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“It had to happen”: Individual memory biases and collective memory¹

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For the purpose of the study we varied the outcome of a sequence of ambiguous behaviors performed by an imaginary individual during World War II. Compared to a control condition where no outcome was presented, this person either ended up saving Jews (heroic behavior) or denouncing Jews to the Gestapo (cowardly behavior). After one week, behavioral antecedents that were consistent with the outcome were likely to be recalled and communicated. Results suggest a tendency towards forming extreme impressions of the target, depending on the outcome. These extreme impressions in turn guide the recall and evaluations of predictability, and also impact on communication about these episodes and thereby on the formation of collective memory.

Keywords: Retrospective hindsight bias, communication, memory, congruent recall, collective memory.

“Tenía que ocurrir”: sesgos de la memoria individual y memoria colectiva

Para el estudio se varió el resultado final de una secuencia ambigua de conductas realizadas por una persona ficticia durante la Segunda Guerra Mundial. Después de la secuencia ambigua de acciones, en una condición control no se producía ninguna consecuencia, en otra condición de heroísmo la persona salvaba la vida de Judíos y en otra condición de cobardía los denunciaba a la Gestapo. Los antecedentes congruentes con la conducta final se recordaron y comunicaron más una semana después. Esto sugiere una tendencia a inferir juicios extremos a partir de la conducta final del personaje, que a su vez influyen en el recuerdo en relación al nivel de previsibilidad de la conducta del personaje, e influyen en la comunicación sobre el hecho y la memoria colectiva.

Palabras clave: sesgo retrospectivo de certeza, comunicación, memoria, recuerdo congruente, memoria colectiva.

History can be viewed as involving a temporal succession of facts. Some of these facts are isolated (e. g. the assassination of Archduke Franz-Ferdinand in Sarajevo, 1914), whereas others span long periods (e. g. the Great Depression). Any historical event occurs within a tangled web of other events and processes. How do ordinary people appraise this complexity? Do they view focal events as the product of the random combination of multiple factors? If this is the case, they may paraphrase Macbeth and see history “as made of sound and fury, as a tale told by an idiot, signifying nothing”. Or, to the contrary, facts can be seen as the mechanical, or even necessary, consequences of earlier events. They may also be considered as the mere surface manifestations of deeper underlying forces. In endorsing such view, we would agree with the likes of Bossuet and Marx who viewed history as guided by an inner necessity (e. g. whether it be driven by God’s design or by the irresistible forces of economic production). Our perception of events as random and contingent would then simply be a byproduct of our lack of clairvoyance.¹²³⁴⁵

These two opposing views of history have been the focus of heated debates among historians and philosophers of history (Nagel, 1960; Ricoeur, 2000). As we have just sketched them, they appear

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extreme and most historians adopt a middle ground. For historical scholarship to be meaningful at all, one must assume that there is at least a moderate degree of causality between events, i. e. that events are not purely contingent. When explaining the past, historians try to disentangle these threads of history, eliminating some of the “noise” that the contingency of many different processes necessarily engenders, to isolate some plausible causal narratives. Thus, they may suggest that the assassination of Franz-Ferdinand was a major cause of WWI or, to the contrary, that it was merely a pretext. Of course, this propensity to view events as caused by other events is not the monopoly of historians. Ordinary individuals act like lay historians and are also influenced by these beliefs.

Thus, people are prone to try to explain and make sense of events as they unfold (Hilton, McClure & Slugoski, 2005; Malle, 1999). An aspect of people’s representations of historical events that differentiates it from episodic memory, as typically studied in experimental psychology (see e. g. Tulving, 1983), is that it is often quite difficult to divorce an historical event, especially a minor or secondary event, from ulterior salient events. When appraising the past, people find it difficult to ignore the future of this past, when known. For example, one can hardly consider the Munich agreement of 1938 between Germany, Italy, the United Kingdom and France without thinking of World War II. It is this hindsight that makes us see Chamberlain and Daladier, the Prime Ministers of UK and France, as cowards whereas they were hailed as the guardians of peace when returning from Bavaria. More closely to us, U. S. aid to the Afghan fighters during the Cold War can be hardly appraised without considering the terrorist attacks of September 11, 2001. Thus the specter of ulterior salient events overshadows the less memorable events that preceded them.

In the present paper, we explore this “post hoc” character of historical memory among ordinary individuals by considering how the knowledge of extreme events can influence the memory and the perception of earlier more ambiguous events.

Specifically, we address three possible consequences of this ulterior knowledge. The first is the hindsight bias: after the facts, events that actually happened appear more predictable than those that did not take place (Fischhoff, 1975). For example, when one considers all the facts that precipitated the defeat of the central powers in 1914, we may be tempted to believe that, had we lived in Paris or Sarajevo in August 1914, we would have been able to predict that the allied would eventually win. Yet, “as-if” historians (Ferguson, 1997; Fogel, 1960) have done much to highlight that the course of history could have sometimes changed because of very minor facts. For example, the German general Helmut von Moltke’s sudden decision to divert forces from the western to the eastern front in July 1914 seems to have prevented the Germans from a snap victory in France (Rowley & Almeida, 2009). Experimentally, the hindsight bias is typically demonstrated by varying the outcome of a story presented to participants and asking them to estimate the likelihood of this outcome as if they were not aware of it. Compared to people who have not received the outcome (i. e. people said to be in “foresight”), those who have received it tend to view its likelihood as higher than those who have not. Although numerous explanations for this bias have been offered (for a review, see Blank & Nestler, 2007; Schwarz & Stahlberg, 2003; Sedlmeier & Jaeger, 2007), a process that seems crucial to the emergence of the bias is the existence of a causal chain that can account for the outcome (Nario & Branscombe, 1995; Blank & Nestler, 2007; Nestler, Blank & von Collani, 2008). The presence of conditions that may have facilitated the event tend to appear after the fact as determining the outcome. Thus, what may be statistically plausible suddenly appears necessarily true.

Why would this be the case? This brings us to the second phenomenon we wish to consider here: selective memory for events that are consistent with the outcome. Some antecedents are perceived to be semantically or logically consistent with known historical events. For example, knowing that Hitler behaved aggressively with his classmates may be considered as psychologically consistent with the motivations that led him to invade part of Europe during WWII.

Consistent outcomes can also be those that fit logically in a causal chain (Nario & Branscombe, 1995). Thus, knowing that Hitler was picked on by Jewish comrades at school may enter a logical chain accounting for his decision to support the Final Solution. When trying to form a judgment of predictability after the fact, we may expect events that are psychologically consistent with the outcome to be more easily retrieved than those that invoke forces that may have led to a different outcome (Carli, 1999). Obviously, this consistency is not given (Nestler et al., 2008). It is often reconstructed after the fact when people elaborate causal structures that account for the events (thus, the very same experience happening to another person could be used to explain a later conversion to Judaism).

We suggest that the salient outcome may work as a retrieval cue and lead people to recall a biased sample of antecedents (Tulving, 1983; Winter & Uleman, 1984). For example, knowing that the occupied French greeted the allied armies when they liberated their country may be associated in memory with episodes of anti-Nazi behavior during the Occupation. These may be easier to bring to mind and result in a biased memory of the Occupation. Consistent events are also more likely to be stored in memory than unrelated events, as these are logically or semantically connected with the outcome (Sulin & Dooling, 1974). This finding has crucial implications for lay perceptions of history as it suggests that events that do not nicely fit in commonly accepted historical narratives may fall into oblivion. People may hence overestimate the predictability of the future. Evidence that consistent events are better remembered than inconsistent events has been demonstrated in earlier research on the hindsight bias (e. g. Carli, 1999; Erdleider, Brandt & Bröder, 2007; Pohl, Eisenbauer & Hardt, 2003) and partially explains this bias given that people may use a biased sample of recalled events to construct their likelihood judgment.

A third related phenomenon we wish to investigate here is the tendency to perceive past events in a more extreme light once a significant outcome is known. Until a decade ago, the dominant narrative regarding the behavior of the French population during the

German Occupation was that it was divided between a great majority of *résistants* and a few mischievous collaborators (Lagrou, 2003). Viewed through the lens of the German defeat and the subsequent repression of collaboration (*l'épuration*), the behavior of the French people during this war can actually seem much less equivocal than it actually was. Most Frenchmen and women were actually neither resistance fighters (*résistants*) nor active collaborators (Azéma & Bédarida, 1993). Only a small minority of the population could be classified in these two categories. This tendency to see the past as black or white when it was actually grey may also be the consequence of one's knowledge of the significant outcome. Knowing that the French massively supported General de Gaulle at the end of the war, people may infer that this behavior, rather than being the outcome of specific circumstances offered by the defeat of Germany, reflects underlying dispositions that were already present during the Occupation. Such a phenomenon can be viewed as a manifestation of the representativeness heuristic (Tversky & Kahneman, 1974): behavior (e. g. supporting de Gaulle) is used as a cue for judging the target's membership to a specific category (e. g. *résistants*).

This process informs a phenomenon that cultural historians (van Ypersele, 2006) and social scientists (Todorov, 1994) have investigated: *heroization*, or the social process through which existing historical figures are represented as heroes within a given social community. Typically, the biography of heroes, as it is narrated within the community, depicts them as displaying, already at very early ages, traits and behavior consistent with their ulterior achievements. The saying “you don't become a hero, you were born a hero” summarizes this view. These figures fulfill a variety of functions related to the social identity of the group (e. g. reifying it, embodying the group's traits, etc.). Yet, such a heroization may be partially a consequence of the representativeness heuristic and the associated tendency to overattribute behaviors to personal dispositions (correspondent inference: Jones & Harris, 1967). Thus, people may generalize extraordinary behaviors as typical of the hero's dispositions. These dispositions can then be used to interpret

the hero's early behavior or contribute to maintain these behaviors in memory. Rehearsal of the heroic narratives by the media and through intragroup communication is likely to facilitate this process. It may thereby fuel a causal chain or a network of associations between the early behaviors and the focal "extraordinary" behavior, which suddenly appears predictable in light of these antecedents.

Here is an example of such circular reasoning:

1. Focal extraordinary behavior: "King Albert of Belgium resisted the Germans until the end".
2. Dispositional attribution: "Hence King Albert must have been a very courageous person".
3. Use of the inferred disposition to explain antecedent behaviors that could be attributed to various causes (repeated over several instances): "This underlying courage and generosity is already shown in his generous behavior towards his sister when he was 5 years old" [which could alternatively have been interpreted as reflecting cultural norms or parental expectations].
4. Prediction of future behavior based on interpretation of antecedent behavior: "The presence of these qualities so early in life suggests that he was destined to resist the Germans rather than surrender".

In this view the impression generated by the hero works as a schema that facilitates memory for the consistent behaviors and thereby the predictability of the extraordinary behavior.

In this causal chain, the source of the bias resides in the fact that the impression is an outcome of the focal behavior. This creates a self-perpetuating cycle in which memory and impression reinforce each other. This process is likely to apply not only to the perception of heroes, who have participated in exceptionally virtuous or positive behavior, but also in the perception of "villains" who have perpetrated particularly horrendous actions ("demonization"). Consistent with this view, Carli (1999) has shown that the impression generated by a man who, depending on the experimental condition, was described as

either raping or marrying a women with whom he had been previously engaged in a variety of ambiguous behaviors, predicted the occurrence of both the hindsight bias and memory for behaviors consistent with the outcome.

In the present study, we explore these processes in a historical context by presenting a story involving a character (a Belgian bartender) who performs a range of moderately courageous and moderately cowardly behaviors during WWII. We manipulated the outcome of the story which ended either in an exceptionally courageous or an extremely cowardly outcome. In a control condition, the outcome was not provided. We subsequently measured memory for the behaviors and asked participants to estimate the likelihood of the two outcomes. We also asked them to freely interpret the motives underlying several ambiguous behaviors. Our hypotheses are the following:

1. Hindsight bias (HB): Participants who are aware of the courageous outcome should find this outcome as more likely and the cowardly one as less likely than people who received the cowardly outcome. The control condition should exhibit intermediary estimates for these two measures.
2. Selective memory: Behaviors should be better recalled when they are psychologically consistent with the received outcome than when they are not. Such recollection biases should not appear when no outcome is presented.
3. Dispositional inference: Participants should attribute the outcome to the target's underlying dispositions. This should be reflected in impressions of the target as displaying more traits associated with courage in the courageous outcome condition than in the two other conditions. Similarly, the target should be viewed as psychologically weaker, more cowardly and as a “collaborator” in the cowardly outcome condition.

Method

Material

A pretest was conducted in order to construct an ambiguous story about Paul, a fictional character living during the Second World War. A total of 45 students volunteered to take part in the pretest (undergraduates at a French speaking Belgian university) designed to identify, among 120 different items, the courageous, neutral and cowardly behaviors of Paul. Hence, participants were asked to read and evaluate 40 behaviors for each of these three categories on 11-point scales (ranging from 1, *not at all courageous*, to 11, *very courageous*). We then sorted the results in an ascending order, from the most cowardly to the most courageous behavior.

We selected behaviors that were evaluated as either moderately cowardly or moderately courageous (although significantly differing from the scale midpoint) in order to guarantee the ambiguity of this material. 12 moderate representative behaviors of each category were selected and randomly inserted in a fictional diary ostensibly written between 1940 and 1945 by a man by the name of Paul B., a Belgian bartender. This diary was presented as published in a newspaper after the Second World War. The choice of this form allowed us to justify the apparent incoherence between some of the behaviors and to control possible influences of a narrative schema on memory (see for example Marsh, 2007; Kashima, 2000; Lyons & Kashima, 2006; Tversky & Marsh, 2000). The following examples of items belonging to the two categories and included in the diary are translated from French: “I never answer to Germans’ questions” (moderately courageous) and “I never laugh at the Germans” (moderately cowardly).

Two different outcomes were chosen for closing the article. These were presented as “editorial notes”: either Paul denounced a Jewish family to the *Kommandantur*, leading them to be taken to a transit camp from which they never returned (cowardly outcome) or he decided to escape with the family, thereby preventing their deportation

and helping them to escape to England. He was therefore arrested, interrogated and tortured to death (courageous outcome). As behaviors included in the story, these two outcomes were also pretested and selected as extremely cowardly and extremely courageous.

Experimental design

We used a 3 (*Outcome Knowledge*: cowardly outcome, courageous outcome, no outcome) $\times$ 2 (*Questionnaire Order*: recognition task before *versus* after Hindsight Bias questions) between-subjects design. In line with a classic hypothetical Hindsight Bias design (Fischhoff, 1975; Guilbault, Bryant, Howard Brockway & Posavac, 2004; Hoffrage & Pohl, 2003; Pohl, 2007; Schwarz & Stahlberg, 2003), the experimental groups received the outcome knowledge (hindsight): This outcome was either cowardly or courageous. The control group did not receive any outcome at all (foresight). Independently of outcome knowledge, participants received two different versions of the questionnaire in order to control any carryover effect between two measures: The recognition task was presented either before or after the Hindsight Bias measures (see also Carli, 1999).

Participants

66 (mostly female) undergraduate students at a French-speaking Belgian university ($M_{age} = 19.11$, $SD = 0.37$) took part in the study in exchange for course credit and were randomly assigned to conditions.

Procedures and measures

Participants were asked to read the diary excerpts to form an impression of the character. They were informed that the purpose of the study was to examine the formation of impressions on the basis of biographical information. After reading, participants were asked to return one week later for responding to a questionnaire and were

asked to avoid any discussion about the experiment between the two experiment sessions.

One week later, participants engaged with the free recall of the story. Participants who did actually receive the outcome were then asked to recall the outcome they learnt the previous week (manipulation check). Half of the participants had later to evaluate the perceived likelihood of different events (HB measures) and finally to complete a recognition task, whereas the other half had to respond to the recognition task before the HB measure. Since the order did not reveal a significant effect on our results, we did not consider it in the following results section.

The free recall task enjoined participants to recall what they remembered of the diary they had read the previous week as if they were retelling it to a friend. Each recalled behavior was later coded by two independent judges either as cowardly, courageous or neutral, Cohen's $\kappa = .90$. Disagreements between judges were solved through discussion.

As part of a manipulation check, only participants who read an outcome were asked to choose the outcome they had been presented with, one week before, among four options. Regarding the HB measure, participants had to estimate (on a 9-point scale from 1 = *very unlikely* to 9 = *very likely*) how likely they would have found the cowardly outcome, the courageous outcome and two filler neutral outcomes. Participants in hindsight (outcome conditions) were instructed to express their judgments imagining not to have a previous knowledge of the outcome of the story (in foresight -no outcome condition, this last instruction was removed).

The recognition task consisted of 32 multiple choices. Participants were asked to identify behaviors they had read in the diary one week earlier. Each multiple choice was made up of four propositions: a cowardly behavior, a courageous and a neutral one, and a proposition as follows: "None of these behaviors were present in the diary". For each item, one answer only was correct.

We also measured participants' judgments on 15 traits (rated on a 9-point scale from 1 = *not at all* to 9 = *very much*) to investigate their impression of the character. From these, a ten-item scale (e. g. heroic, courageous)⁶ was computed as a measure of the character's heroism (Cronbach's $\alpha = 0.89$).

Results

Manipulation Check

77.3% of participants who received the cowardly outcome remembered the outcome they received the previous week, whereas 82.6% of participants in the courageous outcome condition remembered their respective outcome.

Hindsight Bias

A mixed Outcome Knowledge $\times$ Outcome Predictability (Courageous vs. Cowardly Outcome) ANOVA was performed on the evaluations of the two focal outcomes. This analysis revealed a main effect of Outcome Predictability, $F(1, 63) = 19.86, p < .001, \eta^2 = .24$: Participants estimated the courageous outcome ($M = 4.48, SD = .23$), as more likely than the cowardly one ($M = 2.93, SD = .24$). Moreover, we found a significant interaction between Outcome Knowledge and Outcome Predictability, $F(2, 63) = 20.50, p < .001, \eta^2 = .39$.

To better assess this interaction, we computed univariate ANOVAs on both likelihood judgments. Multiple comparison tests (using the Student-Newman-Keuls method) confirmed our first hypothesis: People with the courageous outcome knowledge found this outcome as more predictable than those in the cowardly and no outcome conditions, $F(2, 63) = 25.42, p < .001, \eta^2 = .45$. By contrast, participants who

⁶ Items for the heroism scale were: heroic, courageous, cowardly (reversed item), immoral (r), coherent, nice, impressionable (r), profiteer (r), resistant, committed.

knew the cowardly outcome presented the cowardly outcome as more likely than those with the courageous outcome knowledge and those without any knowledge of outcome, $F(2, 63) = 4.56, p < .05, \eta^2 = .13$ (see Table 1).

Table 1

Means of Outcome Likelihoods as a function of the Outcome Knowledge

Likelihood of outcome	Condition					
	Courageous		Control		Cowardly	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Courageous	6.74	.39	3.52	.40	3.18	.39
Cowardly	2.22	.40	2.67	.42	3.90	.41

Recall

A mixed Outcome Knowledge $\times$ Outcome Consistency (number of recalled cowardly versus courageous behaviors) ANOVA revealed that courageous items were generally more reported ($M = 3.15, SD = .24$) than cowardly items ($M = 1.95, SD = .21$), $F(1, 63) = 24.2, p < .001, \eta^2 = .28$. As expected, we also observed an interaction between Consistency and Outcome Knowledge, $F(2, 63) = 3.31, p < .05, \eta^2 = .09$ (selective memory : hypothesis 2). Participants who received a courageous outcome clearly better recalled courageous behaviors ($M = 3.83, SD = .41$) than cowardly behaviors ($M = 1.78, SD = .36$), while participants who knew the cowardly outcome recalled to the same extent courageous ($M = 2.96, SD = .42$) and cowardly behaviors ($M = 2.36, SD = .37$). Note however that, in both instances, simple comparisons within each condition failed to reveal any significant difference between the two types of behaviors.

Recognition

In a next series of analyses, we examined recognition scores. For both courageous and cowardly behaviors, we computed hit (correctly identifying a relevant behavior that was presented as such) and false alarm scores (identifying a relevant behavior when none was presented). Hit scores were well above chance levels (.25) in both cases ($M_{\text{cowardly}} = .49$ and $M_{\text{courageous}} = .47$, both $ts > 10$, $p < .001$). In order to perform a signal detection analysis, we created sensitivity and criterion scores (using the standard formulas reported by Macmillan & Creelman, 2004). The sensitivity measure evaluates participants' accuracy (i. e. the tendency to discriminate presented and unpresented stimuli). This variable was not affected by the experimental conditions ($F(2,63) = 1.03$, $p = .36$ and $F(2,63) = 1.92$ for cowardly and courageous items respectively). By contrast, the criterion, which measured the “threshold” people use to select an item as courageous (regardless of whether it was presented or not), varied as a function of condition (for $B'_{\text{courageous}}$, $F(2,63) = 4.51$, $p = .015$). Thus, the bias towards the courageous option was weaker in the cowardly and control conditions (both $B's = .91$) than in the courageous condition ($B' = .63$). No such effect was observed for B'_{cowardly} ($F(2,63) = 2.14$, $p = .14$) although the means were in the expected direction: B' was lower in the cowardly condition ($B' = .47$) than in the courageous ($B' = .63$) and control (.66) conditions.

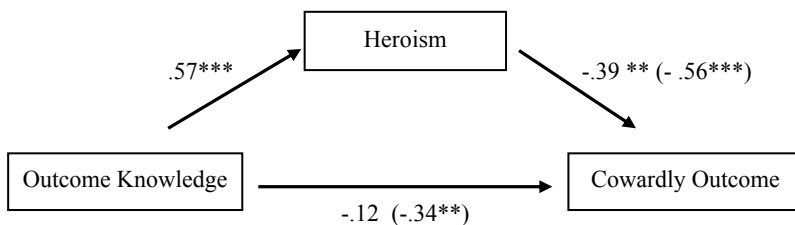
Heroism

A One-way ANOVA on Paul's heroism revealed a main effect of outcome knowledge, $F(2,683) = 18.47$, $p < .001$, $\eta^2 = .37$. As expected, a multiple comparison test (Student-Newman-Keuls) showed that Paul was perceived as more heroic when participants previously knew the courageous outcome than when they did not (respectively $M = 6.56$, $SD = 0.29$ and $M = 5.59$, $SD = .31$). Conversely, participants in the cowardly outcome condition perceived Paul as less heroic ($M = 4.03$, $SD = 0.30$) than in the two others (hypothesis 3).

Mediational analyses

We followed the procedure proposed by Baron and Kenny (1986) to test whether the effect of outcome knowledge on outcome predictability was mediated by participant's impression of the character (i. e. Paul's heroism). In doing so, we treated outcome knowledge as a linear contrast (with the cowardly outcome coded -1, the control condition coded 0, and the courageous outcome coded + 1).

First, we analyzed the mediational effect of heroism on the predictability of the cowardly outcome: Outcome knowledge (the predictor) had a significant effect on the outcome, cowardly outcome likelihood, $\beta = -.34$, $t(64) = -2.93$, $p = .005$, and on the proposed mediator, Paul's heroism, $\beta = .57$, $t(64) = 5.61$, $p < .001$, and Paul's heroism significantly predicted the likelihood of the cowardly outcome, $\beta = -.46$, $t(64) = -4.13$, $p < .001$. Moreover, in a multiple regression with both outcome knowledge and Paul's heroism as predictors, the effect of heroism remained significant $\beta = -.39$, $t(63) = -2.87$, $p < .01$ and the effect of outcome knowledge was not significant anymore, $\beta = -.12$, $t(63) = -.88$, *ns*. Hence, all conditions required for mediation (according to Baron & Kenny, 1986) were fulfilled. The indirect effect of the IV through the mediator on the DV was also confirmed by a Sobel (1982) test of mediation, $z = -2.54$, $p < .05$.



* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 1. Mediation of the effect of outcome knowledge on the perceived likelihood of the cowardly outcome by perceived heroism of the main character.

However, contrary to our prediction, a regression analysis on the courageous outcome predictability failed to yield a significant mediation: Outcome knowledge had a significant effect on the courageous outcome predictability, $\beta = .61$, $t(64) = 6.14$, $p < .001$, and on Paul's heroism, $\beta = .57$, $t(64) = 5.60$, $p < .001$, and Paul's heroism significantly predicted the likelihood of the courageous outcome, $\beta = .36$, $t(64) = 3.12$, $p < .005$. Nevertheless, in a multiple regression with both outcome knowledge and Paul's heroism as predictors, the effect of heroism was not significant, $\beta = .02$, $t(63) = .17$, although the effect of outcome knowledge remained significant, $\beta = .60$, $t(63) = 4.89$, $p < .001$, $z = 0.16$.

Discussion

In the present study, we presented a series of seemingly unrelated events as part of the personal diary of an ambiguous wartime figure. Memory for these events a week after presentation showed that events that could have been construed as mere contingencies tended to coalesce in a coherent representation. First, in appraising the likelihood of an event, participants fall prey to the "retrospective illusion" or "hindsight bias", believing that this outcome was more predictable if they believed that it had taken place than if it had not. Further, we have provided evidence that this bias was mediated by the impression of the main character: When behaving in a cowardly way, he was demonized (assuming that low scores on our heroization scale reflects demonization), which led to a perception of the cowardly outcome as more predictable than it was. The opposite occurred when he behaved heroically, although the mediation was not conclusive. Further, the knowledge of the outcome led to a biased memory for consistent antecedents. Thus, one week after the presentation of the story, people tended to remember events that fit well within the narrative than events that did not. A recognition test helped us better address the processes underlying this memorization. Participants tended to

select antecedents that were consistent with the outcome more often than inconsistent items, independently of accuracy. Thus, it seems that the received outcome acts like a heuristic cue: following the representativeness heuristic (Tversky & Kahneman, 1974), if the target behaved in a heroic way, he is assumed to be endowed with heroic dispositions and, hence, to have acted courageously in the past. Such a process may facilitate the emergence of inaccurate memories about the central character.

Heroization and Demonization seem to operate on the basis of a naïve personality theory common in the Western world (Norenzayan, Choi & Nisbett, 1999) according to which people behave consistently over time and their behaviors can be explained by underlying dispositions (Asch, 1946; Leyens, 1983; Schneider, 1973). This tendency seems to guide memory for the events by influencing both their retrieval and the elaboration of likelihood judgments. This lay *dispositionalism* seems conducive to the endorsement of a deterministic view of history wherein events that could have been explained by unpredictable situational factors are viewed as the expression of underlying dispositions. Thus, this study seems to provide an empirical illustration of the personalization of history.

Obviously, in the very construction of the material, which was presented as a personal diary, and focused on the target, this study facilitates this type of dispositionalism. It remains to be seen whether witnessing history through other channels leads to the same tendencies. Are people amenable to consider the social context in which the actors of history are embedded? An important challenge for further research involves determining whether such an apprehension of the social context leads people to a less deterministic view of history or whether, on the contrary, they tend to rely on other naïve theories, which may offer equally deterministic views of historical events. Thus, when collectives are perceived as social entities endowed with a stable underlying essence, dispositionalism is transferred at the group level (Yzerbyt, Judd & Corneille, 2004) and the very same type of determinism could appear.

Further, the procedure used in this study, although consistent with studies on the hindsight bias, differs from the typical ways in which people appraise events they did not directly experience (like WWII in the present instance). Indeed, participants learned of the antecedents before knowing the salient outcome. Yet, when observers appraise history, they often know more crucial historical events before learning about more secondary antecedents. Few people have learnt of Hitler's childhood before knowing his role in WWII! Being aware of the outcome before receiving information about the antecedents may further amplify the antecedents by orienting memory towards consistent facts and by encouraging a tendency to fit antecedents within a consistent narrative leading to the outcome. On the contrary, it may also alert naïve historians to the seeming inconsistencies between the outcome and the antecedents, thereby reducing the hindsight bias (c. f. Marchal & Klein, 2009).

Moreover, the material used in this study purposefully lacked causal structure. We believe that future research should examine in more detail the causal chains people rely on for making sense of history. How do people select causal explanations at the expense of others? McClure, Hilton and Sutton (2007) have asked people to select among a variety of causes that were part of a causal chain leading to a focal event (e. g. a house burning) those that they viewed as the most likely cause (e. g. someone throwing a cigarette in a nearby bush). Their findings suggest that people preferably choose as causes the most proximal cause that is intentional. In this view, dispositionalism and determinism may work hand in hand with people inserting in their accounts of historicity the very events that they can trace to the protagonists' intentions and dispositions. If these intentions are viewed as informed by stable dispositions, the narrative can then be endowed with an illusion of inner necessity. For example, if a skinhead who dropped a cigarette in a bush is viewed as deliberately and intentionally generating a fire (because of his aggressive dispositions), the burning of the house may be viewed as a necessity given the presence of this agent nearby the house (contrary to e. g. an accidental fire that would

be due to natural causes). Consistent with this view, one can also argue that intentional causes may prove more adequate causes of events than unintentional causes because they covary more with effects than more fleeting external causes (c. f. Hilton, Mc Clure & Slugoski, 2005). Such a focus on the elaboration of causal chains would also inform research on the hindsight bias, which has typically relied on very simple antecedents that were not amenable to the elaboration of a rich causal structure.

Finally, this study has taken a resolutely individualistic and cognitive perspective on the appraisal of history. This choice is motivated in part by the observation that research on collective memory has been mainly focused on the social factors that influence people's representation of the past (c. f. for example, Pennebaker, Rimé & Páez, 1997). This may have contributed to a tendency to view individual minds as the simple repository of already elaborated social representations of the past, without considering the active role individuals can play in shaping these views. We believe that the type of study we have conducted here is necessary to understand the processes that drive the elaboration of collective representations as, inevitably, these representations find their source, or their channel, in individual minds. Yet, the interplay between macro-social processes and individual level processes certainly deserves greater scrutiny. For example, addressing how history is taught at school and the naïve theories of history that are endorsed by history teachers and their pupils may prove an important moderator of the findings we have considered here. For example, if instructors are guided by the desire to draw moral lessons from history, they may encourage among their students a tendency to view history as predictable and thereby predetermined.

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