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Learning About What Others Were Doing: Verb Aspect and Attributions of Mundane and Criminal Intent for Past Actions

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Abstract

Scientists have long been interested in understanding how language shapes the way people relate to others, yet it remains unclear how formal aspects of language influence person perception. We tested whether the attribution of intentionality to a person is influenced by whether the person's behaviors are described as what the person *was doing* or as what the person *did* (imperfective vs. perfective aspect). In three experiments, participants who read what a person *was doing* showed enhanced accessibility of intention-related concepts and attributed more intentionality to the person, compared with participants who read what the person *did*. This effect of the imperfective aspect was mediated by a more detailed set of imagined actions from which to infer the person's intentions and was found for both mundane and criminal behaviors. Understanding the possible intentions of others is fundamental to social interaction, and our findings show that verb aspect can profoundly influence this process.

Keywords

People's impressions of others often rely on hearing or reading about the others' behavior through daily conversations or exposure to information from the news. Semantic aspects of these behavioral descriptions undoubtedly affect impressions of the actors, such that someone described as *viciously* shoving a friend will be perceived as more aggressive than someone described as shoving a friend in a *friendly* manner (Higgins, Rholes, & Jones, 1977; Loftus & Palmer, 1974; Srull & Wyer, 1979). But how do formal linguistic features of descriptions of actions influence people's impressions of the actors? Does the verb aspect of these descriptions alter such impressions? Would people attribute greater intentionality to another person if they learned what that person *was doing*, as opposed to what he or she *did*? Could this subtle linguistic difference influence legal decision making by affecting attributions of intentionality? As the role of language in influencing thought and judgment has long been a topic of scientific interest (Chomsky, 1975; Grice, 1975; Vygotsky, 1978; Whorf, 1956; see also Gleitman & Papafragou, 2005), a wide range of researchers may desire answers to these questions.

In this article, we report research that was designed to test whether the verb aspect used in descriptions of a person's behaviors influences attributions in the absence of differences in the content of those descriptions. Specifically, we examined whether attributions of intentionality were affected by whether a person's prior behaviors was described using the imperfective aspect (i.e., what the person *was doing*) or the perfective aspect (i.e., what the person *did*; Fiske, 1989; Heider, 1958; Jones & Davis, 1965; Shaver, 1985).

Research has shown that verb aspect can change the way people structure a described behavior (Comrie, 1976; Vendler, 1957). The imperfective aspect (e.g., "Keith *was pointing* his gun") causes people to represent a person's behavior as a dynamic, unfolding sequence of actions. By contrast, the perfective aspect (e.g., "Keith *pointed* his gun") causes people to represent a person's behavior as a completed whole (Madden & Zwaan, 2003).[1] Thus, the imperfective aspect, relative to the perfective aspect, may support a more detailed representation

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of a described behavior that includes a greater number of concrete, component actions (Comrie, 1976; Madden & Zwaan, 2003). In one demonstration (Morrow, 1990), participants memorized a map of a house prior to reading about the movement of a protagonist inside the house. This movement was conveyed using either the imperfective or the perfective aspect (e.g., "John *was walking/walked* from the kitchen to bedroom"). The imperfective-aspect description caused readers to imagine the protagonist on the path toward his destination (i.e., walking toward the bedroom), whereas the perfective-aspect description caused readers to imagine the protagonist stopped at his destination (i.e., in the bedroom; see Zwaan & Radvansky, 1998).

Verb aspect has been shown to influence not only representations of behavior, but also the processing of described actions, which in turn can affect narrative comprehension. Presumably, readers perceive an unfolding behavior (as opposed to a completed behavior) as more pertinent to comprehending subsequent information and therefore analyze an unfolding behavior in greater detail (Zwaan & Radvansky, 1998). Studies suggestive of this possibility have shown that behavior descriptions marked with the imperfective aspect are more memorable than the same behavior descriptions marked with the perfective aspect (Carreiras, Carriedo, Alonso, & Fernandez, 1997; Magliano & Schleich, 2000). Perhaps surprisingly, although prior research on verb aspect has examined behavior representation and detailed processing (as indexed by memory performance), it has not considered the implications of behavior representations for attributions about the actor's intent or assessed detailed processing directly.

Imagine that you hear that a defendant in a criminal case "was pointing his gun at and was firing gun shots at his victim" or that the defendant "pointed his gun at and fired gun shots at his victim." At first sight, these two descriptions appear similar, but we hypothesized that the imperfective aspect may direct perceivers to structure the defendant's behavior as unfolding, as opposed to finished (Madden & Zwaan, 2003). Representing the defendant's behavior as unfolding may compel perceivers to imagine a greater number of intermediary or component actions and to imagine details of what pointing and firing a gun entails (Madden & Zwaan, 2003), thus creating a more detailed set of behavioral components that can be used subsequently in making attributions of intentionality (Newtson, 1973). That is, the imperfective aspect may enable perceivers to more vividly imagine the defendant's concrete, component actions and consequently may increase the number of behavioral details that can be used to infer the criminal's intentions.

In theory, a more detailed depiction of action may promote attributions of greater intentionality for several reasons. First, a detailed depiction of behavior could increase attention to the intentions that gave way to each component behavior, thus resulting in a set of many intentional actions on which to base global intentionality judgments. Perceiving an action as corresponding to personal goals and intentions apparently happens by default, even when the action occurs in the presence of social pressures that seemingly invite external attribution (i.e., the *correspondence bias*; Jones & Harris, 1967). Second, a detailed behavior representation may highlight the effort required by the multiple actions and thereby imply considerable determination and intent (Aronson & Mills, 1959; Kelley, 1973). Third, a detailed representation with more imagined actions provides more opportunities to take the actor's perspective and consequently provides more instances in which the perceiver may imagine the actor's intentions (Kozak, Marsh, & Wegner, 2006; Wegner & Giuliano, 1982).

Prior research has shown that more detailed analyses of behaviors promote more internal attributions to actors (i.e., psychological explanations, as opposed to external, situational explanations of behavior; Deaux & Major, 1977; Lassiter, 1988; Newtson, 1973; Newtson & Rinder, 1979; Wilder, 1978a; also see Lassiter, Geers, Munhall, Ploutz-Snyder, & Breitenbecher, 2002). In one experiment (Newtson, 1973), participants watched a 5-min video depicting a man engaging in mundane behaviors (e.g., reading a book, throwing away garbage), having been instructed to segment his behavior into either many small units or a few large units. Later, participants were asked to imagine the man engaging in certain behaviors (e.g., solving a math problem) and to ascribe external or internal causes to his behavior (e.g., "the problem was easy" vs. "he is good at math"). As anticipated, participants assigned to segment the videotaped behavior into many small units were more likely to choose the internal explanations for his later behaviors.

Attributions of intentionality are particularly meaningful in the context of impression formation because they contribute to judgments of personal responsibility and blame for behavior outcomes in a fashion that is uniquely human (Leyens et al., 2000; Pinker, 1997; Schlenker, 1997). Prior research suggests that intentionality judgments can be influenced by world knowledge related to the person being judged (e.g., knowledge that adults are more capable of high-level cognition than children are; Gray, Gray, & Wegner, 2007) and the behavior being considered (e.g., knowledge that falling in love is often unintended; Malle & Knobe, 1997), as well as by the perceiver's ability and motivation to make mental-state inferences (e.g., Kozak et al., 2006). For example, people are more inclined to attribute intentionality to another person when they are directly asked to imagine the thoughts and feelings of that person (Kozak et al., 2006). Also, people are more inclined to make attributions of intentionality when they consider behaviors that are presumed to be driven by beliefs and desires, such as asking a love interest out on a date, than when they consider behaviors that are emitted more automatically, such as sweating (Malle & Knobe, 1997). Note, however, that this past research has investigated effects of semantic aspects of the information presented (e.g., characteristics of the actors—Kozak et al., 2006; different behavior descriptions—Malle & Knobe, 1997) and of direct instructions to take another person's perspective (Kozak et al., 2006), but has not investigated possible effects of formal aspects of behavior descriptions on attributions of intentionality.

In three experiments, we examined how verb aspect affects the process of making intentionality attributions in the context of everyday (Experiments 1 and 2) and criminal (Experiment 3) behavior. In each experiment, participants were randomly assigned to read a set of descriptions of a person's behavior. These descriptions were identical across conditions except for whether the imperfective or perfective verb aspect was used (e.g., "Keith *was playing/played* basketball"). Subsequently, participants completed measures assessing the effects of verb aspect on detailed processing of the behaviors, accessibility of intention-relevant concepts in memory, and intentionality attributions. To assess the detailed processing of the behaviors, we measured behavior segmentation rates (Experiment 2) and the self-reported ease of imagining the subcomponents (or segments) of the behaviors (Experiment 3; "How easy was it for you to imagine this person's concrete actions?"). These two theoretically equivalent measures are consistent with past conceptualizations of detailed processing (Newtson, 1973). To assess demand effects, at the close of each experiment we asked participants to guess its purpose. As no participant correctly guessed the purpose of any of the three experiments, we do not discuss the issue of demand further.

Experiment 1

In Experiment 1, we tested whether reading about what someone *was doing* (imperfective aspect) would increase the accessibility of intention-relevant concepts in memory (e.g., "want"), relative to reading about what someone *did* (perfective aspect). In this experiment, participants were asked to read a set of behavioral descriptions attributed to a character; these descriptions were conveyed in either the imperfective aspect or the perfective aspect. After participants read the descriptions, they completed a measure of memory for intention-relevant concepts. As attributions of intentionality require mental-state concepts such as goals and wants (Heider & Simmel, 1944), we predicted that the amount of residual activation of these concepts (following the reading task) would be greater under conditions in which we expected greater attributions of intentionality (i.e., the imperfective-aspect condition).

To test our hypotheses, we asked 54 introductory psychology students to read a series of 15 descriptions of evaluatively neutral behavior performed by a male protagonist named Keith.[2] Participants were randomly assigned to a condition in which all the behavioral descriptions were conveyed in the perfective aspect or a condition in which all the behavioral descriptions were conveyed in the imperfective aspect (e.g., "Keith *prepared/was preparing* dinner for some friends"; "Keith *read/was reading* a chapter in his psychology book"; "Keith *made/was making* small talk with a neighbor"). Participants were instructed to read the behavioral descriptions, which were presented simultaneously, and to try to understand Keith.

After participants read the behavior descriptions, they completed an ostensibly unrelated experiment on verbal fluency that involved completing word stems. Specifically, participants were shown 13 word stems, 7 of which could be completed to form either a word related to intentions (*try*, *aim*, *goal*, *determination*, *plan*, *intent*, and *want*) or a word not related to intentions (e.g., *toy*, *ail*, *coal*, *extermination*, *peon*, *indent*, and *wand*, respectively). The word stems were presented sequentially in the following order (target stems are in italics): "S_ _P," "*T_Y*," "*AI_*," "F_ _OR," "_*OAL*," "_OOT_," "MO_SE," "_ _*TERMINATION*," "*P_ _N*," "RU_B_R," "*IN_E_T*," and "*WAN_*." The number of target stems completed with intention-relevant words was used as a measure of accessibility of intention-relevant concepts.

As predicted, participants in the imperfective-aspect condition completed more word stems with words denoting intentions than did participants in the perfective-aspect condition ($M = 3.89$, $SD = 1.10$, vs. $M = 2.68$, $SD = 1.25$), $F(1, 53) = 13.31$, $p = .001$, $d = 1.00$. This finding is consistent with the possibility that participants who read the imperfective-aspect descriptions considered the actor's possible intentions more than participants who read the perfective-aspect descriptions did. Nevertheless, this finding does not necessarily imply that verb aspect increased attributions of intentionality directly to the actor. Therefore, in Experiment 2, we examined attributions of intentionality to the actor, as well as differences in the detail with which behavior is construed (i.e., behavior segmentation).

Experiment 2

Experiment 2 tested whether framing a person's prior behaviors as what that person *was doing* would promote a more fine-grained analysis of the behaviors (indexed by behavior segmentation) compared with framing the behaviors as what the person *did*, and would thereby increase attributions of intentionality to that person. In this experiment, 37 introductory psychology students were told that they would participate in a study on impression formation in which they would read about a person's behaviors. They read nine descriptions of evaluatively neutral behaviors attributed to "Keith"; the descriptions were presented sequentially on a computer screen, and, depending on condition, either all were written in the imperfective aspect or all were written in the perfective aspect. These descriptions were conceptually similar to the ones used in Experiment 1 but described a different set of behaviors (e.g., "Keith *sipped/was sipping* his coffee," "Keith *opened/was opening* his mail," and "Keith *washed/was washing* his hands"). Participants were asked to read each behavior description, imagine the described behavior, and then place a tally mark on a sheet of paper for each meaningful segment of action they imagined (for similar procedures, see Wilder, 1978a, 1978b; Newtson & Rinder, 1979). Participants' tally marks served as an indication of the number of action segments they registered from the behavior descriptions, and the number of action segments (tally marks) was averaged across the nine target behaviors.

After participants performed this task, they completed three intention-attribution items from the Mind Attribution Scale (Kozak et al., 2006) in reference to Keith: "Keith is capable of doing things on purpose," "Keith is capable of planned action,"

and "Keith has goals." Participants responded to the items on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). As in prior research (Kozak et al., 2006), the three items formed a coherent scale (α = .84), and responses were averaged to form a measure of intentionality attribution.

We hypothesized that the imperfective aspect would enhance intentionality attributions by promoting the detailed segmentation of behavior descriptions. As predicted, participants in the imperfective-aspect condition perceived Keith's behavior as more intentional than did participants in the perfective-aspect condition ($M = 5.55$, $SD = 1.10$, vs. $M = 4.63$, $SD = 0.72$), $F(1, 35) = 9.28$, $p = .004$, $d = 1.00$. Also as predicted, participants in the imperfective-aspect condition tallied more action segments than did participants in the perfective-aspect condition ($M = 4.64$, $SD = 1.99$, vs. $M = 2.72$, $SD = 1.09$), $F(1, 35) = 13.60$, $p = .001$, $d = 1.23$, a pattern suggesting more detailed processing in the former condition.

Next, we tested whether the number of action segments registered mediated the effect of verb aspect on intentionality attribution. To assess mediation, we estimated the standard deviation of the indirect effect of verb aspect (via the number of action segments) on intentionality attributions for 5,000 bootstrapped samples (Preacher & Hayes, 2004). The indirect effect was estimated to lie between 0.03 and 0.84 with 95% confidence ($b = 0.38$, $SE = 0.21$). Because zero was not included in the 95% confidence interval, this analysis demonstrates significant mediation.

Experiment 3

In our third experiment, we tested whether the effects of verb aspect would extend to a legal decision-making scenario in which participants decided whether the actor had a criminal intention to harm a victim. We asked 48 introductory psychology students to take the perspective of a judge in a criminal case about a man who shot another man after a verbal dispute (this report was modeled from the summary statement in *State v. Williams*, 2010). Participants were randomly assigned to read either a perfective-aspect or an imperfective-aspect version of the short case report:

> After an argument broke out between James Westmoreland and Darryl McElroy in a 2009 dice game in East Cleveland, Westmoreland *was pulling/pulled* out his gun and *was pointing/pointed* it at Darryl McElroy. As the other players, including Darryl McElroy, attempted to run away, Westmoreland *was firing/fired* gun shots, one of which struck McElroy in the back, paralyzing him. McElroy and others identified Westmoreland as the shooter, and Westmoreland was later arrested and confessed to the crime.

After participants finished reading the report, they rated whether they thought Westmoreland intentionally or unintentionally caused harm to McElroy. Specifically, they rated the extent to which Westmoreland knowingly (from −5, *unknowingly*, to +5, *knowingly*), intentionally (from −5, *unintentionally*, to +5,

intentionally), and deliberately (from −5, *accidentally*, to +5, *deliberately*) caused harm to McElroy. These three items formed a cohesive scale (α = .85), and ratings were therefore averaged as a measure of criminal intentionality. In addition, participants completed the intention-attribution items from Experiment 2 (taken from the Mind Attribution Scale; Kozak et al., 2006), but in reference to Westmoreland (α = .69). Subsequently, participants were asked to self-report the extent to which the case report promoted the detailed processing of the criminal act. They were asked to rate, on a scale from 1 (*very difficult*) to 7 (*very easy*), the extent to which the case report made it easy or difficult for them to imagine (a) the crime unfolding, (b) Westmoreland's concrete behaviors, (c) Westmoreland's physical movements, and (d) the details of the crime. To facilitate accurate reports, we made the case report available for viewing while participants responded to each of these questions. Because ratings of the four items were highly correlated (rs = .46–.71), they were averaged to form a measure of detailed processing (α = .87).

As predicted, participants in the imperfective-aspect condition indicated greater levels of criminal intentionality than did participants in the perfective-aspect condition ($M = 4.89$, $SD = 1.06$, vs. $M = 3.69$, $SD = 1.94$), $F(1, 46) = 7.02$, $p = .01$, $d = 0.76$. By the same token, as in Experiment 2, participants in the imperfective-aspect condition made significantly higher intention attributions (the Mind Attribution Scale measure) than did participants in the perfective-aspect condition ($M = 4.61$, $SD = 0.84$, vs. $M = 4.06$, $SD = 0.79$), $F(1, 46) = 5.29$, $p = .03$, $d = 0.66$. In addition, participants in the imperfective-aspect condition reported imagining the criminal behaviors in a more detailed way than did participants in the perfective-aspect condition ($M = 5.40$, $SD = 1.16$, vs. $M = 4.48$, $SD = 1.34$), $F(1, 46) = 6.39$, $p = .02$, $d = 0.73$. This latter finding conceptually replicates the finding of more detailed processing (as indexed by action segmentation) in the imperfective-aspect condition of Experiment 2.

To assess mediation, we examined whether verb aspect influenced perceptions of criminal intentionality through the detailed-processing index. The indirect effect of aspect (via the detailed-processing index) on perceptions of criminal intentionality was estimated to be between 0.06 and 1.15 with 95% confidence ($b = 0.50$, $SE = 0.28$). This finding suggests that the imperfective aspect enhanced attributions of criminal intentionality because it promoted a more detailed processing of the criminal behaviors. Likewise, in a separate mediation analysis, we found that the indirect effect of aspect (via the detailed-processing index) on intention attributions was also significant (95% confidence interval = 0.05, 0.52; $b = 0.24$, $SE = 0.12$). This latter mediation effect is conceptually equivalent to the mediation effect in Experiment 2.[3]

General Discussion

Despite decades of interest in impression formation and much research on intentionality attributions, there has been an

absence of work on how the linguistic structure of behavior descriptions influences impression formation. We examined whether describing a person's behaviors in terms of what the person *was doing* (rather than what the person *did*) would enhance intentionality attributions in the context of both mundane and criminal behaviors. In Experiment 1, participants had intention-relevant concepts more accessible in memory after reading descriptions of a person's behaviors conveyed in the imperfective aspect than after reading the same descriptions conveyed in the perfective aspect. Experiment 2 extended these findings by showing that the imperfective aspect led to segmenting more actions from the described behaviors, which in turn increased attributions of intentionality to the actor. Finally, Experiment 3 highlighted important implications of our model for assessments of criminal intentionality and also conceptually replicated the findings of Experiment 2. In particular, Experiment 3 revealed that when violent, unlawful actions were described in the imperfective rather than the perfective aspect, the perpetrator of the actions was viewed as engaging in them with greater harmful intent. As in Experiment 2, these effects of aspect were traced back to differences in the detail with which the actions were processed.

Although our findings were consistent, our experiments suggest several areas for additional research. First, we used correlational procedures to test mediation and therefore cannot fully discount a spurious relation between detailed behavior processing and intentionality attributions. Nevertheless, given that prior experimental evidence has shown a direct causal link between these two variables (e.g., Newtson, 1973), the possibility of a spurious relation is unlikely. Second, we used a limited set of assessments of detailed processing, and convergent findings with conceptually similar measures are needed to provide more confidence in our conclusions. For example, detailed processing might be measured by the speed of deciding whether a component action (e.g., "put on shirt") is part of a larger behavior (e.g., "*was getting/got* dressed"). Third, we are aware that psychological phenomena are complex and multidetermined and do not presume that a single mechanism underlies the effects we observed. For example, compared with the perfective aspect, the imperfective aspect may also suggest a longer behavior duration, which may in turn suggest greater persistence and intent. Future work should address these possibilities.

Further research is also required to examine the generality of our initial findings, by using different measures of person perception (e.g., direct assessments of personal responsibility for outcomes), contexts (e.g., distracting environments), verbs (e.g., randomly selected verbs), and tenses (e.g., present tense). For example, the effects of aspect on intentionality attributions might be more pronounced for verbs that describe easily segmentable, complex, conscious behaviors (e.g., studying) than for verbs that describe less segmentable, simple, perhaps automatic behaviors (e.g., sweating). Also, the effects of aspect on intentionality attributions might decrease (or increase) when situational variables (e.g., the presence vs. absence of

distracting noise in a courtroom) decrease (or increase) the ability to process a described behavior in a detailed way. Finally, the influence of verb aspect on intentionality attributions may be weaker for verbs in the present and future tenses than for verbs in the past tense. For example, in the present tense, aspect is unlikely to produce differences in detailed processing because both the perfective and the imperfective aspect ("I *walk/am walking*") suggest a current, unfolding (and incomplete) action.

Despite the need for future research, our initial findings have important practical implications. For example, the results of Experiment 3 suggest that a defense attorney might be able to make clients appear less responsible for their actions by using the perfective aspect in statements about their behavior (i.e., what the clients *did*). In contrast, a state attorney might be able to make a defendant appear more guilty by presenting a closing statement using the imperfective aspect rather than the perfective aspect. Judgments of mental capacity for goal-directed behavior figure prominently in all aspects of legal proceedings, and our results show how subtle aspect cues may bias these judgments.

Notes

1. Note that the imperfective and perfective aspect are presumed to influence whether a behavior is structured as ongoing or completed, and not necessarily whether it is habitual (Comrie, 1976). In English, for example, either the perfective or the imperfective aspect can be used to describe habitual actions, although research suggests that people most often choose the perfective aspect to describe habitual action (Tagliamonte & Lawrence, 2000).

2. Data from 2 participants were lost because of a computer error. Data from an additional 2 participants were discarded because they spent less than 15 s reading the behavior descriptions. Eliminating these participants did not change the pattern of the cell means.

3. In addition to promoting intentionality attributions in Experiment 3, the imperfective aspect might have created a more coherent representation of the story than the perfective aspect did because the case report in the imperfective aspect depicted a series of behaviors that apparently unfolded into each other. Although these potential discourse-level differences cannot account for our results in Experiments 1 and 2, which used disjointed actions that would not be construed as a coherent story, such differences may be the subject of future narrative-comprehension research.

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