Title

Development of Substitution Bias Sensitivity: Are Adolescents Happy Fools?

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 35(35)

ISSN

1069-7977

Authors

Rossi, Sandrine
Cassotti, Mathieu
Agogue, Marine
et al.

Publication Date

2013

Peer reviewed

Development of Substitution Bias Sensitivity: Are Adolescents Happy Fools?

Sandrine Rossi (sandrine.rossi@unicaen.fr)
LaPsyDE (CNRS Unit 3521), University of Caen Basse-Normandie, Caen, France

Mathieu Cassotti (mathieu.cassotti@parisdescartes.fr)
LaPsyDE (CNRS Unit 3521), Paris Descartes University, Paris, France

Marine Agogué (marine.agogue@mines-paristech.fr)
Centre de Gestion Scientifique, Mines ParisTech, Paris, France

Wim De Neys (wim.de-neys@parisdescartes.fr)
CNRS, LaPsyDE (CNRS Unit 3521), Paris Descartes University, Paris, France

Abstract

Influential work on human thinking suggests that our judgment is often biased because we minimize cognitive effort and intuitively substitute hard questions by easier ones. Recent work with adults who solved the bat-and-ball problem, one of the most publicized examples of the substitution bias, suggests that people realize they are doing this and notice their mistake. In the present paper we look at the development of this substitution bias sensitivity. A group of young adolescents solved standard and isomorphic control versions of the bat-and-ball problem in which reasoners experience no intuitive pull to substitute. Adults have been shown to be less confident in their substituted, erroneous bat-and-ball answer than in their answer on the control version that does not give rise to the substitution. However, the present study established that this critical confidence drop was less pronounced for young adolescents. This implies that in contrast with adults, young adolescents do not yet fully acknowledge the questionable nature of their biased answer and remain more oblivious to the substitution. That is, young adolescent reasoners seem to behave more like happy fools who blindly answer erroneous questions without realizing it.

Keywords: Decision-making; Bias; Development

Introduction

Human reasoners have been characterized as cognitive misers who show a strong tendency to rely on fast, intuitive processing rather than on more demanding, deliberate thinking (Evans, 2008; Kahneman, 2011). Although the fast and effortless nature of intuitive processing can sometimes be useful, it can also bias our reasoning. It has been argued that the key to this bias is a process of so-called attribute substitution – when people are confronted with a difficult question they often intuitively answer an easier one instead (e.g., Kahneman, 2011; Kahneman & Frederick, 2002). Consider the following example:

> A bat and a ball together cost $1.10. The bat costs $1 more than the ball. How much does the ball cost?

When you try to answer this problem, the intuitive answer that immediately springs to mind is “10 cents”. Indeed, about 80% of university students who are asked to solve the “bat-and-ball” problem give the “10 cents” answer (e.g., Bourgeois-Gironde & Vanderhenst, 2009). But it is wrong. Obviously, if the ball were to cost 10 cents, the bat would cost $1.10 (i.e., $1 more) and then the total cost would be $1.20, rather than the required $1.10. The correct response is “5 cents”, of course (i.e., the bat costs $1.05). The explanation for the widespread “10 cents” bias in terms of attribute substitution is that people substitute the critical relational “more than” statement by a simpler absolute statement. That is, “the bat costs $1 more than the ball” is read as “the bat costs $1”. Hence, rather than working out the sum, people naturally parse $1.10, into $1 and 10 cents which is easier to do. In other words, because of the substitution people give the correct answer to the wrong question.

The bat-and-ball problem is considered a paradigmatic example of people’s cognitive miserliness (e.g., Bourgeois-Gironde & Vanderhenst, 2009; Kahneman, 2011; Kahneman & Frederick, 2002; Toplak, West, & Stanovich, 2011). After all, the problem is really not that hard. Clearly, if people would reflect upon it for even a moment they would surely realize their error and notice that a 10 cents ball and a bat that costs a dollar more cannot total to $1.10. Hence, the problem with attribute substitution seems to be that people do typically not notice that they are substituting and do not realize their error (Kahneman & Frederick, 2005; Thompson, 2009; Toplak et al., 2011). This can sketch a somewhat bleak picture of human rationality: Not only do we often fail to reason correctly, much like happy fools, we do not even seem to realize that we are making a mistake.

However, the fact that decision-makers do not deliberately reflect upon their response does not necessarily imply that they are not detecting the substitution process. That is, although people might not engage in deliberate processing and might not know what the correct answer is, it is still possible that they have some minimal substitution sensitivity and at least notice that their substituted “10 cents” response is not completely warranted (e.g., Alter, Oppenheimer, Epley, & Eyre, 2007; De Neys, 2012; De

Neys & Bonefon, 2013; Oppenheimer, 2008; Thompson & Morsanyi, 2012).

De Neys, Rossi, and Houdé (2013) recently tested this hypothesis. They designed a control version of the bat-and-ball problem that does not give rise to attribute substitution. Consider the following example:

> A magazine and a banana together cost $2.90. The magazine costs $2. How much does the banana cost?

People will tend to parse the $2.90 into $2 and 90 cents just as naturally as they parse $1.10 in the standard version. However, the control version no longer contains the relative statement ("$2 more than the banana") that triggers the substitution. That is, in the control version De Neys et al. explicitly presented the easier statement that participants were supposed to be unconsciously substituting. After solving each version participants were asked to indicate their response confidence. De Neys et al., reasoned that if participants are completely unaware that they are substituting when solving the standard version, the standard and control version should be isomorphic and response confidence should not differ. However, if people are indeed not completely oblivious to the substitution and have some minimal awareness of the questionable nature of their answer, response confidence should be lower after solving the standard version.

De Neys et al. (2013) observed that biased "10 cents" reasoners showed a decreased confidence in the correctness of their answer on the standard bat-and-ball problem. The authors interpreted this as showing that although reasoners often fail to deliberately reflect on their answer, they nevertheless intuitively sense that their response is questionable and are not oblivious to the substitution (see De Neys, 2012, for related suggestions). In the present study we use a developmental approach to validate this claim. Note that a key processing requisite for detecting an unwarranted substitution is that one monitors one's reasoning for conflict between an intuitively cued substituted question and the original phrasing (De Neys & Glumicic, 2008; Kahneman, 2011). Now, developmental studies in the cognitive control field have established that such basic error or conflict monitoring abilities increase spectacularly throughout adolescence (e.g., Davies et al., 2004; Fitzgerald et al., 2010; Santesso & Segalowitz, 2008). This has been linked to the late maturation of the Anterior Cingulate Cortex, the brain structure that is supposed to be mediating the monitoring process (e.g., Botvinick, Cohen, & Carter, 2004; De Neys, Vartanian, & Goel, 2008; Santesso & Segalowitz, 2008). In general, this suggests that younger reasoners should be less efficient at detecting the biased nature of their substituted judgments than adults. In other words, if adults' decreased confidence in the De Neys et al. (2013) study indeed results from a successful substitution monitoring or sensitivity, one can also predict that the confidence effects should be less pronounced for younger, adolescent reasoners. More specifically, when younger reasoners give a biased response on the standard version of the bat-and-ball problem, they should show a higher confidence in the correctness of their substituted answer than adult reasoners. Of course, on the control version that does not give rise to attribute substitution, any differential age-related substitution sensitivity, should not affect the confidence ratings.

To test this hypothesis we presented a group of young adolescents with the standard and control version of the bat-and-ball problem and recorded their response confidence. The performance of this group of adolescents was contrasted with that of the adults in the original De Neys et al. (2013) study. At a theoretical level, this will help us to validate De Neys et al.'s substitution claims. Clearly, from a developmental point of view, it is also important to start documenting possible age-related differences in substitution detection skills in its own right.

Experiment

Method

Participants. A total of 115 adolescents (average age = 14.89 years, SE = .03) participated in the study. All participants were Grade 9 students in a local middle school in the Paris region. Performance of these adolescents was contrasted with the performance of the 248 adult undergraduates (average age = 22 years, SE = .18) in the study of De Neys et al. (2013).

Material and Procedure. Material and procedure were based on the study of De Neys et al. (2013). All participants were presented with a standard and control version of the bat-and-ball problem. The problems were translated in French and adjusted to the European test context (see Appendix). To minimize surface similarity, we also modified the superficial item content of the two problems (i.e., one problem stated that a pencil and eraser together cost $1.10, the other that a magazine and banana together cost $2.90). Both problems were printed on separate pages of a booklet. To make sure that the differential item content did not affect the findings, the item content and control status of the problem were completely crossed. For half of the sample we used the pencil/eraser/$1.10 content in the standard version and magazine/banana/$2.90 content in the control version. For the other half of the sample the content of the two presented problems was switched. Presentation order of the control and standard version was also counterbalanced: Approximately half of the participants solved the control version first, whereas the other half started with the standard version[1]. An overview of the material is presented in the Appendix.

Immediately after participants wrote down their answer they were asked to indicate how confident they were that

[1] Note that when the problem content and presentation order factors were entered as additional control factors in our main analyses the reported effects were not affected.

their response was correct by writing down a number between 0 (totally not sure) and 100% (totally sure). Note that we only intend to use this measure to contrast people's relative confidence difference in the standard and control versions. Obviously, the confidence ratings will be but a proxy of people's phenomenal confidence state. The response scale is not immune to measurement biases such as end preferences or social desirability effects (e.g., Berk, 2006). For example, since it might be hard to openly admit that one has given a response that one is not confident about, mere social desirability can drive people's estimates upwards. This implies that one needs to be cautious when interpreting absolute confidence levels. However, such interpretative complications can be sidestepped when contrasting the relative rating difference in two conditions. Any general response scale bias should affect the ratings in both conditions. Consequently, our analyses focus on the relative confidence contrast and we refrain from making claims based on the absolute confidence levels.

Results and Discussion

Accuracy. Adolescents' and adults' scores on the standard and control bat-and-ball problem version were entered in a 2 (problem version, within-subjects) x 2 (age group, between subjects) mixed model ANOVA. As expected, there was a main effect of the Problem Version factor, $F(1, 361) = 1027.74$, $p < .0001$, $\eta^2p = .74$. In line with previous studies, overall only 20% (SE = 2.2%) of participants managed to solve the standard bat-and-ball problem correctly. However, the control version that did not give rise to substitution was solved correctly by 99% (SE = .5%) of the participants. Accuracy did not differ in the two age groups; the Age Group and Age Group x Problem Version interaction did not reach significance, both Fs < 1.

Note that incorrect responses on the standard version were almost exclusively (i.e., 361 out of 363 responses) of the "10 cents" type suggesting that biased participants were not simply making a random guess but indeed engaged in the postulated substitution process[2].

Confidence ratings. Our crucial question concerned participants' response confidence. A first analysis focused on the response confidence of reasoners who substituted and gave the erroneous "10 cents" response on the standard version. These participants' confidence ratings were entered in a 2 (problem version, within-subjects) x 2 (age group, between subjects) mixed model ANOVA. Results showed that there was a main effect of the Problem Version factor. As De Neys et al. (2013) already established, overall, people's confidence in their erroneous "10 cents" response was lower than the confidence in their control version answer that did not give rise to the substitution, $F(1, 285) = 57.9$, $p < .0001$, $\eta^2p = .17$. However, the critical finding was that this effect was indeed less clear for adolescent reasoners. As Figure 1 (top panel) shows, the Age Group and Problem Version factor tended to interact, $F(1, 285) = 3.78$, $p < .055$, $\eta^2p = .01$, and there was also a main effect of the Age Group factor, $F(1, 285) = 5.11$, $p < .025$, $\eta^2p = .02$.

Follow-up analyses established that in contrast with biased adolescents, biased adults showed specifically more doubt in the correctness of their response when solving the standard bat-and-ball version, $F(1, 285) = 5.02$, $p < .05$, $\eta^2p = .02$. On the control problem, that did not give rise to attribute substitution, both age groups' confidence did not differ, $F(1, 285) = 1.16$, $p = .28$. This establishes that the critical lower confidence ratings on the standard problem in the adult group are not confounded by a general age-related confidence decrease but result from a differential substitution sensitivity. When adults and adolescents do not substitute, their confidence does also not differ. Clearly, if adults would simply show overall more doubt in their judgments, their confidence ratings on the control problem should have been lower too.

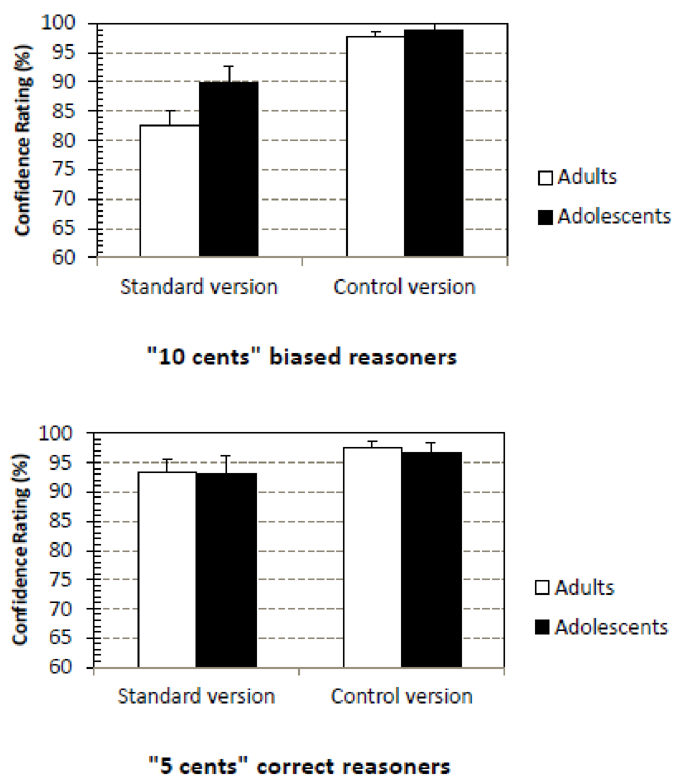

Figure 1. Response confidence on standard and control versions of the bat-and-ball problem for participants who answered the standard problem incorrectly ("10 cents" biased reasoners, top panel) and correctly ("5 cents" correct reasoners, bottom panel) in the two age groups. Error bars are standard errors.

This conclusion is further supported when we focus on the confidence ratings of those participants who did not substitute on the standard problem and solved it correctly. Confidence ratings for these participants were also subjected

[2] The few incorrectly solved control trials and the "non-10 cents" incorrectly solved standard trials were discarded for the subsequent confidence analyses.

to a 2 (problem version, within-subjects) x 2 (age group, between subjects) mixed model ANOVA. Results are shown in Figure 1 (bottom panel). As Figure 1 shows, overall the problem version effect on the confidence ratings (i.e., 93% standard vs. 97% control) was far less clear for correct than for biased reasoners, $F(1, 68) = 5.02$, $p < .05$, $\eta^2p = .02$. In and by itself this is not surprising. Indeed, it makes sense that people who actively reflected upon their judgment and resisted the substitution also knew that their response was likely to be correct. The critical point here is that in this analysis neither the Problem Version x Age Group interaction, nor the main effect of Age Group were significant, both $Fs < 1$. Hence, here too, adolescents and adults who did not substitute and reasoned correctly did not show a differential response confidence. This further strengthens the claim that the age-related decreased response confidence on the standard problem that we observed for biased reasoners results from an increased substitution bias sensitivity.

General Discussion

The present study indicates that human reasoners become more sensitive to substitution bias throughout their development. The previously observed lowered response confidence after solving the standard bat-and-ball problem, was less clear for biased adolescents. That is, in contrast with adults, 15-year old adolescents seem to have a harder time detecting the erroneous nature of their substituted judgment. This pattern fits with basic cognitive control studies that indicate that adolescents' basic error or conflict monitoring skills are not fully developed (e.g., Davies et al., 2004; Fitzgerald et al., 2010; Santesso & Segalowitz, 2008). With respect to attribute substitution during reasoning this implies that young adolescents do not yet fully acknowledge the questionable nature of their biased answer and remain more oblivious to the substitution. In that sense, adolescents do seem to behave like happy fools who blindly answer erroneous questions without realizing it.

We mentioned that our study can have important implications for the developmental field. Some ten years ago, Markovits and Barrouillet (2004) noted in a special developmental issue of the journal Thinking and Reasoning that although reasoning and decision-making were once one of the prime research areas for developmental scientists, interest had faded in more recent years. Markovits and Barrouillet suggested that one of the reasons for this decline was the rise of the "Heuristics and Biases" research program and its demonstration of the widespread bias in human reasoning. This massive bias seemed to point to a developmental standstill in human reasoning. That is, if even the vast majority of educated university students fail to solve basic reasoning problems, one might easily get the impression that there doesn't seem to be a lot of development going on. At first sight, our developmental study might have seem to strengthen this conclusion. Indeed, when looking at the accuracy rates we did not find any age-related improvement. Adults seemed to perform as badly as adolescents. However, looking closely at the substitution detection process and confidence data suggests that the lack of development is more apparent than real. Although both adults and adolescents are indeed biased most of the time, our findings indicate that an important difference between the age groups is that adults at least detect that their responses are biased. Consistent with recent insights in the developmental field (e.g., Brainerd, Reyna, & Ceci, 2008; Klaczynski, Byrnes, & Jacobs, 2001; Houdé, 2007; Reyna & Farley, 2006; Reyna et al., 2003) this differential substitution bias awareness argues against the idea of a developmental standstill in human reasoning.

It is important to clarify some potential misconceptions and critiques about our work. For example, some critics might spontaneously argue that since our control bat-and-ball version is easier than the standard version our findings with adults are trivial since they simply show that people are more confident when answering an easy question than when answering a hard question. It is important to stress that this critique is begging the question. The crucial question is of course whether or not people realize that the classic version is hard. That is, the control version presents the easier statement that participants are supposed to be unconsciously substituting. What we want to know is whether or not people note this substitution. If people do not notice it, then the two problems should be isomorphic and they should be considered equally hard. In other words, arguing that adults notice that the classic problem is harder than the control problem underscores the point that they are not oblivious to the substitution.

A related spontaneous critique is that our confidence findings might result from mere guessing rather than from substitution sensitivity. In general, if people do not know an answer to a problem and guess, they presumable realize this and will also give a low confidence rating. Hence, a critic might argue that the lower confidence in adult groups does not necessarily point to substitution sensitivity but merely to a rather trivial "guessing awareness". However, this critique is readily discarded. In the present study more than 99% of the erroneous bat-and-ball responses were of the "10 cents" type. This is the response that people should pick if they engage in the postulated substitution process. Clearly, if people were biased and less confident because they were merely guessing, we should have observed much more random erroneous answers.

In the present study we focused on the bat-and-ball problem because it is one of the most vetted and paradigmatic examples of people's substitution bias (e.g., Bourgeois-Gironde & Vanderhenst, 2009; Kahneman, 2011; Kahneman & Frederick, 2002; Toplak, West, & Stanovich, 2011). However, attribute substitution has also been proposed as an explanation for people's judgment errors in other classic reasoning tasks such as the base-rate neglect or conjunction fallacy task (Kahneman & Frederick, 2002). Although it has been argued that these task might be less suited to test substitution claims (e.g., Bourgeois-Gironde &

Vanderhenst, 2009; see also Pennycook, Fugelsang, Koehler, 2012; Klauer & Singmann, 2012), one might nevertheless wonder whether the present findings can be generalized across these tasks. Some emerging evidence suggests they might. For example, a recent study showed that when adult reasoners give a biased response to standard conjunction or base-rate neglect problems, they also indicate to be less confident about their response compared to control problems. Consistent with the present findings, these effects were not always observed in younger samples (e.g., De Neys, Cromheeke, & Osman, 2011; see also De Neys & Feremans, 2013). This gives us some initial indication of the generality of the present findings.

With the present paper we hope to have presented a critical building block to stimulate further research on the development of substitution sensitivity. Our intial data suggest that although most adolescents and adults fall trap to substitution bias, adult reasoners at least detect their bias and realize that their response is questionable. We believe that the potentially severe consequences of adolescents' bias detection difficulties should become a primary research focus for developmental and educational scientists.

Acknowledgements

Preparation of this manuscript was supported by a grant from the Agence Nationale de la Recherche (ANR-JSH2-0007-01).

References

Alter, A. L., Oppenheimer, D. M., Epley, N., & Eyre, R.N. (2007). Overcoming intuition: Metacognitive difficulty activates analytic reasoning. *Journal of Experimental Psychology: General, 136*, 569-576.

Berk, R. A. (2006). Thirteen strategies to measure college teaching: a consumer' s guide to rating scale Construction, assessement, and decision making for faculty, administrators, and clinicians. Sterling, VA: Stylus.

Botvinick, M. M., Cohen, J. D., & Carter, C. S. (2004). Conflict monitoring and anterior cingulate cortex: An update. *Trends in Cognitive Sciences, 12*, 539-546.

Bourgeois-Gironde, S., & Vanderhenst, J. B. (2009). How to open the door to System 2: Debiasing the Bat and Ball problem. In S. Watanabe, A.P Bloisdell, L. Huber, A. Young (Eds.), *Rational animals, irrational humans* (pp. 235-252). Tokyo, Japan: Keio University Press.

Brainerd, C. J., Reyna, V. F., & Ceci, S. J. (2008). Developmental reversals in false memory: A review of data and theory. *Psychological Bulletin, 134*, 343- 382.

Davies, P. L., Segalowitz, S. J., & Gavin, W. J. (2004). *Development of response-monitoring ERPs in 7-to 25-year-olds. Developmental Neuropsychology, 25*, 355-376.

De Neys, W. (2012). Bias and conflict: A case for logical intuitions. *Perspectives on Psychological Science, 7*, 28-38.

De Neys, W., & Bonnefon, J. F. (2013). The whys and whens of individual differences in individual thinking biases. *Trends in Cognitive Sciences, 17*, 172-178.

De Neys, W., Cromheeke, S., & Osman, M. (2011). Biased but in doubt: Conflict and decision confidence. *PLoS ONE, e1595*4. DOI:10.1371/journal.pone.0015954

De Neys, W., & Feremans, V. (2013). Development of heuristic bias detection in elementary school. *Developmental Psychology*, 49, 258-69.

De Neys, W., & Glumicic, T. (2008). Conflict monitoring in dual process theories of reasoning. *Cognition, 106*, 1248-1299.

De Neys, W., Moyens, E., & Vansteenwegen, D. (2010). Feeling we're biased: autonomic arousal and reasoning conflict. *Cognitive, Affective, & Behavioral Neuroscience, 10*, 208-216.

De Neys, W., Rossi, S., & Houdé, O. (2013). Bats, balls, and substitution sensitivity: Cognitive misers are no happy fools. *Psychonomic Bulletin & Review*.

De Neys, W., Vartanian, O., & Goel, V. (2008). Smarter than we think: When our brains detect that we are biased. *Psychological Science, 19*, 483-489.

Evans, J. St. B. T. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology, 59*, 255-278.

Evans, J. B. S. T. (2010). Intuition and reasoning: A dual process perspective. *Psychological Inquiry, 21*, 313-326.

Fitzgerald, K. D., Perkins, S. C., Angstadt, M., Johnson, T., Stern, E. R., Welsh, R. C., et al. (2010). The development of performance-monitoring function in the posterior medial frontal cortex. *Neuroimage, 49*, 3463-3473.

Frederick, S. (2005). Cognitive reflection and decision making. J*ournal of Economic Perspectives, 19*, 25-42.

Pennycook, G., Fugelsang, J. A., & Koehler, D. J. (2012). Are we good at detecting conflict during reasoning. *Cognition, 124*, 101-106.

Houdé, O. (2007). First insights on neuropedagogy of reasoning. *Thinking & Reasoning, 13*, 81-89.

Kahneman, D. (2011). *Thinking, Fast and Slow*. New York: Farrar, Strauss, Giroux.

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics & biases: The psychology of intuitive judgment* (pp. 49-81). New York: Cambridge University Press.

Kahneman, D., & Frederick, S. (2005). A model of heuristic judgment. In K. J. Holyoak, & R. G. Morrison (Eds.), *The Cambridge Handbook of Thinking and Reasoning* (pp. 267-293). New York: Cambridge University Press.

Klaczynski, P. A., Byrnes, J. B., & Jacobs, J. E. (2001). Introduction: Special issue on decision making. *Journal of Applied Developmental Psychology, 22*, 225-236.

Klauer, K. C., & Singmann, H. (2012). Does logic feel good? Testing for intuitive detection of logicality in syllogistic reasoning. *Journal of Experimental Psychology: Learning, Memory, & Cognition*. Advance online publication. DOI: 10.1037/a0030530.

Oppenheimer, D. M. (2008). The secret life of fluency. *Trends in Cognitive Science*, *12*, 237-241.

Markovits, H., & Barrouillet, P. (2004). Why is understanding the development of reasoning important?. *Thinking and Reasoning*, *10*, 113-121.

Reyna, V. F., & Farley, F. (2006). Risk and rationality in adolescent decision making: Implications for theory, practice, and public policy. *Psychological Science in the Public Interest*, *7*, 1-44.

Reyna, V. F., Lloyd, F. J., & Brainerd, C. J. (2003). Memory, development, and rationality: An integrative theory of judgement and decision-making. In S. Schneider & J. Shanteau (Eds.), *Emerging perspectives on judgment and decision research* (pp. 201-245). New York: Cambridge University Press.

Santesso, D. L., & Segalowitz, S. J. (2008). Developmental differences in error-related ERPs in middle- to late-adolescent males. *Developmental Psychology*, *44*, 205-217.

Stanovich, K. E. (2010). *Rationality and the reflective mind*. New York: Oxford University Press.

Toplak, M. E., West, R. F., & Stanovich, K. E. (2011). The cognitive reflection test as a predictor of performance on heuristics-and-biases tasks. *Memory & Cognition*, *39*, 1275-1289.

Thompson, V. A. (2009). Dual process theories: A metacognitive perspective. In J. Evans and K. Frankish (Eds.), *In Two Minds: Dual Processes and Beyond*. Oxford, UK: Oxford University Press.

Thompson, V. A. & Morsanyi, K. (2012). Analytic thinking: Do you feel like it? *Mind & Society*, *11*, 93-105.

Appendix

Standard versions

French

Un crayon et une gomme coûtent 1.10 euro au total. Le crayon coûte 1 euro de plus que la gomme. Combien coûte la gomme?

_______ centimes

Un magazine et une banane coûtent 2.90 euros au total. Le magazine coûte 2 euros de plus que la banane. Combien coûte la banane?

_______ centimes

English translation

A pencil and an eraser cost 1.10 euro in total. The pencil costs 1 euro more than the eraser. How much does the eraser cost?

_______ cents

A magazine and a banana cost 2.90 euro in total. The magazine costs 2 euro more than the banana. How much does the banana cost?

_______ cents

Control versions

French

Un crayon et une gomme coûtent 1.10 euro au total. Le crayon coûte 1 euro. Combien coûte la gomme?

_______ centimes

Un magazine et une banane coûtent 2.90 euros au total. Le magazine coûte 2 euros. Combien coûte la banane?

_______ centimes

English translation

A pencil and an eraser cost 1.10 euro in total. The pencil costs 1 euro. How much does the eraser cost?

_______ cents

A magazine and a banana cost 2.90 euro in total. The magazine costs 2 euro. How much does the banana cost?

_______ cents