



Mental Simulation of Causality: The Role of Social Class

Raymond Doe, André B. McKinney and Mitchel T. Hubbard

Department of Psychology, Lamar University, USA

KEYWORDS Alternatives. Counterfactual. Disengagement. Mutation. Thinking

ABSTRACT This study investigated the mental simulation of counterfactuals and the moderating role of social class ranking on mutability, causality, and blame. An event is considered causal (not responsible) if it is psychologically mutable. Some recent literature on the topic, however, challenges this counterfactual explanation that it just does not work *now*. In an attempt to understand the conditions under which we simulate causality or not, a total of 128 participants were randomly assigned to four conditions involving counterfactual and social class rank manipulations to determine causality. Using a 2x2 Analysis of variance design, the researchers found only main effects of social class ranking on mutability. The high social class ranking group psychologically muted events more than the low social class ranking group. The results and the discussion of the simulation and the role of social class could contribute to the debate of rationalization of causality and blame in modern times.

INTRODUCTION

In 1968, Martin Luther King Jr. gave a speech that described nearly him dying after being stabbed in a main artery. He recounts repeatedly how happy he was that he did not sneeze, for if he had sneezed, the wound would have killed him before he could get medical help. By imagining if he had sneezed, or how different the United States might be if Martin Luther King Jr. had died, one is using counterfactual thinking (Byrne 2002). Humans are known to explain certain outcomes by imagining the possible alternative outcomes to events. Counterfactuals are mentally simulated alternative events of the factually stated outcome of an event. This tendency of mental simulation is often referred to as counterfactual processing (Wells and Gavanski 1989). Wells and Gavanski (1989) proposed that counterfactual thinking is ubiquitous when people reflect on dramatic events, and successfully demonstrated that counterfactual processing plays a central role in how humans attribute causality. However, recent researchers found that such counterfactual processing no longer works (Spellman 2011). In this paper, the researchers examined the components, applications, and research pertaining to counterfactual thinking.

Specifically, the researchers set out to simulate counterfactual processing and measured mutability, causality and blame. Also, in an attempt to understand the conditions under which counterfactuals work, the researchers introduce social class as a plausible moderator.

People might say a man who fell and broke his leg was lucky if they imagined the alternative was death, but consider him unlucky if the imagined alternative was not falling (Wells and Gavanski 1989). The underlying premise of counterfactual processing is that any event (A) can be labelled as the cause of another outcome (B) if and only if the mutations of that event (A) would undeniably undo the outcome (B) (Wells and Gavanski 1989). That notwithstanding, if alternate events pose limitless possibilities, then people often wonder the criteria by which a counterfactual thought is processed.

According to Kahneman and Miller (1986), the type of counterfactual generated can be explained by norm theory, in that people create counterfactuals that align with past experience. If there were a car crash on a snowy night, for example, a New Yorker in the United States might imagine the driver being inattentive; whereas a Texan, also in the United States would immediately blame the snow. This view stems from an earlier study in which Kahneman contributed (Kahneman and Tversky 1982). Participants in the 1982 study were administered a number of mental experiments. One experiment included asking participants to determine which of two men were more upset about missing their flight.

Address for correspondence:

Raymond Doe,
Lamar University,
Department of Psychology,
P.O. Box 10036,
Beaumont TX, 77710, USA
E-mail: rdoe@lamar.edu

Both men had the same flight time, lived in the same area, took the same cab to the airport, and were both stuck in traffic jams that caused them to miss their scheduled flights by 30 minutes. Upon arrival, man (A) was told his flight left on time and he missed it; while man (B) was told his flight was delayed 25 minutes, and he barely missed it. One hundred thirty-eight participants almost unanimously agreed that man (B) would be more upset. Why? Counterfactual evidence from past experience led them to believe that he had a good chance of making his flight if a small detail was alternated, making his situation more frustrating. Research such as this plays a role in understanding the generation of counterfactuals; however, past experiences and normality are still context dependent.

Researchers use the term mutability to reduce ambiguity surrounding counterfactuals. According to Roese and Olson (1995), a factor is mutable if it can be readily mutated in a causal chain. To illustrate, Roese and Olson (1995) described a college student drinking the night before an exam, and subsequently failing the exam. Upon learning of the failure, the student immediately imagined that if the student had not partied the night before, the student may have passed the test. In this situation, partying was an easily mutable factor leading to an outcome (Roese and Olson 1995). Choosing to speed or drive an unusual route home are all examples of mutable factors. Immutable factors, such as gravity or inertia, are factors not considered causal; although, the absence of these factors would affect the outcome. When individuals process events using counterfactuals, or mutate outcomes mentally, they look for irregularities or exceptions to mutate; and tend to leave alone immutable factors. Wells et al. (1987) led a series of experiments that illustrated this point. Wells and colleagues gave 116 participants a timeline of events that led to a certain outcome. One timeline consisted of a student going to swim laps at the school; and ended up running into a man with a gun. Researchers presented participants with eight different scenarios that differed slightly in nature. For example, one scenario described the student leaving at the normal time to go swim, but going on Sunday instead of the normal Saturday trip; and one scenario de-

scribed the student leaving later than usual, but on the normal day. Participants significantly chose the irregularities, going late or on the wrong day, to change the outcome of running into the man with the gun.

Counterfactual thinking (CFT) plays a larger role in the human psyche than one might imagine. Researchers suggested that CFT is used for much more than analyzing everyday activities, such as determining that fast food is the culprit of an upset stomach. Recent research illustrated the use of CFT in multiple applications ranging from experiencing envy, feeling of social anxiety, to understanding higher complexities such as Hillary Clinton losing the 2016 elections in the United States (Monforton et al. 2012; Van de Ven and Zeelenberg 2015; Wells and Gavanski 1989). Kaye (2010) built on this premise by placing utility on counterfactuals from a historical perspective. Historical researchers use counterfactuals to understand what could have happened versus what happened. This information helps us understand not only the past, but the future as well. A debatable topic discussed in Kaye's work was the war with Iraq, and the causality attributed to former president George W. Bush being elected (Kaye 2010). We can only imagine what if Al Gore has won the United States 2000 presidential elections.

Not only is CFT prevalent in adults, but new research clarifies that, it is an essential cognitive tool throughout life. The ability to infer what might have been develops extremely early in life and potentiates along with other cognitive abilities. According to German and Nichols (2003), mental simulation of causality can be detected in children as young as three. In their experiment, 83 children of age three to four were presented with a casual chain of events that resulted in a particular outcome, and asked to determine what events might have changed the resulting outcome. German and Nichols (2003) found that the children had no problem implementing counterfactual thinking, and older children were able to assess more complex causal chains of events. One might assume researchers were not satisfied with the assignment of age for differences in counterfactual abilities. Beck et al. (2009) in a similar experiment with children of this age, found significant positive

correlations between language proficiency, inhibitory control, and counterfactual thinking abilities. Beck and colleagues suggested counterfactual thinking abilities correlate with the status of cognitive development, not age.

In the literature on counterfactual processing, there is the distinction made between mutability, causality, and blame. These three (mutability, causality and blame) are viewed as conceptually independent. For example, one can easily mutate the notion that “If the sprinklers were on, the lawn would be wet,” but it does not necessarily infer causality that “If the lawn were wet, the sprinklers would be on” (Dehghani et al. 2012:3). Subsequently, cause is not necessarily equated with responsibility nor blame. That is, you may have caused an event but that is not sufficient for judging you responsible or blameworthy (Fiske and Taylor 1984; Wells and Gavanski 1989). This is quite often showcased in the court of law and jury deliberations. For example in the United States, you could be guilty of nothing, on the premise that you just killed someone out of a reasonable fear for your own life. An astute legal counsel will thus stop at nothing to convince a jury to separate cause (*actus reus*) and intent (*mens rea*) in such high profile cases.

Wells and Gavanski’s (1989) research illustrated the relationship between counterfactual thinking and the attribution of causality using many of the previously mentioned criteria. They asked participants to consider the scenario of an employee (female) with a wine allergy being taken to a dinner by her boss (male) to celebrate a promotion. At dinner, the dish he orders for them contains wine, and she dies shortly after eating it. In both conditions, he considered ordering another meal before he made his selection. In the first condition, he considered a meal that also contained wine, and in the second condition, he considered a meal that did not contain wine. As expected, participants in this research said the boss was more at fault in the condition that only had one wine dish. Wells and Gavanski (1989) assumed this attribution stemmed from the readily available counterfactual- if only he had ordered the other dish that did not contain wine (Wells and Gavanski 1989). This claim would make sense if, as with all other scientific

claims, the research was replicable. Spellman (2011) attempted to duplicate the landmark study performed by Wells and Gavanski; however, Spellman did not produce the same results. Subjects in Spellman’s (2011) study had different answers when asked to list the counterfactuals, or causes of her death. Participants stated that she should have ordered for herself, or told her boss about her allergy. Some questioned why she was going to dinner with her boss in the first place. Prior replication studies such as Martins (2003) also found contrary results to counterfactual assertions. Roese (2005) also theorized the tendency for victims to be blamed for their misfortunes. These contradictions to counterfactual thinking touch on the underlying issues of social class relations in work and social settings and raises further questions to explore conditions under which counterfactuals occur or not.

Social class continues to be a heavily studied subject in the psychology community. Recent research in the field holds that perceptions of social class has profound effects on how people interact with their environment, physically and mentally (Adler et al. 2000; Zorotovich et al. 2016). Adding to this premise, Kraus et al. (2010) established that lower class individuals have higher emphatic accuracy than their higher class peers. Participants in this study were separated via level of education to ascertain social class, and participants who had only earned a high school diploma were considered low class. Researchers gave each participant the Mayer-Salovey Caruso Emotional Intelligence test (Mayer et al. 2002). An analysis of the results revealed lower class individuals performed significantly better than their higher class counterparts (Kraus et al. 2010).

It is arguable that social status effects cognitive states and abilities, but does it also affect behavior? Recently, psychologists have found significant differences in behavior between social classes. Higher class individuals live in environments with abundance of resources and less uncertainty, creating a sense of elevated rank and freedom. Seven studies carried out in 2010 allowed researchers to observe the implications of this notion. The studies found privileged individuals were far more likely to partake

in unethical behavior such as speeding, lying in negotiation, taking from others, and cheating (Piff et al. 2012).

These topics of moral disengagement, collateral damage, euphemistic language, displacement of responsibility, and dehumanization of a victim as captured in statements such as “she asked for it” or “he made me do it to him” has been addressed in the literature (see Bandura 2016; Sternberg 2016:3). Does an individual’s perceived social class in relation to others alters counterfactual processing, absolving of responsibility or attribution of blame to the victim? Adding the variable of social class into the original study (Wells and Gavanski 1989), the researchers therefore proposed the following:

1. The counterfactual group (one wine - the alternative dish that did not contain wine) will mutate, assign causality and blame to Mr. Carlson for Karen’s death more than the two-wine group.
2. The low social rank group will mutate, assign causality and blame to Mr. Carlson for Karen’s death more than the high social group.
3. The low social rank group with the counterfactual group (one wine - the alternative dish that did not contain wine) will mutate, assign causality and blame to Mr. Carlson for Karen’s death more than all the other groups.

MATERIAL AND METHODS

Participants

A total of 128 students in a medium size university in the United States participated in the study. About 25 percent of the students were freshmen ($n = 32$), 46.1 percent were sophomore ($n = 59$), 21.1 percent were juniors ($n = 27$), and 7.8 percent were seniors ($n = 10$). Each participant received research credits for course requirements.

Design

The experimental design used in this study is a 2 (Counterfactual Mutation: One wine vs Two wine) x 2 (Social class: High vs Low) be-

tween-participants design. The dependent variables were Mutation, Causality and Blame.

Materials

The measures used in this study comprised of: the original manipulated scenarios from Wells and Gavanski (1989) (2 conditions), a social class ranking manipulation (2 conditions) and a demographic section. The dependent measures were ratings of three kinds (Mutation, Causality and Blame). An example of a rating used is ‘Rate [0-9] how much of a causal role Mr. Carlson’s decision to order the Moules Mariniere played in Karen’s death?’ Higher scores reflected more of the attribute being measured. An open ended section was also added to explain their ratings.

Mutation

The participants were presented with one of two scenarios below and were asked to select one option that would have undone Karen’s death.

“Karen was an assistant editor for a small publishing firm. She had a rare hereditary disease called Karpinson’s hemotrysoma, characterized by the lack of an enzyme that normally breaks down certain proteins in the digestive system. Because of this, fermented drinks such as wine and liqueurs can cause a severe allergic reaction in someone with the disease. Karen had just received a promotion so her boss, Mr. Carlson, took her to an expensive French restaurant to celebrate. Mr. Carlson had been to this restaurant several times, so he ordered for both of them. As he looked over the menu, Mr. Carlson considered what to order for Karen. He first thought about ordering the [Coquilles Saint-Jacques] (Scallops Meuniere), but at the last moment decided on the Moules Mariniere instead. Although Mr. Carlson did not know this, [both of these dishes were made with a wine sauce.] (the Moules Mariniere was made in a wine sauce whereas the Scallops Meuniere did not contain any wine). Karen enjoyed her meal greatly, but began to feel ill shortly after finishing. Within minutes, she went into convulsions and was rushed away in an ambulance. She died on the way to the hospital.”

Note: The two wine version includes the portion in parentheses; the one wine version includes the portion in brackets (Wells and Gavanski 1989).

Social Class Ranking

The social class mindset was manipulated using the same paradigm in previous studies (Kraus et al. 2010; Piff et al. 2012). It is important to state herein that this social class mindset paradigm is the closest way to activate higher or lower social class mindset in experimental conditions to measure its effects on behavior. The participants were exposed to a 10-rung ladder with the instructions that:

“Think of the ladder as representing where people stand in the United States. These are people who are the worst (best) off—those who have the least (most) money, least (most) education, and the least (most) respected jobs. In particular, we’d like you to think about how YOU ARE DIFFERENT FROM THESE PEOPLE in terms of your own income, educational history, and job status. Where would you place yourself on this ladder relative to these people at the very bottom (top)? Please place a large ‘X’ on the rung where you think you stand.” After indicating where they feel they stood relative to those at the very bottom or very top of the ladder, participants received the following directions: “Now imagine yourself in a getting acquainted interaction with one of the people you just thought about from the ladder above. Think about how the DIFFERENCES BETWEEN YOU might impact what you would talk about, how the interaction is likely to go, and what you and the other person might say to each other.”

Note: The low social class mindset includes the portion in parenthesis.

Procedure

After IRB approval (IRB-FY18-35), and upon arrival at the research suites and signing an informed consent, we randomly assigned the participants to one of four conditions where the participants recorded their responses. The study took a maximum of 30 minutes to complete and the participants were escorted out of the research suites.

RESULTS

The results showed that out of the total of 128 participants, 93 (73%) were females. One participant did not disclose their gender. Their ages ranged from 18 to 41 years with a mean age of 20.98 ($SD = 4.09$). Prior to data analysis, we explored the normality and homogeneity of the four groups. Using Shapiro-Wilk test as well as the Q-Q plots, there were no deviations from normality. We also checked the four groups and found out that their variances were homogenous ($p = .635$). In addition, all the participants took a pre-test after we randomly assigned them to one of the four groups. A one-way analysis of variance results showed that the groups were equal, $F(3,124) = 0.945, p = .421, \chi^2 = .022$.

The manipulation of social class did show that those in the higher social class condition ($M = 5.38, SD = 1.56$) ranked themselves higher on the social-class rank than those in the lower social class condition ($M = 5.11, SD = 1.83$). This difference was however not significant (See Fig. 1).

To test the three hypotheses, the researchers conducted a 2x2 factorial ANOVA using the

Table 1: Means and SD for the mutability, causality and blame

Version	Social class	Mutability		Causality		Blame		N
		Mean	SD	Mean	SD	Mean	SD	
Version 1 One wine	High social class	4.09	1.06	3.00	1.68	6.34	1.96	32
	Low social class	3.72	1.49	2.66	1.82	5.81	2.04 ^a	32
	Total	3.91	1.29	2.83	1.75	6.08	2.00	64
Version 2 Two wine	High social class	4.34	1.23	2.53	1.81	5.53	2.46	32
	Low social class	3.72	1.46	2.78	1.68	5.31	2.67	32
	Total	4.03	1.38	2.66	1.74	5.42	2.55	64
Total	High social class	4.22	1.15	2.77	1.75	5.94	2.25	64
	Low social class	3.72	1.46	2.72	1.74	5.56	2.37 ^a	64
	Total	3.97	1.33	2.74	1.74	5.75	2.31	128

Note: ^aOne participant did not respond.

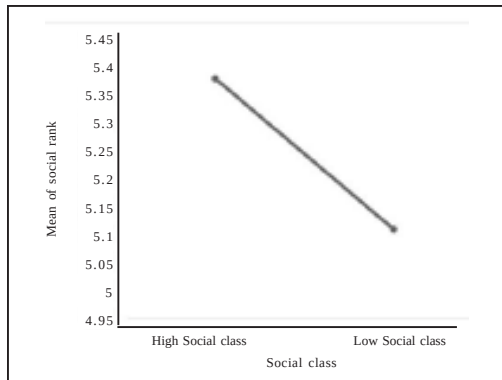


Fig. 1. Social class rank manipulation

conceptually independent ratings of three kinds (Mutation, Causality and Blame) as the dependent variables. The researchers conducted multiple ANOVAs instead of MANOVA to maintain the conceptual distinctions between mutability, causality and blame as discussed in the literature (see Biskin 1980; Fiske and Taylor 1984; Huberty and Morris 1989; Wells and Gavanski 1989). Table 1 shows the means and the standard deviations of all the separate ratings.

The results (see Table 2) show that there were no significant differences between the two groups (one wine or two-wine). That is, the researchers' hypothesis 1 predicting that the counterfactual group will mutate, assign causality and blame Mr. Carlson for Karen's death more than the two-wine group was not supported. Secondly, hypothesis 2 was largely not supported. Con-

Table 3: Intercorrelations between mutability, causality and blame

Outcome measures	1	2	3
1. Mutability	-		
2. Causality	.36**	-	
3. Blame	.19*	.14	-

** $p < .01$, * $p < .05$

trary to the researchers' predictions, low social class rank group significantly mutated less than the high social class rank group ($p = .034$). Lastly, hypothesis 3 was also not supported.

These non-significant results were also observed with a MANOVA analysis. This MANOVA analysis were not a replacement but rather to amplify the univariate results. As suggested by Huberty and Morris (1989) for any multiple univariate analysis, we presented the correlation matrix of the outcome measure in Table 3.

DISCUSSION

The goal of this study was to investigate the conditions under which we imagine alternatives, simulate causality and blame events or people in explaining human behavior. The results though inconclusive, may help explain how participants could be immune to psychological mutation, or at least have justifiable reasons why imagining the alternative is not necessary and sufficient to undo an event, no matter how tragic. In terms of social class, previous research has provided a plethora of evidence suggesting

Table 2: ANOVA results for mutability, causality and blame

Source	SS	df	MS	F	p	η^2
Mutability (DV)						
Version (V)	.500	1	.500	.286	.594	.002
Social class (S)	8.000	1	8.000	4.574	.034	.035
V*S	.500	1	.500	.286	.594	.002
Error	216.875	124	1.749			
Causality (DV)						
Version (V)	.945	1	.945	.308	.580	.002
Social class (S)	.070	1	.070	.023	.880	.001
V*S	2.820	1	2.820	.919	.340	.007
Error	380.656	124	3.070			
Blame (DV)						
Version (V)	13.545	1	13.545	2.552	.113	.020
Social class (S)	4.536	1	4.536	.855	.357	.007
V*S	.805	1	.805	.152	.698	.001
Error	652.901	123	5.308			

that unethical behavior could be influenced by a person's social class. Although there are arguments that low social class individuals with perceived fewer resources, and perceived marginalization engage in unethical behaviors more than higher social class individuals with more perceived freedom and resources; Kraus et al. (2011) argue that the feeling of freedom and independence among high social class individuals lead to self-focused cognitive tendencies. The current results which should be interpreted with caution, could suggest that a feeling of high social class standing relative to others may have provided a sense of freedom and independence to mutate events over and above low social class ranking individuals. In addition, one could argue that a sense of high social class standing leads to valuing one's welfare by imagining if they were the victim. In this context, it is fair to argue that if individuals can come to terms of committing a similar offense, they are more likely to reduce the consequence of their unintended actions (Stillwell and Baumeister 1997).

Alternatively, the feeling of a low social class standing may have prevented or at least influenced individuals from imagining the alternative as undoing the behavior in question, no matter how tragic that event may be. That is, having a sense of learned helplessness in imagining an alternative as having any potency to make any difference. As noted in our introduction and in previous articles (Wells and Gavanski 1989), it is important to separate mutability from the idea of undoing an event since some mutations cannot undo an event. At least, here on earth, we do not expect in everyday normal settings for individuals to imagine the absence of gravity as undoing the tragic death of a man who falls off a tall skyscraper.

Counterfactual processing or the dearth thereof, has been renewed in the literature with a slightly new terminology – moral disengagement, by Albert Bandura. Specifically, the counterfactual group could not mutate, simulate causality or assign blame any differently than the non-counterfactual group in this study because of:

the cognitive restructuring of inhumane conduct into a benign or worthy one by moral justification, sanitizing language, and advantageous

comparison; disavowal of a sense of personal agency by diffusion or displacement of responsibility; disregarding or minimizing the injurious effects of one's actions; and attribution of blame to, and dehumanization of, those who are victimized. (Bandura 1999: 193)

If there is no moral fiber inherently restricting individuals or preempting individuals to any moral standards, then whoever is identified or labelled as the victim in any situation will be dehumanized. The victim's misdeeds will not only increase in the courts of public opinions but legitimizes any further punishment the victim had to endure. Ellard et al. (2002) labelled this condition as the demonization of offenders. Subsequently, if norm theory's explanation of counterfactual as rooted in our past experiences (Van Hoeck et al. 2015); then humanity's recent past experiences of seemingly legitimized war crimes, terrorism, cyber fraud, bullying, sexual assaults, religious and political manipulations, mass exploitation, and untamed greed cast a shadow on the sense of being human. This 'new normal' of imagining alternatives, non-mutability and disassociation from blame will gradually become a threat to humanity as we know it.

CONCLUSION

In this study, the researchers examined counterfactual thinking, mental simulation of causality, and assigning blame. The researchers found that individuals primed as high social class rank do engage in psychological mutation, more than the low social class ranking group; but are not any different in assigning responsibility or blame, irrespective of how tragic the event might be. The case has been made in the literature that social class impacts individuals at cognitive and behavioral levels. As research continue to learn more about the origins of counterfactual thought, normality, and mutability, the researchers became aware that past experiences play a large role in counterfactual processes. Subjective thoughts such as past experiences vary widely from person to person. However, these findings show that an individual's social status relative to others could have an influence on past experiences and counterfactual thoughts as a whole.

LIMITATIONS AND FUTURE DIRECTIONS

The immediate limitations observed in this study included the written presentation of the scenarios to participants. It is possible that an audio visual presentation of the scenarios may have provided different results. Participants, especially millennials, might connect with scenarios (vignette) better if presented in the form of a video presentation. Future studies could take up this challenge or even compare results to falsify this claim. The use of undergraduate students may also not be representative of the larger population. Secondly, social class status of participants were not verified with secondary data from participants such as using the traditional ways to determine one's social rank (for example, parent's income, education, occupation, family size). Although activating social class mindset is a better alternative to self-promoted responses when direct social class measures are used, caution should be exercised when interpreting these results. Future studies could include direct measures of non-homogeneous working population. Although gender differences were not discussed in this study, it might be worthwhile to explore this possibility in future studies.

IMPLICATIONS

At the organizational level, it is not uncommon for employees to ask questions such as: 'how can they do that?' 'I can't believe they will do that?' However, the decision makers at the helm of affairs will try to re-conceptualize and attempt to convince employees of all the factors that culminated to the inevitable act such as layoffs and closures. In research, there is constant interaction between moral reasoning, affect and social reception that leads an individual to take decisions that are harmful to others. These current results could imply that, the use of more diversified and inclusive leadership, boards, and committees that are tasked with making decisions could reduce the tendency for individuals to be morally disengaged from responsibility and blame.

REFERENCES

- Adler NE, Epel ES, Castellazzo G, Ickovics JR 2000. Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, 19: 586-592.
- Bandura A 1999. Moral disengagement in the perpetration of inhumanities. *Personality and Social Psychology Review*, (Special Issue on Evil and Violence), 3: 193-209. doi: https://doi.org/10.1207/s15327957pspr0303_3
- Bandura A 2016. *Moral Disengagement: How People Do Harm and Live With Themselves*. New York: Worth Publishers.
- Beck SR, Riggs KJ, Gorniak SL 2009. Relating developments in children's counterfactual thinking and executive functions. *Thinking and Reasoning*, 15: 337-354.
- Biskin BH 1980. Multivariate analysis in experimental counseling research. *The Counseling Psychologist*, 8: 69-72.
- Byrne RMJ 2002. Mental models and counterfactual thought about what might have been. *Trends Cogn Sci*, 6: 426-431. doi: 10.1016/s1364-6613(02) 01974-5
- Dehghani M, Iliev R, Kaufmann S 2012. Causal explanation and fact mutability in counterfactual reasoning. *Mind and Language*, 27: 55-85. doi:10.1111/j.1468-0017.2011.01435.x
- Ellard JH, Miller CD, Baumle T, Olson JM 2002. Just world processes in demonizing. In: M Ross, DT Miller (Eds.): *The Justice Motive in Everyday Life*. New York, NY, US: Cambridge University Press, pp. 350-362.
- Fiske ST, Taylor SE 1984. *Social Cognition*. Reading, MA: Addison-Wesley.
- German TP, Nichols S 2003. Children's counterfactual inferences about long and short causal chains. *Developmental Science*, 6: 514.
- Huberty CJ, Morris JD 1989. Multivariate Analysis versus Multiple Univariate Analyses. *Psychological Bulletin*, 105(2): 302-308.
- Kahneman D, Miller DT 1986. Norm Theory: Comparing reality to its alternatives. *Psychological Review*, 93: 136-53.
- Kahneman D, Tversky A 1982. The psychology of preferences. *Scientific American*, 246(1): 160-173.
- Kaye ST 2010. Challenging uncertainty: The utility and history of counterfactualism. *History and Theory*, 49: 38-57. doi:10.1111/j.1468-2303.2010.00527.x
- Kraus MW, Cote C, Keltner D 2010. Social class, contextualism, and empathic accuracy. *Psychological Science*, 11: 1716.
- Kraus MW, Piff PK, Keltner D 2011. Social class as culture: The convergence of resources and rank in the social realm. *Current Directions in Psychological Science*, 20(4): 246-250. <https://doi.org/10.1177/0963721411414654>
- Martins AC 2003. O pensamento contrafactual e a percepção de crimes. Revisitando Macrae, Milne e Griffiths (1993). [Counterfactual thinking and the perception of crimes: Revisiting Macrae, Milne and Griffiths (1993).]. *Análise Psicológica*, 21(3): 393-406.
- Mayer JD, Salovey P, Caruso DR 2002. *Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) User's Manual*. New York: Pearson Education, Inc.

- er's Manual. Toronto, Ontario, Canada: MHS Publishers.
- Monforton J, Vickers K, Antony MM 2012. 'If only I didn't embarrass myself in front of the class!': Social anxiety and upward counterfactual thinking. *Journal of Social and Clinical Psychology*, 31: 312-328. doi:10.1521/jscp.2012.31.3.312
- Piff PK, Stancato DM, Cote S, Mendoza-Denton R, Keltner D 2012. Higher social class predicts increased unethical behavior. *Proceedings of the National Academy of Sciences*, 109(11): 4086-4091. <https://doi.org/10.1073/pnas.1118373109>.
- Roese NJ 2005. *If Only: How to Turn Regret Into Opportunity*. New York: Broadway.
- Roese NJ, Olson JM 1995. Counterfactual thinking: A critical overview. In: NJ Roese, JM Olson (Eds.): *What Might Have Been: The Social Psychology of Counterfactual Thinking*. Hillsdale, NJ: Erlbaum, pp. 1-55.
- Spellman B 2011. It's Not The Bosses Fault. From <<http://www.psychfiledrawer.org/replication.php?attempt=ODk%3D>> (Retrieved on 26 May 2017).
- Sternberg RJ 2016. When good, not so good, and down-right evil people do bad things: A review of Moral Disengagement by Albert Bandura. *Psyc Critiques*, 61(8): Article 1.
- Stillwell AM, Baumeister RF 1997. The construction of victim and perpetrator memories: Accuracy and distortion in role-based accounts. *Personality and Social Psychology Bulletin*, 23: 1157-1172.
- Wells GL, Gavanski I 1989. Mental simulation of causality. *Journal of Personality and Social Psychology*, 56: 161-169. doi:10.1037/0022-3514.56.2.161
- Wells GL, Taylor BR, Turtle JW 1987. The undoing of scenarios. *Journal of Personality and Social Psychology*, 53: 421-430.
- Van de Ven N, Zeelenberg M 2015. On the counterfactual nature of envy: 'It could have been me'. *Cognition and Emotion*, 29: 954-971. doi:10.1080/02699931.2014.957657
- Van Hoeck Nicole, Watson PD, Barbey AK 2015. Cognitive neuroscience of human counterfactual reasoning. *Frontiers in Human Neuroscience*, 9: 1-18.
- Zorotovich J, Johnson EI, Linn R 2016. Subjective social status and positive indicators of well-being among emerging adult college students. *College Student Journal*, 50: 624.

Paper received for publication in June, 2019
Paper accepted for publication in July, 2019

\