Thinking about What Might Have Been: If Only, Even If, Causality and Emotions

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Abstract

We discuss two different kinds of thinking about what might have been: Counterfactual "if only" thinking about how things might have been different and semifactual "even if" thinking about how things might have turned out the same. We report the results of an experiment that showed that the two kinds of thinking have different effects on cause and emotion judgements. The experiment provides the first demonstration that semifactual "even if" thoughts reduce peoples judgements of causality and their emotional reactions compared to no thoughts about what might have been, and it replicates recent findings that counterfactual "if only" thoughts increase peoples judgements of causality and their emotional reactions.

Counterfactual Thoughts and Emotions

People frequently consider what might have been different in their everyday thinking and these counterfactual thoughts are closely linked with judgements of causality and with a range of emotions, from regret (Byrne & McEleney, 1997; Gilovich & Medvec, 1994; Landman, 1987) to guilt and shame (Niedenthal, Tangney & Gavanski, 1994). The more easily people can imagine a situation turning out differently, the more their emotions about that situation are amplified (Kahneman & Miller, 1986). For example, consider the plight of an Olympic runner who injures herself the day before an important race (Boninger, Gleicher, & Strathman, 1994). The runner must chose between two painkillers, an older drug whose side-effects include nausea and fatigue and a new drug whose side-effects are unknown. She chooses the older drug, experiences the side-effects, and narrowly misses winning a medal. Participants who were told that the new drug turned out to have no side-effects judged that the runner would experience more regret and self-blame compared to participants who were told that the new drug had the same side-effects as the old one. The result suggests that thinking counterfactually about how things could have been different "if only" a different decision had been made can increase emotions such as regret and self-blame (Boninger et al., 1994).

Counterfactuals and Semifactuals

When people think about what might have been, they think not only about how things could have been different *if only* something else had happened (e.g., "if only I had not had an accident, I would have won a medal"); they also think about how things might have turned out the same *even if* something else had happened (e.g., "even if I had taken the other drug, I would still have experienced the side effects"). Philosophers have long recognized the distinction between counterfactual "if only" thinking and semifactual "even if" thinking (e.g., Goodman, 1973), but it has only recently begun to receive attention in psychological research (e.g., Branscombe, Owen, Garstka, & Coleman, 1996; McCloy & Byrne, in press).

Counterfactual and semifactual thoughts focus on different imaginary alternatives to factual events. Counterfactual "if only" thoughts focus on alternative antecedents that would undo an outcome whereas semifactual "even if" thoughts focus on alternative antecedents that would not undo the outcome (McCloy & Byrne, in press). As a result, counterfactual and semifactual thinking have very different effects on people's judgments of cause and blame: counterfactual thoughts increase judgements of cause and blame compared to semifactual thoughts (Branscombe, et al., 1996; McCloy & Byrne, 1999a). Our aim in the experiment we report was to examine more closely the effects of semifactual thinking on judgements of cause and emotion.

Semifactual Thoughts and Emotions

Do semifactual thoughts reduce people's emotional reactions? Semifactual thoughts do not *increase* judgements of cause and blame, compared to counterfactual thoughts, but do they *decrease* judgements of cause and blame? The answer is unknown because in the little available research on semifactual thoughts, their effects have been compared only to the effects of counterfactual thoughts, and not to an appropriate neutral baseline, such as no thoughts about what might have been (e.g., Boninger et al., 1994).

Our first aim in the experiment was to compare three sorts of thoughts about the Olympic scenario: "if only"

thoughts, "even if" thoughts, and no thoughts about what might have been. These thoughts may have different consequences for judgements of cause and emotions. Consider, for example, judgements about how much the decision to take the older drug caused the outcome. How people judge how causal an antecedent is has received considerable attention in both philosophy and psychology (e.g., Cheng & Novick, 1991; Hilton & Slugowski, 1986; Mackie, 1974; Mill, 1872). The causal judgement may evoke spontaneously the construction of counterfactual and semifactual alternatives to assess how necessary and sufficient the antecedent is to bring about the outcome (e.g., Johnson-Laird & Byrne, 1991; Mill, 1872; N'Gbala & Branscombe, 1995). An antecedent for which people can readily construct a counterfactual alternative may be judged to be very causal whereas an antecedent for which people can readily construct a semifactual alternative may be judged to be not very causal (Goodman, 1973; Kahneman & Miller, 1986). Judgements of causality in the situation where people have been provided only with information about the factual situation provides a baseline measure of how causal the antecedent is judged on the basis of background knowledge alone.

One way in which counterfactual thinking has been hypothesized to influence people's emotional reactions is by way of causal inferences (e.g., Roese & Olson, 1995). People may, for example, regret events to the extent that they believe them to have caused negative outcomes. As generating counterfactuals about an event increases its perceived causal importance in producing an outcome, it also increases regret for that event. By denying that an antecedent event was causal in producing an outcome, semifactual "even if" thoughts may reduce people's emotional reactions to that event. Our predictions for emotional reactions were therefore the same as those for causal judgements.

Second, orthogonal to this variable, we compared three sorts of information about alternatives: a scenario in which there was an available alternative that would undo an outcome (a counterfactual alternative), one in which there was an available alternative that would not undo the outcome (a semifactual alternative), and one in which there was no information about alternatives. The explicit provision of a different counterfactual alternative may increase judgements of, for example, causality, whereas the explicit provision of a semifactual alternative may decrease judgements of causality, compared to the situation where no alternatives are given. Again, we predicted that people's emotional reactions would follow the same pattern and would increase where causality increases and decrease where causality decreases.

The Experiment

The participants were 367 undergraduates from the University of Dublin, Trinity College who took part in the experiment voluntarily. The 264 women and 101 men (two participants did not record their gender) ranged in age from 17 to 46 years old.

We gave all of them the Olympic scenario described earlier (based on the story in Boninger et al., 1994; see Appendix 1). We manipulated two independent variables in the experiment: the nature of the mutation task following the scenario and the nature of the alternatives described in the scenario. We manipulated the nature of the mutation task by ensuring that one of three mutation tasks followed the scenario: a counterfactual mutation task, in which participants were asked to imagine that in the days and weeks following the race they thought "if only..." and they were asked how they completed this thought; a semifactual mutation task, in which participants were asked to imagine that they thought "even if..." and they were asked how they completed this thought; or no mutation task, for which participants proceeded directly from reading the story to carrying out cause and emotion rating tasks.

We manipulated the nature of the alternatives by ensuring that the scenario had three different endings. For the different alternative scenario, it ended with the information that athletes who used the other, newer drug felt no pain and experienced no side effects. For the same alternative scenario, it ended with the information that those who had taken the newer drug felt no pain, but experienced the same side effects (see Appendix 1). For the no alternative scenario, no information was included about other athletes experiences with the other drug. These two independent variables, each with three levels, resulted in nine different scenario-task combinations. We assigned the participants at random to one of the nine groups, and each group had approximately 40 participants.

The dependent variables were the participants ratings of causes of, and emotional reactions to, the outcome of the scenario. The participants rated on a 9 point scale (where 1 indicated they did not feel the emotion at all and 9 indicated they felt it a great deal), first, how much they regretted taking the well-known drug; second, how bad they felt about what happened; third, how much they blamed themselves for the outcome of the race; and last, how much they thought deciding to take the well-known drug had caused them not to get a medal (see Appendix 2).

Results

We carried out a three (mutation task: if only, even if, none) by three (available alternatives: different, same, none) multivariate analysis of variance on the four dependent rating measures: regret, feeling bad, self-blame and causal ascription. The MANOVA showed that there were main effects for each of the independent variables, the mutation task and the available alternatives (Wilks' lambda = 0.95, $F(4, 356) = 2.07$, $p < 0.05$, and Wilks' lambda = 0.77, $F(4, 356) = 12.26$, $p < 0.0001$ respectively), as we describe below, and that there was no interaction between them (Wilks' lambda = 0.93, $F(4, 356) = 1.51$, $p < 0.87$).[1]

[1] Participants' "if only" thoughts tended to make the outcome of the scenario different (90%), whereas their "even if" thoughts tended to leave the outcome of the scenario unchanged (78%; see McCloy & Byrne, 1999b).

"If only" and "Even if" thoughts have different effects

The sort of mutation task participants carried out affected their ratings of emotions and causes, as shown by the main effect of mutation task. The sort of mutation task only affected ratings of feeling bad and ratings of causality, ($F(2, 356) = 4.57$, $p < 0.01$ and $F(2, 356) = 4.77$, $p < 0.01$, as shown by univariate tests) but not ratings of self-blame or regret ($F(2, 356) = 1.55$, $p < 0.21$, and $F(2, 356) = 2.50$, $p < 0.08$), as Table 1 shows. Participants ratings of feeling bad decreased following the generation of "even if" thoughts (mean 6.68) compared to the generation of "if only" thoughts (mean 7.29), or no thoughts (mean 7.30), as shown by post-hoc Student-Neuman-Keuls tests ($p < 0.05$). Participants' ratings of the causal role of the decision to take the well-known drug also decreased following the generation of "even if" thoughts (mean 4.82) compared to no thoughts (mean 5.67), although not reliably compared to "if only" thoughts (mean 5.23), see McCloy & Byrne, 1999b, for further details.

Table 1: The effects of the different mutation tasks (collapsed over different available alternatives) on ratings of emotions and causes

	Regret	Feeling Bad	Self-Blame	Cause
If only	5.36	7.29	5.35	5.23
Even if	5.29	6.68	4.85	4.82
None	5.88	7.30	5.25	5.67

Different available alternatives have different effects

The nature of the available alternatives described in the scenario affected participants ratings of emotions and causes, as shown by the main effect of alternatives. The nature of the available alternative only effected ratings of regret and ratings of causality, ($F(2, 356) = 43.21$, $p < 0.001$ and $F(2, 356) = 27.91$, $p < 0.001$, as shown by univariate tests) but not ratings of feeling bad or self-blame ($F(2, 356) = 0.13$, $p < 0.88$, and $F(2, 356) = 0.46$, $p < 0.63$), as Table 2 shows. Participants' ratings of regret decreased in the same alternative condition (mean 4.08) compared to the no alternative (mean 5.73), and different alternative condition (mean 6.78), as shown by post-hoc Student-Neuman-Keuls tests ($p < 0.05$). Participants' ratings of the causal role of the decision to take the well-known drug also decreased in the same alternative condition (mean 4.26) compared to the no alternative (mean 5.25), and the different alternative condition (mean 6.23), see McCloy & Byrne, 1999b, for further details.

Table 2: The effects of the different available alternatives (collapsed over different mutation tasks) on ratings of emotions and causes

	Regret	Feeling Bad	Self-Blame	Cause
Different	6.78	7.06	5.25	6.23
Same	4.08	7.07	4.99	4.26
None	5.73	7.16	5.24	5.25

Discussion

The results of the experiment provide the first demonstration that semifactual "even if" thoughts reduce peoples judgements of causality and their emotional reactions, at least ratings of feeling bad. The reduction is particularly clear when the effects of semifactual thinking are compared to an appropriate neutral baseline of no thoughts about what might have been, rather than when semifactual thoughts are compared only to counterfactual "if only" thoughts, as in the few previous studies on semifactual thinking (e.g., Branscombe, et al., 1996; McCloy & Byrne, in press). Our experiment also replicates recent studies which show that counterfactual thoughts increase people's judgements of causality and their emotional reactions.

The results of the experiment also provide the first demonstration that the availability of an alternative antecedent which would have led to the same outcome reduces people's judgements of causality and their emotional reactions, at least ratings of regret, compared to a baseline of no alternatives. Our experiment replicates the findings of previous studies that the availability of an alternative antecedent which would have led to a different outcome increases peoples judgements of causality and their emotional reactions, at least ratings of regret.

Something that we did not predict in our results is the divergence between effects of being presented with alternative antecedents and those of explicitly generating "if only" or "even if" thoughts. The explanation for this, we believe, lies in the events that each manipulation causes participants to focus on. When we provided participants with available alternatives, we did so to just one event in the scenario, the choice of drug, whereas our mutation task manipulation was more open ended. People's mutations focus, not only on the choice of drug, but also on the accident and on other events.[2] The manipulation of alternatives is therefore more likely to effect emotions about that one specific event (e.g., regret), whereas the mutation task manipulation could effect reactions to any number of events in the scenario and might be more likely to effect more general measures of negative affect (e.g., feeling bad).

The results suggest that the nature of the mental representations of factual events that people construct affect their construction of alternatives and their subsequent ratings of causality and emotional impact (e.g., Byrne, 1997). When

[2] See McCloy & Byrne (1999b) for a breakdown of the content of participants' responses to the two mutation tasks.

people are asked to think "if only", they must undo the outcome and examine how the undone outcome could have come about. They keep in mind two situations, one in which both the antecedent and consequent occurred and another in which neither occurred. As a result the antecedent is represented necessary for the consequent, and hence their rating of causality is increased compared to the baseline. When they are asked to think "even if", they must leave the outcome the same and examine whether the same outcome could have been brought about by different antecedent events. They keep in mind two situations, one in which both the antecedent and consequent occurred and another in which the antecedent did not occur but the consequent did. As a result the antecedent is represented as not necessary for the consequent, and hence their rating of causality is decreased compared to the baseline. The degree to which people think that the antecedent event may have caused the outcome following the generation of counterfactual or semifactual thoughts then effects their emotional reactions to that event.

Our experiment shows that the impact of semifactual thinking on our judgements of causality and emotions may be as important as the impact of counterfactual thinking. Of course, the Olympic scenario that we have examined has a negative outcome, the athlete does not win a medal, and it is well-known that counterfactual thinking is evoked more often following a bad outcome than following a good outcome (e.g., Landman, 1987). Participants in our experiment may have spontaneously thought counterfactually even in situations where they were not asked to (i.e., the no thoughts conditions). Whether semifactual thinking exhibits the same tendencies as counterfactual thinking, such as a prevalence after bad outcomes compared to good outcomes, remains an open research question.

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Appendices

Appendix 1: The scenario and the tasks used in the experiment

You are a runner and since the age of eight you have competed in the sprint races in local track and field events. Up through school you had won every race in which you had competed. It was at the age of 13 that you began to dream about the Olympics. At the age of 18, before starting college, you decide to give the Olympics one, all out shot. You make the Irish Olympic team for the 400 metre race.

On the day before the 400 metre race, in a freak accident during training, you sprain your left ankle. Although there is no break or fracture, when you try to run, the pain is excruciating. Your trainer tells you about many advances in pain killing medications and assures you that you will still be able to participate. He recommends that you choose between two drugs, both legal according to Olympic guidelines. One is a well-known pain killer that has been proved effective but also has some serious side effects including temporary nausea and drowsiness. The other pain killer is a newer and less well-known drug. Although the research suggests that the newer drug might be a more effective pain killer, its side effects are not yet known because it has not been widely used.

After considerable thought, you elect to go with the more well-known drug. On the day of the race, although there is no pain in your ankle, you already begin to feel the nausea and find yourself fighting off fatigue. You finish in fourth place, only 1 tenth of a second from a Bronze medal, 4 tenths from a silver, and 5 tenths from a gold medal.

Different Alternative:

After the event, you learn that some athletes in other events who were suffering from similar injuries used the other, newer drug. They felt no pain and experienced no side effects.

Same Alternative:

After the event, you learn that some athletes in other events who were suffering from similar injuries used the other, newer drug. They felt no pain but experienced the same side effects.

If Only mutation task:

In the days and weeks following the race you think "if only...". How do you complete this thought?

Even If mutation task:

In the days and weeks following the race you think "even if..." How do you complete this thought?

Appendix 2: The rating tasks used in the experiment

Rating tasks:

1. How much do you regret taking the more well-known drug?

1	2	3	4	5	6	7	8	9
I feel no regret at all								I feel a great deal of regret

2. To what extent do you feel bad about how things turned out?

1	2	3	4	5	6	7	8	9
I do not feel bad at all								I feel extremely bad

3. How much do you blame yourself for not getting an Olympic medal in the 400 metre race?

1	2	3	4	5	6	7	8	9
I do not blame myself at all								I blame myself a great deal

4. To what extent do you think your decision to take the well-known drug led to your failure to obtain an Olympic medal in the 400 metre race?

1	2	3	4	5	6	7	8	9
Definitely did not lead to my failure								Definitely led to my failure