Who Killed Princess Diana? A Case Study of Causal Reasoning

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Abstract

How do people represent causally complex situations? A real-world case was used to investigate whether single-cause explanations are preferred, and to assess whether goals facilitate causal discounting. Participants were asked to think about the causes of Princess Diana's death and were assigned the goal to show that either the driver or the photographers were not responsible. Participants drew a causal diagram depicting their theory, and rated the importance of the causal factors mentioned. In general, people did not seek a unique cause for the event and generated multicausal explanations with no explicit links between causes. Those given the goal to defend one party included fewer causal factors related to the defended party and rated them as less important, but did not over-emphasize the importance of other factors. The results differ from those found in typical attribution tasks.

Introduction

Generating explanations for the events that occur in the world around us is a complex exercise in causal reasoning. Real-world phenomena have a wide array of antecedent events, and some subset of these must be identified and evaluated as plausible causal factors. How do people represent complex causal situations such as those encountered in daily life? A large body of research has investigated how people make causal inferences based on different patterns of evidence concerning the empirical association or covariation between events. People have been found to display a number of reasoning biases, such as a strong tendency to focus on positive information, specifically those cases where cause and effect are both present rather than instances of their joint absence in making attributions (Downing, Sternberg & Ross, 1985; Schustack, 1988). Further, discounting effects have been observed in multi-causal contexts. Individuals typically behave as though they are searching for a single cause of an event; little causal importance is attributed to other factors present in a situation (Schustack, 1988; Morris & Larrick, 1995) and often the most likely single cause is focused on (Downing et al., 1985). Kelley (1972) proposed that any one causal candidate for an event will tend to be discounted to the extent that other potential causes are available. Do these findings tell us about what people do in real-world contexts? Is it the case that people generally seek unicausal explanations even in very complex causal situations?

In causal attribution tasks, abstract stimuli and simplified hypothetical scenarios have typically been used to minimize the impact of background knowledge on studying the process of causal attribution. Consequently, the structure of these tasks may not be representative of causal problems encountered in everyday life, where complex causal relationships are often present and background knowledge can serve the induction process. Recent research examining the type of information people spontaneously seek when making causal attributions has shown that background knowledge concerning causal mechanisms figures prominently (Ahn, Kalish, Medin & Gelman, 1995). Knowledge of causal mechanisms has also been found to moderate causal judgments of covariation (Rapus & Dunbar, 1998). Further, background assumptions concerning causal relations themselves, such as causal directionality have been shown to play an important role in causal inference (Waldmann, 1996). Background knowledge, particularly that concerning causal mechanisms, may play a role in people's apparent tendency to prefer single-cause explanations. Ahn & Bailenson (1996) have found that when causal mechanisms cannot be inferred to link different causes into a coherent explanation, discounting is more likely to occur. Similarly, Thagard's (1992) explanatory coherence model would also imply discounting in such cases; it states that when no explanatory connection can be made between two theories for an event they will be held as competing, and one or the other but not both can be viewed as true.

The tragic death of Princess Diana in a Paris tunnel provided a real-world context in which to investigate how people represent complex multi-causal situations. In this case, an array of different possible causes were present prior to Diana's fatal accident. Given the presence of these multiple candidate causes, is discounting likely to be observed? Will people demonstrate a tendency to select just one cause or one class of causes subjectively considered to have maximal causal importance to explain Diana's death (e.g., the driver or those related to driver)? In the rich context of a real-world problem, background knowledge concerning causal mechanisms is free to influence causal attributions. In this case, if plausible mechanisms do exist to integrate the various possible causes of Diana's death (e.g., drunk driving and high speed chases), then it is expected that people will generally not exhibit a tendency to discount.

In the present study, individuals were asked to think about the causes of Diana's death, draw a causal diagram depicting their theory of what caused her death, and to rate the causal importance of the factors they included. People were also either given the role to defend one specific party involved in the accident in a hypothetical legal context (i.e., to think as the driver's or the photographers' lawyer) or given no role. The goal of those given the role of defense lawyer was to show that either the driver or the photographers were not responsible for Diana's death. Manipulation of goals has been shown to influence patterns of scientific reasoning,

where goals constrain the information that is attended to (Dunbar, 1993). It is hypothesized that in the current study the manipulation of roles will facilitate the discounting of causal factors. Reasoning with such a goal is expected to influence both the number of causes ascribed as well as their perceived strength or importance in producing the outcome. There are two potential ways in which discounting may be observed. First, the presence of a goal could serve to reduce the number of causes relating to the defended party that are mentioned and minimize the causal importance attributed to the defended party. Second, reasoning with this goal could result in the exclusion of causal factors relating to the defended party from people's explanations. Alternatively, it is also possible that the manipulation of goals could produce an increase in the importance ratings of alternative causes, compared to the control condition.

The production of causal models in this study provides the opportunity for perceived interrelationships between causal factors to be assessed. Individuals were instructed to show what links they believed existed between the causes in their diagrams. The structural complexity of the models will be analyzed to assess the presence of the links depicted between causes. It is expected that if multi-causal explanations are generated, evidence of connections between causes will be observed in the causal models.

Method

Participants

One hundred and two students enrolled in various psychology classes at McGill University volunteered to participate in the experiment. The data was collected in December 1997 and January 1998; at this point there was little new information broadcast concerning the accident.

Materials and Procedure

Participants completed a pencil and paper questionnaire in which they were asked to think about the causes of the death of Princess Diana. Participants in two experimental conditions received, at the outset, the instruction to assume one of two lawyer roles in their completion of the questionnaire. In the driver lawyer role, participants were asked to assume the role of the lawyer for the Ritz Hotel, and were instructed to show that the driver, Henri Paul, was not responsible for Diana's death. In the photographers' lawyer role, participants were asked to assume the role of the lawyer for the photographers and were instructed to show that the photographers were not responsible for her death.

Participants were provided with a brief summary of the facts surrounding Diana's death obtained from an AP Wire bulletin, which included information concerning the photographers' involvement, the driver's condition, a British plot, and Diana giving up personal security. Participants were then asked to draw a causal diagram depicting their theory of what caused her death given their role as either the driver's lawyer or the photographers' lawyer; those in the control condition were simply asked to draw a diagram depicting their theory. Participants were instructed to include all the causal factors they thought were relevant and what the links between them were. They were then asked to list the causal factors included in their diagrams and rate their causal importance in causing the accident on a scale from 1 to 7 (1 indicated little importance and 7 indicated extremely important). Subsequently, participants were asked to answer three questions concerning how likely the accident would have been to occur given the absence of the each of three causes: "Would the accident have been likely to occur if (1) the driver had been in perfect condition and not speeding; (2) the photographers had not been chasing the car that night; (3) Diana had not given up around-the-clock security. These items were rated on a six-point scale, with 1 indicating very unlikely to occur and 6 indicating extremely likely to occur. Last, participants were given four questions regarding their interest in Diana's life and emotional involvement; these items were rated on a 7-point scale.

Results

Coding

The causal factors included in the diagrams were comprised of four general categories of causes: Driver, Photographer, Diana, and Other causes. These were classified in the following way. Driver causes were causal factors that specified the driver in some way and included drinking, being on medication, an illegal license, and speeding. Photographer causes were those that specified the photographers in some way and included chasing Diana's car, not aiding at the accident scene, and using flash cameras. Diana causes were factors that specified some aspect related to Diana, including not wearing a seat belt, giving up personal security, and any characteristic of her personality and eminence. Other causes included those factors not classifiable as any of the above, and included a British conspiracy and another car being involved.

The complexity of the causal diagrams was also analyzed. A causal diagram was classified as simple if it depicted a direct cause(s) only (i.e., a cause that was linked directly to Diana's death.). Simple was used to describe the lack of intermediate factors and the lack of interconnections present between causes. Thus, simple models did not necessarily have to be uni-causal. An example of a simple model with multiple causes is presented in Figure 1.

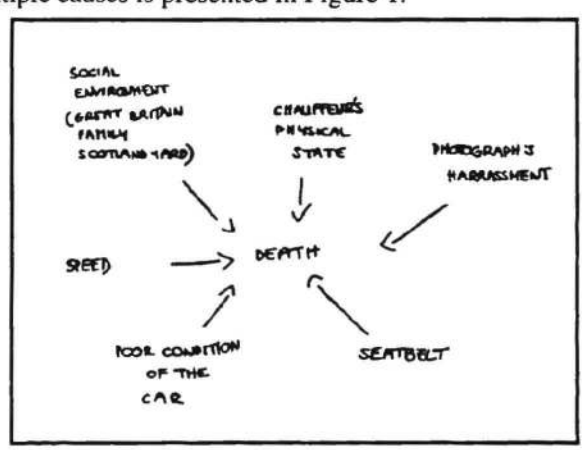

Figure 1: Example of a simple model with multiple causes

The driver's drinking being responsible for Diana's death would be an example of a direct cause. A complex causal diagram depicted at least one indirect cause. Indirect causes were those that were linked to Diana's death through another cause (or intermediate factor). An example of an indirect cause would be that the driver's drinking resulted in the driver speeding which led to Diana's death. In this case, the driver's drinking would be an indirect cause. Complex causal diagrams were further coded for three types of structure. A linear diagram consisted of one causal chain of events. For example, a diagram in which factor A caused B which caused C would be coded as a linear diagram. A multi-linear diagram consisted of two or more causal chains that converged at the outcome or at a factor prior to the outcome. An interactive diagram consisted of factors A and B causing each other and A and B causing one or more other factors.

Effect of Role Manipulation

The number of causes mentioned in each of the four categories as a function of the role assigned was compared to assess the effect of role on discounting. ANOVAs were used to compare the number of factors mentioned by participants in each condition. Significant differences in the number of factors mentioned in the Driver category, $F(2, 98)=6.67$, $p<.01$, and in the Photographer category $F(2, 98)=10.09$, $p<.0001$ were found as a function of the role assigned. Specifically, post-hoc comparisons (Sheffe tests) revealed that people assigned to defend the driver mentioned fewer factors related to the driver than those assigned to defend the photographers ($p<.01$) or those in the control condition ($p<.05$). However, these individuals did not mention more photographer factors than did participants in the control condition ($p>.05$).

	Driver-related causes		Photographer-related causes	
Defend Photographers	2.28	SD= 1.6	0.34	SD= 0.5
Defend Driver	1.12	SD= 1.3	1.06	SD= 0.8
Control	2.11	SD= 1.3	1.03	SD= 0.8

Table 1: Mean number of driver-related and photographer-related causes mentioned across conditions

Similarly, people assigned to defend the photographers mentioned fewer factors related to the photographers than those in the driver's lawyer role ($p<.001$) and those in the control condition ($p<.01$) but did not mention any more driver factors than participants in the control condition ($p>.05$). Table 1 depicts the mean number of driver-related and photographer-related causes mentioned in each condition. ANOVAs were also performed on the number of factors mentioned from the Diana category and the Other category. No significant difference emerged between the role conditions ($F(2,98)=0.46$, $p>.05$ and $F(2,98)=2.89$, $p>.05$, respectively). The role manipulation did not have any effect on the total number of causes contained in the models, nor on the number of different categories mentioned. ANOVAs conducted on the total number of factors, $F(2, 98)=0.53$, $p>.05$, and the number of different categories, $F(2, 98)=2.5$, $p>.05$, revealed no significant differences between conditions. This indicates that any differences found between conditions is not due to an overall difference in the number of causes mentioned.

	Driver-related causes		Photographer-related causes	
Defend Photographers	6.23	SD= 1.0	3.15	SD= 1.8
Defend Driver	4.93	SD= 1.3	5.90	SD= 1.3
Control	5.79	SD= 1.3	5.01	SD= 1.8

Table 2: Mean causal strength ratings for each type of cause across conditions

The effect of the role manipulation on the causal strength ratings was also measured. For each category of causal factors, the average causal strength rating was calculated over the number of items that were actually listed by the participants. ANOVAs assessed differences between conditions in these ratings for each causal category. Participants in the different role conditions did not evaluate causes from the Driver category, $F(2,83)=7.72$, $p<.0001$, or the Photographer category in the same way, $F(2,74)=16.44$, $p<.0001$. Sheffe post hoc tests revealed the same pattern observed with the number of causes. Participants assigned to defend the driver ascribed less importance to driver-related causal factors than participants in the photographers' lawyer role ($p<.001$) and the control condition ($p<.05$), but did not rate photographer-related causal factors as more important than the control group ($p>.05$). Similarly, those in the photographers' lawyer role rated photographer-related factors as less important than did those assigned to defend the driver ($p<.0001$) and the control group ($p<.001$), but did not rate the driver-related factors as more important than the control group ($p>.05$). Table 2 displays the mean causal strength ratings for driver-related and photographer-related causes across conditions. Factors related to the defended party were rated less important while the importance of alternate causes was not amplified. The causal strength ratings for Diana-related and Other causes were not significantly different across the three conditions.

This pattern of results indicates that individuals assigned the role of defending one party tended to decrease the number and causal importance of the factors related to the defended party, rather than exclude them from their models. Furthermore, defending one party did not lead to a significant increase in the importance ratings of other causes. Interestingly, the role did not reduce the overall number of causes identified; those assigned a role did not differ from the control group in the total number of causes mentioned. This indicates that individuals did not discount, even in conditions were they were given a constraining goal.

Analysis of Causal Models

Causal models were first assessed for the number of factors incorporated. Participants included, on average, 4.08 different causal factors (SD= 2.49) and, on average, 2.34 (SD= 1.31) of the four possible causal categories in their models. This indicates that multiple-cause explanations were preferred. Only 2 models included a single cause and only 3 models included just one category of causal factors. In terms of structural complexity, simple models, which included only direct causes of Diana's death, were found to be the most frequently produced (n=65, 64.4%). No models that could be coded as simple linear chains were observed. Seventeen of the models were coded as multi-linear (16.8%) and nine as interactive (8.9%). Ten models were not classifiable into any of the coding categories (9.9%). This result shows that people generally produced simple causal models where interrelations were not depicted between causes.

The effect of the role manipulation on the structure of the causal models produced was also assessed. A chi square test revealed that the different types of structures were not equally distributed across the different conditions, $\chi^2(6,N=101)= 14.35$, $p<.05$. Specifically, models with interactive structures were mostly found in the control condition (77.8%). This finding indicates that the role manipulation had an effect on the complexity of the models generated, reducing the likelihood that interactive relations would be depicted among causal factors.

Across all conditions, individuals tended to list more causes related to the driver (M=1.83) than to the photographers (M=0.82), t=6.57, $p<.0001$. There was also a difference in the average ratings of causal strength. On average, participants rated driver- related causal factors to be more strongly linked to the death of Princess Diana (M=5.72). This reveals that individuals, in general, attributed greater causal importance to the driver in explaining Diana's death.

Discussion

In the control condition, people were not observed to discount causes. The majority of explanations generated were multicausal in nature, yet they exhibited a simple structure where no indirect causes or relations between causes were depicted. Relatively few multi-linear or interactive models were observed, and the latter were more likely to be produced by participants in the control condition. The manipulation of roles in this study resulted in the inclusion of fewer causes associated with the defended party, and their importance was downplayed. However, individuals did not show a tendency to place greater importance on other causal factors.

The results of the goal manipulation show that when people were given the role to defend either the driver or the photographers, they decreased both the number of causal factors associated with the defended party and the strength of the causal role assigned to them. Specifically, when instructed to defend the driver, individuals specified fewer causes related to the driver in their models and rated them as less important than causes associated with the photographers. The same pattern of minimization held when people's goal was to defend the photographers. Interestingly, individuals defending either the driver or the photographers did not ascribe more importance to other causal factors than those in the control condition. Rather, people downplayed the causal significance of the defended party and did not attempt to over-emphasize the importance of other causes. The total number of causes mentioned as well as the number of different causal categories referred to, however, did not differ between the role and control conditions. These results indicate that the presence of goals in this study constrained the information attended to, which is consistent with previous findings (e.g., Dunbar, 1993; Spellman & Holyoak, 1996). It must be emphasized that the assignment of a particular goal produced a tendency to minimize the importance of the defended party; causes related to the defended party were not simply excluded, and single-cause explanations for Diana's death were not generally observed. Thus individuals in the goal condition discounted to the extent that they minimized the importance of causes related to the defended party.

Analysis of the structural complexity of the causal models further revealed that although most explanations for Diana's death were simple in structure (i.e., no indirect or interrelated causes were depicted), they included multiple causal factors. Models were not found to be limited to the one cause or one class of causes rated to have maximal causal importance, as explanations based on a single cause or a single category of cause were rare; models, on average, included four causes. This indicates a preference for multi-cause explanations for Diana's death, as was hypothesized.

The fact that single-cause explanations were not observed in this study, even in the goal conditions may be due to the interrelatedness of the causal factors operating in the situation and the fact that these causes can be integrated via mechanisms. The different causal factors present can be integrated to form a single coherent explanation of Diana's death. Ahn and Bailenson's (1996) findings indicate that discounting is less likely to occur when a mechanism exists to cohere two causal explanations for an event. For example, both the driver and the photographers can be assigned causal status, and viewed to contribute to the crash by increasing the speed of Diana's car. Similarly, Thagard's (1992) explanatory coherence model states that explanations will be viewed as competing when no explanatory connection between them can be made. Analysis of the causal diagrams, however, revealed that people did not generally provide mechanisms showing such integration of the causal factors (i.e., the majority of people produced simple models, rather than multi-linear or interactive ones). Thus, while people did not exclude causes, they did not explicitly integrate them either. A plausible interpretation of this finding is that the causes were integrated, but that the process is not necessarily an explicit one. It is possible that the majority of individuals, for pragmatic reasons, did not feel it necessary to specify how the causes were related, perhaps assuming that the connections were obvious.

Although few interactive models were observed, they were more likely to be generated by individuals who had no role assigned to them. It appears that having the goal to defend one party had an impact on the structure of the model produced, specifically lowering the likelihood of depicting interacting causes. This indicates that the manipulation of goals resulted in a simplification of the explanations generated.

Further, linear models, in which a single causal chain is delineated, were not observed. Previous investigation of people's representations of real-world causal processes has found causal models to be characterized by linear chains (White, 1995). This divergence may be due to the temporal features of the causal situation used in this study. In this case, the causal factors can be represented as operating simultaneously (i.e., the driver was drunk at the same time the photographers were in pursuit of Diana's car). The presence of simultaneous causes may be less conducive to linear-chain representations. Consequently, time factors may be an important constraint on the way models are constructed.

Overall, these results suggest that findings from typical causal attribution tasks may not all be generalized to real-world contexts. The goal manipulation of adopting a certain viewpoint resulted in discounting, in terms of individuals minimizing the role of the defended party rather than excluding these factors. In the absence of a goal, however, the apparent bias of discounting was not observed. In addition, goals resulted in the simplification of causal models, particularly of interactive causal relationships. In the present real-world situation where multiple interrelated causes are available, focusing on a single cause is not a reasonable strategy to use. In general, discounting should be less likely to occur in real-world situations where many interrelated causes interact. Further, causal mechanisms will play an important role in determining which factors are accorded causal status and which can be discounted.

The present results also answer the question of who killed Princess Diana in the minds of people. It appears that while no one party was held solely responsible for causing her death, individuals tended to name more causes associated with the driver and ascribed greater importance to them. Thus, the driver was regarded as more culpable in the public's eye.

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