not learned to say things like this or whether they truly think that their arguments are sufficient. When we study thinking through its verbal expression, we can often detect weak warrants in single arguments. To detect failure to consider rebuttals, we need a more complete record of a person’s thinking.

The two kinds of weakness in arguments correspond to failure of search and failure of inference (Baron, 1994a). Weak warrants make for weak inferences. At a slightly deeper level, however, use of a weak warrant can be

understood as a failure to search for evidence about the backing (justification) of the warrant itself (Baron, 1990). Thus, use of a principle of reasoning, or heuristic, or warrant, without sufficient justification can result from previous failures to reflect about principles of reasoning. These failures might be on the part of those who taught the principle in question as well as on the part of the user (who might have had good reason to trust her teachers).

Consider another example. Some subjects (in pilot studies) argue along the following lines: “I believe that the fetus is a person because, once it ‘starts,’ nothing can naturally stop it except for abortion; thus it is equivalent to murder.” Nicholas Maxwell (personal communication) called this the moldy-bread argument: if you let bread sit out, nothing will naturally stop it from becoming moldy and inedible; therefore, eating bread is equivalent to eating moldy bread. This analogy shows that the logic, the form of the argument, fails. Likewise, others argue, “One wouldn’t have to decide about an abortion if they didn’t get impregnated in the first place.” Again, a counterexample against the warrant is neglected, the fact that unwanted pregnancies occur. Note that the objections we make to poor arguments weaken the arguments themselves, regardless of other arguments.

An implication of the view I have presented is that isolated arguments can be good if they are warranted, even if they are subsequently overwhelmed by good arguments on the other side. Typically (outside of mathematics or logic), no single argument is decisive, and we must consider the total weight of evidence and the possibility of even stronger arguments on the other side. A good argument, however, stands on its own. It can be overwhelmed but not undermined. In this sense, practically all of the arguments cited as poor by Mall (1982), on both sides, are really good arguments. Most of these arguments point to consequences of making abortion legal or illegal. These arguments are good if the assumption of causality is warranted. For example, an argument against banning abortion by a constitutional amendment stated that such an amendment would complicate the interpretation of other laws and would have other unintended effects. Such an argument is good if the causal account of how this could happen is plausible, but it is not decisive.

A person may think of good arguments (or bad ones) only on one side of an issue such as abortion. This is “myside bias” as defined by Perkins (1989), who has demonstrated such bias by asking subjects to list the thoughts that occur to them when they think about a controversial question. Perkins and his colleagues have found that people can be easily prompted for additional arguments on the other side, although prompting for further arguments on

their favored side is less effective. So the failure to think of arguments on the other side is typically not the result of not knowing them.

Perkins's measure of myside bias is similar to the "differentiation" score of Tetlock's (1992) measure of "integrative complexity" of thinking. In contrast to the view of Baron (1993, 1994a), Nickerson (1989), and Perkins (1989), Tetlock argues that differentiation is not always good and that it is sometimes better to ignore the other side, in particular, when the other side is clearly weak or nonexistent. Should we, for example, consider both sides of the question of whether Hitler was a good man? In response to Tetlock, I and others (Baron, 1985, 1994a) have admitted that, if one has already considered the other side or if one is operating on the basis of a well-examined general principle, then additional thinking of any sort may be inefficient or pointless. When we do think, however, it is surely wasteful to consider arguments only on our favored side, for such thinking cannot accomplish much. Note also that verbal output need not tap underlying openness. People may be open to the other side and not say it because they cannot think of it, perhaps because it does not exist. Beyond this, I would argue that one *should* be open to the other side when considering a new issue or a debatable one: how is one to know whether the other side exists if one does not look for it? Because abortion is a controversial issue, I assume here that people should consider both sides.

This paper reports evidence of both kinds of errors just described, weak warrants and myside bias in thinking of arguments. The evidence for weak warrants comes from an informal examination of arguments provided by students (Experiment 1). The evidence for myside bias comes from a more formal study of the same subjects (Experiment 2), which also looks for a possible cause of myside bias, the *belief* that one-sided thinking is good. The presence of this belief is correlated with the subject's own one-sidedness. A second formal study shows that this preference for one-sided arguments cannot be easily interpreted as just a preference for arguments that are persuasive to others.

Experiment 1: Preparing for a discussion

Method

Subjects were 54 students at the University of Pennsylvania in 1988, solicited by advertising and paid for completing this questionnaire and others. They

were asked to imagine that they were preparing for a class discussion on the topic “Are abortions carried out in the first day of pregnancy (e.g., by the ‘morning after’ pill) morally wrong?” by making a list of the arguments that occur to them concerning the topic. The “first day” question avoided issues of disputable scientific fact, such as when the fetus first feels pain, etc.

Results

I classified arguments as good or bad according to the warrant. The reader can check my classifications, which are doubtless disputable in some cases. The point, though, is that some of these arguments are good and some are poor. Here are some of the arguments I classified as good:

“Late abortions (≈ 6 months) are immoral because they are the murdering of a person. However, a day after the egg is fertilized, the ‘fetus’ does not have any consciousness. It does not think or feel.”

“The ‘morning after’ pill only can be considered extinguishing a human life in a very abstract sense. If it were considered murder of a potential life, then any form of birth control could be seen as preventing a potential life as well.”

“Are we splitting hairs here? Every month a woman’s egg is menstruated away. More frequently than that, the man’s sperm are ejaculated away ‘unused’ Suddenly conception takes place (maybe) the night before, and the whole ball game changes. Fertilization has taken place, and it’s no longer egg and sperm, but ‘life’ – hence a moral issue. Really, the facts may be plain, but the moral issue is: are there ‘life-wise’ any differences between the 1-day-old fetus and the unfertilized egg and sperm?”

“The pill is ‘killing’ less of an organism than a fully formed fly.”

“Overpopulation is already a problem. We don’t need more kids, especially unwanted ones.” “Yes, the embryo is dependent upon the mother But, similarly, the mother is dependent upon many other people for her life: the farmer, doctor, police, etc. If they end their services and the mother died, are they committing a moral offense?”

Other subjects argued that they, and most other people, would not want to have been aborted (thus invoking the Golden Rule – see Hare, 1975, for a sophisticated form of this argument). Or they argued that the practice of abortion will reduce respect for human life elsewhere – an empirical claim that, if true, would argue against abortion. These sorts of arguments can be overwhelmed by other arguments on the other side. No single argument is decisive, and they were not put forward as decisive. They are good because

they do not appeal to principles to which obvious counterexamples can be found. (Many are also found in philosophical discussions of abortion.)

Here are some of the arguments that I consider weak, on both sides, classified according to type:

1. Control of one's body.

"Women should have power over their own bodies."

"I believe women have the right to do whatever they want with their own bodies."

"You have the right to control your own body."

"The child is not yet an independent, thinking human. It's still being carried by the mother. Therefore, it's her choice whether or not to continue carrying it."

The problem here is that the argument neglects the other side: the fetus also may have rights. The argument is also a non-sequitur, but most arguments are, even good ones. The point is that a critical objection is ignored.

2. Not a moral question.

"A couple should be able to decide what decision are best for them without the coercion (governmental *or* moral) of any other person."

"It's a personal decision, and this person must decide if they themselves feel it is morally wrong or not."

"Also, it is not for anyone else to label it as moral or immoral, since it is the pregnant woman who can make that judgment based on her own measures of morality and the conditions surrounding the situation."

"No living animal is born (or conceived) with an intrinsic 'right to life.' Any 'right to life' to anything exists because we humans posit it, not because of any a priori circumstance or condition. Positing this right is arbitrary, therefore the existence of a 'right to life' is arbitrary."

"People have no right to force their morals on someone else. Who is to decide what is morally right or wrong?"

Again, a critical counterargument is ignored. If this isn't a moral question, then could you say the same about murdering an adult?

3. Possibility of no harm.

"The morning after pill is largely a preventive measure – you don't know whether conception has occurred or not."

"There is very little chance that you would know if you were pregnant."

"*Morality* involves consciously recognizing right and wrong. In the case of the morning-after pill, the woman does not *know if she is pregnant*. Therefore, the moral argument does not apply."

Here, a principle is used that has some counterexamples, and the counterexamples have not been acknowledged. Subjects would not say that driving drunk is morally acceptable because it is possible – indeed likely – that no harm will be done. Yet this is the same argument applied to another case. The argument is used here, perhaps, because subjects are searching for something to support the conclusion they want to be true. They are not searching for the truth itself.

4. Begging the question.

“Killing a fetus is murder.”

“Abortion is the murdering of an innocent child.”

5. Avoiding the question.

“Abstinence is the best method.”

The issue is, what if abstinence has not occurred? What then?

6. Confusing decision with action.

“How can you decide its fate?”

This argument assumed that not to abort is not to decide, and therefore not to have the “arrogance” that comes with taking a decision upon oneself. The counterargument to the warrant is that not acting is also a decision, once the option of acting is known. This is an example of the error of omission bias (Baron, 1994b): abortion, a commission, is wrong, but preventing birth by abstaining from sexual intercourse, an omission, is not wrong even though it, too, is deciding the fate of future persons.

Some arguments were impossible to classify as good or poor, since subjects simply made assertions or asked questions, e.g.: “*When* is abortion taking a human life?”; “Life of living must take precedence over life of a fetus.”

In sum, many arguments are weak in the sense that their warrants are questionable. The subject has apparently made little effort to look for evidence against the warrant. This kind of failure is found elsewhere (Baron, 1990).

Experiment 2: Standards for thinking and myside bias

Experiments 2 and 3 are based on previous studies (e.g., Perkins, 1989) showing myside bias, that is, a tendency to think of reasons that favor one’s initial view rather than those that oppose it. They also investigate a possible source of this bias. Baron (1991) suggested that some people think that one-sided thinking is better than two-sided thinking. They think that people should know what is right without having to think about it, in the way

in which experts seem to know the answers in their field. (In this regard, people may misunderstand how experts acquire their expertise; see Baron, 1993.) Certain cultural traditions may also actively discourage people from questioning the beliefs of the tradition in question, leading to a general distrust of open-mindedness. Such traditions would have at least a temporary survival advantage over traditions that encourage questioning.

Baron (1991) found moderate but significant correlations between measures of subjects' beliefs about the nature of good thinking and the one-sidedness of their own thinking about controversial issues. Beliefs were assessed either by asking subjects how other people ought to deal with challenges to their own beliefs (by defending their beliefs or by considering the challenges) or by asking subjects to grade made-up examples of other people's thinking. For example, subjects were first asked their own opinion about a moral dilemma concerning a student's request to rewrite a paper (after other students had left for the summer) so he could get the B he needed to win a scholarship. Subjects were given several two-sided or one-sided arguments to grade, with conclusions equally often on one side or the other. The measure of standards was the difference between the mean grade assigned to two-sided and one-sided arguments, irrespective of their side. This measure correlated with a dichotomous measure of the one-sidedness of the subjects' own thinking about a different question (the use of resources on the ocean floor).

These results suggest that people's standards – their beliefs about the nature of good thinking – affect the conduct of their own thinking. (For similar results see: Dweck & Leggett, 1988; Kuhn, 1991; Schommer, 1990.) People who think that two-sided thinking is good try to do it, and those who do not think it is particularly good do not try.

Method

The subjects used in Experiment 1, after they made their lists of arguments, were given lists made by 24 hypothetical other students, and they were asked them to “evaluate the thinking” of these students. Subjects were explicitly instructed to concentrate on the thinking, not the verbal expression. They were asked to assign a grade from A+ to F to each student. Some of the students gave arguments on one side and others gave arguments on both sides.

Specifically, the lists of thoughts varied in the student's initial side (yes

or no), the number of arguments on the student's side (2 or 4), and the number of arguments on the other side (0 or 2). These three factors were combined orthogonally to yield a set of eight conditions. Three versions of each condition were constructed by maximizing the variety of the specific arguments across the three versions.

The versions drew arguments from the following list:

"Yes" arguments:

Killing of human beings is wrong, and abortion is killing a human, even though the human is only a fetus.

Aborting a fetus is preventing someone from having a life, and this is wrong. None of us would have wanted to have been aborted ourselves.

There is no clear place to draw the line between early abortions, late abortions of fetuses that could survive on their own, and the killing of handicapped or unwanted infants.

Condoning abortion is likely to reduce respect for human life in general, leading to decreased effort to preserve human life in other cases.

Women who get pregnant by mistake are irresponsible, and they should not be rewarded by being allowed to correct their error.

Abortion is never absolutely necessary as a means of birth control. If someone really doesn't want to get pregnant, they can try chastity.

"No" arguments:

The fetus is not hurt by early abortion. It has no future plans, no knowledge of life, no pain, and no fear of death.

Families must be limited in today's world. If we are going to limit births, it is, on the whole, better to limit the births of unwanted children than the births of children who are wanted. Abortion is one means of preventing unwanted children from being born, when it is too late to prevent them by other means.

Contraceptive methods are all subject to failure, so the only way to be sure of not getting pregnant is to abstain from sex. This would be an intolerable burden to impose on married couples who are not ready to have children.

Women should be able to decide whether they want to go through something that affects them as much as pregnancy and childbirth do.

It's unfair that women should bear the brunt of mistakes for which men are at least as responsible.

Many women who get pregnant by mistake are adolescents and others who are not ready to care for children. The possibility of abortion allows

many of them to continue their education and have children when they are mature enough to raise them well.

Results

Table 1 shows the mean grades assigned to the eight conditions. On the whole, grades given to one-sided lists were higher than grades given to two-sided lists ($t_{53} = 2.99$, $p = .004$, two-tailed), *even when the student disagreed with the subject* ($t_{53} = 2.17$, $p = .034$) and even when the analysis was restricted to cases with four arguments on one side (so as to eliminate those cases where a conclusion was drawn despite an equal number of arguments on both sides; $t_{53} = 3.55$, $p = .001$). Thirty-two subjects gave higher grades to one-sided lists, and 18 gave higher grades to two-sided lists. This experiment reveals a clear preference for one-sided thinking.

Subjects also gave higher grades to students with more arguments on the subjects' side than on the other side ($t_{52} = 4.57$, $p < .001$). They did not give higher grades to students who agreed with them when the student had two arguments on each side ($t = 0.87$). Subjects also gave higher grades to lists with four arguments on the student's side than to lists with two arguments on the student's side ($t_{53} = 9.57$, $p < .001$). (Interactions between the three factors – otherside arguments, student-side arguments, and agreement of student and subject – were all statistically significant, although none was of substantive interest.)

In the subjects' own paragraphs, 36 subjects gave no otherside arguments, and 16 gave at least one otherside argument. (Two subjects gave no arguments at all.) There was no correlation between the number of myside and otherside arguments ($r = 0.12$).

Two-sidedness, the difference between grades given to two-sides and one-sided arguments, correlated significantly with the number of otherside arguments that the subjects made themselves ($r = 0.29$, $p = .022$, one tailed). These results support the hypothesis that standards for active open-mindedness affect thinking.

The difference between grades given to long and short lists (i.e., 4 vs. 2 arguments on the student's side) correlated with the number of myside arguments that subjects made in their own lists ($r = 0.42$, $p = .002$), but it did not correlate with their otherside arguments ($r = -0.12$). These findings (supported by the results of a principal components analysis) suggest two orthogonal standards of thinking, one concerned with fairness to both

Table 1
Mean grades in the two experiments

Student agrees with subject				
Condition	Experiment 2		Experiment 3	
	Thinking	Thinking	Persuade intel.	Persuade not intel.
2,0	6.3	6.2	5.5	6.4
2,2	4.7	5.4	4.0	5.3
4,0	8.4	8.0	8.2	8.2
4,2	6.4	6.4	6.4	6.4

Student disagrees with subject				
Condition	Experiment 2		Experiment 3	
	Thinking	Thinking	Persuade intel.	Persuade not intel.
2,0	5.3	6.0	5.3	6.2
2,2	4.6	5.4	4.4	5.1
4,0	7.1	7.6	8.2	8.5
4,2	5.6	6.0	5.4	6.5

Notes: The first number under “Condition” is the number of arguments on the student’s side, and the second number is the number of arguments on the other side. Standard deviations ranged from 2.2 to 3.5. Grades are on a scale from 0 (F) to 12 (A+).

sides and the other concerned with thoroughness in thinking of arguments on one's own side. The former expresses itself in the the number of otherside arguments and in the two-sidedness measures, and the latter expresses itself in the number of myside arguments and in the effect of long vs. short. The fairness standard is opposed by a competing standard concerned with internal consistency.

Justifications of the grades were classified (following Baron, 1991) into six categories: two-sidedness as a virtue (“considers both sides” – or one-sidedness as a vice); one-sidedness as a virtue (or two-sidedness as a vice, “seems undecided,” “contradicts himself”); content (“I agree,” “His points are good,” “Obviously a male chauvinist”)¹; numerosity (“not enough reasons”); and conciseness (“succinct”), the opposite of numerosity. These arguments were coded without looking at the lists that subjects were responding to.

The percent of subjects who gave justifications in each category were: two-sidedness, 38%; one-sidedness, 85%; content, 94%; numerosity, 53%; conciseness, 6%. The preponderance of one-sided over two-sided justifications is consistent with the fact that two-sided arguments received lower grades than one-sided arguments. However, 26% of the subjects used *both* two-sided and one-sided justifications (on different items); this finding supports the suggestion (Baron, 1991) that most people hold both standards simultaneously. The presence of two-sided justifications was associated with the number of otherside arguments that subjects gave ($t_{49} = 2.92, p < .005$); this result further supports the hypothesis that standards for active open-mindedness affect thinking (even when the standards are measured after the thinking).

Persuasion vs. thinking: Experiment 3

Subject in Experiment 2 may be confusing good thinking with persuasiveness. To test this possibility, Experiment 3 asked specifically about persuasiveness, along with quality of thinking. It used three conditions: one asking for evaluation of the quality of thinking for forming one's own opinion, the others asking for evaluation of thinking in preparation for persuading others. The explicit use of two different instructional manipulations should call attention

¹This category included the category called “weight” by Baron (1991), that is, arguments about whether the conclusion drawn was consistent with the arguments offered. Only a couple of subjects used this argument. Its rarity is probably due to the fact that the student's opinion was described as an *initial* opinion, not a conclusion.

to the distinction between persuasiveness and quality. The two persuasiveness conditions differed in the quality of the students in the class, either very intelligent or not very intelligent. Subjects might think that two-sided arguments work better with more intelligent listeners. (Chu, 1967, and Hovland et al, 1949, found that knowledgeable listeners were more persuaded by two-sided arguments.)

The 24 cases from Experiment 2 were divided into three groups of 8 cases each, otherwise keeping the order the same within each group as in Experiment 2. Each group of 8 contained all 8 conditions, but a given condition was represented by different arguments in each group. Subjects differed in the assignment of groups to conditions. The three conditions were presented in the following orders to different subjects (in which P, I, and N stand for personal opinion, intelligent listeners, and not intelligent listeners, respectively): PIN, PNI, INP, NIP. Order did not affect any of the measures reported.

Instructions for the personal opinion section read, “In this part, evaluate the quality of the thinking in terms of *what people ought to do when they think about their own personal opinions on subjects like this*. Please write on your sheet what you are evaluating before you begin. This is the only way we can know the order in which you did the three parts.” The intelligent section was the same except that it asked subjects to “evaluate the quality of the thinking in terms of *how good each student will be at persuading others in the class. Imagine that the class consists of very intelligent students who are themselves good thinkers*.” The not-intelligent section described the other students as “not very intelligent and are not themselves good thinkers.” Asking subjects to write down the task they were doing insured that they would pay attention to the instructions. Although subjects were asked for their own opinion at the outset, they provided no explanations.

Subjects were 45 students from both the University of Pennsylvania and Philadelphia College of Pharmacy and Science. (An additional 28 subjects were omitted because they failed to answer one or more questions, sometimes just one of the items in a group. Each condition in a group was represented by only one item, so all data were crucial. Of course, subjects who failed to write down the task they were doing were useless.)

Table 1 shows the mean grades in the three conditions. The results were parallel for the three conditions. In all conditions, one-sided arguments were given higher grades than two-sided arguments ($t = 2.72$, $p = .009$ for thinking; $t = 3.79$, $p < .001$ for intelligent listener; $t = 3.50$, $p = .001$ for non-intelligence listener). The size of this effect did not differ significantly as a

function of agreement between the subject and the student or as a function of condition. Subjects gave slightly higher grades to students on their own side ($t = 1.72$, $p = .047$, one tailed), and this effect did not vary significantly across conditions. The only significant difference among the conditions was that subjects gave lower grades to students in the intelligent-listener condition ($F = 6.61$, $p = .002$, for the difference among the three conditions; post-hoc tests confirmed that the intelligent-listener condition was lower than the other two [$p < .02$, Bonferroni corrected], which did not differ). Some subjects remarked that intelligent students would require better arguments to be convinced. In sum, subjects considered one-sided thinking to be better even when they clearly understood that they were evaluating thinking about one's own opinion rather than power of argument.

Another possible explanation of the results of both of these studies is that the arguments were simply listed, so that changes in perspective appeared to be sudden. This, of course, was consistent with what the arguments were supposed to be, notes. In a follow-up study, carried out in collaboration with Sue Tedman, arguments were written out in paragraphs to prevent the disconnectedness that results from the juxtaposition of arguments on opposite sides. Each student gave two arguments, which were either on the same side or on opposite sides, and the student stated no conclusion. When the second argument agreed with the first, it began with "also," and, when it disagreed, it began with "on the other hand." The selections were "meant to represent different people's thoughts before a decision has been reached." Once again, the 37 subjects tested tended to give higher grades to one-sided arguments ($t_{36} = 1.85$), although this result was not found for a less controversial issue, the question of whether pre-marital AIDS testing should be mandatory.

Discussion

In sum, people consider one-sided thinking to be better than two-sided thinking, even for forming one's own opinion on an issue. It is possible that this standard is found only for controversial issues like abortion, but this is where it also may have its most damaging effect.

Where does this standard come from? One possibility (Baron, 1991) is that people confuse good thinking with expertise. Experts do not need to think, and consideration of the other side suggests that expertise is lacking. It is also possible that certain institutions, such as organized religions, promote

the idea that seeing two sides is “confusing.” Institutions that do this might be more likely than other institutions to keep their followers.

Another possibility is that people overextend the idea that commitment is a virtue. Surely it is in marriage and, more generally, in the honoring of vows, promises, and contracts of all sorts. But the formation of a belief or a political opinion is not a contract. Those who think that commitment to a belief is a virtue seem not to understand why commitment is ever a virtue. If they understood, they would see that the reasons do not apply here.

On the other side, respect for two-sided thinking could come from education. The standards of “actively open-mindedness,” with its active search for reasons why an initial idea might be wrong, are manifest in the grading of papers (and the reviewing of scholarly articles).

The evidence on effects of education is mixed. Perkins (1989) found some effect of graduate training on a measure of bias, but no significant effect of college or high school. Perkins, Bushey, and Faraday (1986) observed only small effects of various courses that emphasized thinking, but a 16-session course for high-school students that they designed nearly doubled the number of otherside arguments concerning issues not discussed in the course (with a slight increase in quality as well, and no effect on the number of myside arguments). Students were taught that the arguments they consider should be *true* (to the best of the thinker’s knowledge), *relevant* to the issue, and *complete* – that is, all important arguments should be considered. Controversial issues were discussed in class, and students were encouraged to generate and evaluate (for truth and relevance) arguments on both sides, especially the other side. Kuhn, Amsel, & O’Loughlin (1988) and Kuhn (1991) found results that could also be interpreted this way: philosophy graduate students were less subject to a type of myside bias in scientific thinking than other subjects, and, in general, education encouraged the belief that truth emerges from a process of critical inquiry in which both sides must be considered. In sum, the results together indicate that education can reduce myside bias and change standards, but, in many cases, does not do so. A more intentional effort may be needed (Baron, 1993).

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