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Eye Movements to Audio-Visual Scenes Reveal Expectations of a Just-World

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Abstract

When confronted with bad things happening to good people, observers often engage reactive strategies, such as victim derogation, to maintain a belief in a just world. Although such reasoning is usually made retrospectively, we investigated the extent to which knowledge of another person's good or bad behavior can also bias people's *online* expectations for subsequent good or bad outcomes. Using a fully-crossed design, participants listened to auditory scenarios that varied in terms of whether the characters engaged in morally good or bad behavior while their eye movements were tracked around concurrent visual scenes depicting good and bad outcomes. We found that the good (bad) behavior of the characters influenced gaze preferences for good (bad) outcomes just prior to the actual outcomes being revealed. These findings suggest that beliefs about a person's moral worth encourage observers to foresee a preferred deserved outcome as the event unfolds. We include evidence to show that this effect cannot be explained in terms of affective priming or matching strategies.

Keywords: belief in a just world; visual-world paradigm; eye movements; just-world schema; moral behavior

Eye Movements to Audio-Visual Scenes Reveal Expectations of a Just-World

In our day-to-day lives, we encounter bad things happening to good people, such as children facing starvation (Pflanz, 2011), and good things happening to bad people, such as a serial rapist winning the lottery (e.g., Edwards, 2009). When confronted with such episodes of unjust suffering and undeserved benefit, people are rarely apathetic, and a long tradition of research inspired by Lerner's (1977, 1980) just-world theory has attempted to shed light on the various ways people make sense out of and find meaning in the bad (good) things that happen to good (bad) people.

According to just-world theory, people are motivated to maintain the functional belief that they live in a world in which people get what they deserve. Perhaps the most compelling evidence of the importance of a "just world" to people comes from research showing that people may, at times, derogate an innocent victim's character to maintain a sense of justice (Lerner & Simmons, 1966; Ryan, 1971)—after all, in a just and orderly world, bad things happen only to bad people. Moving beyond victim rejection, more recent research has shown that people adopt a variety of strategies to maintain a commitment to justice (see Callan & Ellard, 2010; Hafer & Gosse, 2010), such as through biased recollection of past events (Callan, Kay, Davidenko, & Ellard, 2009; Gaucher, Hafer, Kay, & Davidenko, 2010), immanent justice reasoning (Callan, Sutton, & Dovale, 2010), and perceiving benefits in the later lives of victims of tragedy (Anderson, Kay, & Fitzsimons, 2010).

One common feature of these and other strategies for preserving a belief in a just world is that they involve people's retrospective interpretations of the bad (good) outcomes that happen to good (bad) people. From a just-world theory perspective, however, a concern for deservingness may also establish a real-time *expectation* or "perceptual readiness" (Bruner, 1957) for outcomes that are consistent with what people deserve. That is, if people are motivated to "see" justice and deservingness in their lives, they might be immediately

biased towards expecting good (bad) things to happen to good (bad) people. This analysis resonates with Hafer and Bègue's (2005) and Lerner and Clayton's (2011) contention that people may perceive justice in their daily experiences via the application of just-world heuristics (e.g., "bad things are caused by bad people"; see Callan et al., 2010). Extending their analysis, we argue that along with assimilating past experiences into such a just-world schema (e.g., by reconstructing the past), people may also be incrementally updating their predictions of just-world congruent outcomes for good and bad people as a scenario is unfolding in time.

To test this novel prediction, we eye-tracked observers in a "visual world paradigm" (e.g., Cooper, 1974), in which eye-movements around visually presented objects are closely time-locked with some related auditory input. This approach is highly sensitive in that it allows an implicit, incremental analysis of gaze preference between visual objects as a scenario develops. For example, such an approach has been used recently to demonstrate that people are able to infer the thoughts of others and set up expectations about those people's actions, based on their beliefs (Ferguson, Scheepers, & Sanford, 2010; Ferguson & Breheny, 2012) or complex desires (Ferguson & Breheny, 2011).

We therefore adopted this methodology to investigate whether people infer good or bad outcomes in an unfolding scenario that is depicted onscreen and accompanied by an auditory narrative for characters that have been introduced beforehand as either good or bad people. On the basis of the foregoing analysis, we predicted that people quickly build up "just-world" expectations about forthcoming events unfolding in scenarios, which is reflected in their eye movement patterns towards the relevant objects in the scene.

Participants first listened to several auditory descriptions of "good" or "bad" people to set up the appropriate just-world biases. These contexts were followed by target sentences that described either positive outcomes or negative outcomes, paired with two relevant visual

images. Eye movements around the visual scenes were monitored and time-locked to the

auditory target sentences to examine good/bad context effects on participants' expectations of

good or bad outcomes. We expected that people's eye movements towards story-relevant

visual images would reflect their knowledge of the target person's prior moral or immoral

behavior (e.g., focusing one's gaze more on an image of a man in a car crash than a man

finding a $100 bill after learning that he cheated on his wife).

Method

Participants

Forty-four native English speakers from the University of Kent were paid to participate in the

study ($M_{age} = 22.93$, $SD_{age} = 4.89$; 61% female).

Stimuli and Design

Twenty experimental images were paired with an auditory passage in one of four conditions.

Visual displays were created using commercially available clipart and were presented on a 17

inch colour monitor in 1024 x 768 pixels resolution. Each scene contained two images: a

good outcome (e.g., image of a man celebrating) and a bad outcome (e.g., image of a car

crash). To prevent any systematic viewing strategies, left-right spatial arrangements of these

picture elements was counterbalanced across items, and image sizes were equated (Good

outcome: $M_{width} = 352$ ($SD = 64.9$), $M_{height} = 339$ ($SD = 57.3$); Bad outcome: $M_{width} = 355$ (SD

$= 39.7$), $M_{height} = 352$ ($SD = 53.1$)), ps > 0.42.

Sound files consisted of two parts, context and outcome, resulting in a 2 (good vs. bad

person) x 2 (good vs. bad outcome) within-subjects design. This fully-crossed design

eliminates the possibility that participants would base their expectations on simple learned

associations between people and outcomes over the course of the experiment. A context

introduced a story character as being either a "good" or "bad" person. For example, one of

the twenty contexts described an interaction between a married couple, where the husband

was described as either being violent or loving:

> Allen was at home watching the TV when his wife came home from work. Because she had been working a lot of overtime recently, she was tired and wanted to sit down and relax. [Allen yelled at her to make him his dinner. When she said she wanted to relax for a moment, he called her a "lazy bitch" and slapped her across the face.] / [Knowing this, Allen gave her a bouquet of flowers he bought earlier that day and made her favorite dinner while she put her feet up].

Target sentences then described either a "good" outcome or a "bad" outcome. These

sentences were identical until roughly mid-sentence, when the valence of the outcome was

revealed, as in (1) and (2):

> (1) The next morning, Allen was involved in a *hugely successful business contract…

> (2) The next morning, Allen was involved in a *terrible car accident…

One version of each item was assigned to one of four counterbalanced presentation

lists, with each list containing twenty experimental items, five in each of the four conditions

(see Supplementary Materials for the experimental stimuli). In addition, twenty-four

unrelated filler items were interspersed randomly among the twenty experimental trials to

create a single random order (see Supplementary Materials for some example filler stimuli).

These filler items were included to ensure that participants were unaware of the purpose of

the study, and either described good/bad contexts followed by a neutral outcome (e.g. doing

some gardening), or described characters making concrete decisions (e.g. choosing a new pet,

dinner choices, or travel plans). Binary-choice comprehension questions followed half of the

experimental and half of the filler trials. All participants scored at or above 80% accuracy on

these questions.

Procedure

Participants were seated at a distance of 68cm (fixed by a chin-rest) in front of the computer

monitor, and gaze location and movement from the left eye was recorded using an EyeLink

1000 eye-tracker, running at 1000Hz (viewing was binocular). The experiment was

controlled using Experiment Builder software and the experimental procedure is illustrated in

Figure 1. Each trial began with a single centrally-located fixation cross while participants

listened to the story context via headphones. Next, the fixation cross was replaced with the

target image, along with the target sentence. The onset of the target image preceded the onset

of the corresponding target sentence by 1000ms. This 'preview period' ensured that

participants had time to identify the target images and allowed us to assess early attentional

biases to these outcome images prior to the onset of the target sentence (i.e., due to visual

properties of the images themselves or due to the preceding context). The picture stayed on-

screen for the duration of the target sentence, with the auditory sentence typically ending 1-2

seconds before the end of the trial (see Supplementary Materials for a real-time video replay

of the trial procedure, http://privatewww.essex.ac.uk/~mcallan/BJW_paper_FinalFull.m4v). At the

beginning of the experiment, and once every ten trials thereafter, the eye-tracker was

calibrated and validated against nine fixation points, using the standard EyeLink calibration

procedures.

Results & Discussion

Data Processing

Eye movements initiated while the target image was onscreen were processed according to

the relevant picture and sound onsets. The spatial coordinates, in pixels, of fixations[1] were

mapped onto the appropriate regions of analysis, corresponding to the good and bad

outcomes for each image. If a fixation was located within 20 pixels of a visual object's

perimeter, it was coded as belonging to that object, otherwise, it was coded as background.

Visual preferences were examined by calculating a good/bad advantage score as a

function of time (i.e. the probability of fixating the 'good' outcome *minus* probability of

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[1] Thresholds to detect saccades were set to a velocity of 30°/s and an acceleration of 8000°/s² as defined by Eyelink's Cognitive expfiguration. Fixations shorter than 80 ms (fewer than 3% of cases) were integrated with the immediately preceding or following fixation if that fixation lay within 0.5°, otherwise the fixation was excluded. The location of a fixation was defined as the mean eye position during this fixation. Time spent during saccades was excluded from analysis.

fixating the 'bad' outcome). This measure is therefore symmetrical around zero such that

higher proportions of fixations on the "good" outcome result in a positive score, whereas

higher proportions of fixations on the "bad" outcome result in a negative score.

Preview Analysis

Recall that the onset of the picture preceded the onset of the corresponding target sentence by

1000ms (see Figure 1). Thus, we first analyzed the distribution of good/bad fixations during

this preview period to examine whether any very early visual biases emerged after the

context information was given but prior to the target sentence onset. That is, a preview

analysis allowed us to test whether the valence of the context (good vs. bad person) simply

"primed" observers toward correspondingly valenced outcome images prior to the onset of

the target sentence. Within-subjects ANOVAs comparing good/bad advantage scores

between 0-500ms and 500-1000ms post-picture onset did not reveal any difference between

the two context conditions in either time period ($ps > 0.6$). The mean scores and standard

errors for each time window and condition are displayed in Table 1. This preview analysis

therefore provides an important control: it shows that attentional cues from the images did

not influence fixations around the scene in the absence of linguistic cues to guide predictions.

Given previous evidence that observers are able to recognize objects in a scene well within

500ms (Naber, Hilger, & Einhäuser, 2012; Potter & Levy, 1969; Yao, Gao, Yan, & Li, 2011),

it also rules out that any anticipatory effects at subsequent stages were driven by affective

priming or simple matching between the valence of the context and the outcomes. If these

processes were occurring, such effects would emerge clearly during this early preview

period.

Main Analysis

The main analyses focused on visual biases during the auditory target sentence. To examine

this, temporal onsets and offsets of the fixations were recalculated on a trial-by-trial basis, to

transform the original image-onset-locked time series to the onset of disambiguating

information in the corresponding auditory input (indicated by * in (1) and (2) above). A time

period ranging from 2500ms *before* the onset of disambiguating information[2] to 2000ms *after*

the onset of disambiguating information was examined. Figure 2 plots the average good/bad

advantage scores in each condition for every 20ms time-slot within the selected time period.

The solid black vertical line in the figure (t=0) indicates the onset of disambiguating

information. In order to divide the data into larger windows for statistical analysis, the 20ms

time-slots in Figure 2 were divided into nine consecutive 500ms timeslots. The resulting

analysis regions are indicated by the dashed vertical lines in Figure 2.

For each participant (respectively item) and condition, an average good/bad advantage

score was calculated over the 20ms time slots in each of the nine 500ms analysis regions,

then analysed separately for each region using a 2 X 2 ANOVA, with context (good *vs*. bad)

and outcome (good *vs*. bad) as the repeated-measures factors. Table 2 displays the statistical

details of the effects for each time window of interest, allowing generalization to participants

(F_1; in which participants are seen as a random factor and items as a fixed factor) and items

(F_2; in which items are seen as a random factor and participants as a fixed factor).

Significance on both these tests will ensure generalizability of the results across the different

participants and experimental items. Strength of association is reported in terms of partial eta-

squared ($_p\eta^2$).

Statistical analyses revealed a significant main effect of context from -1000ms before

the onset of disambiguating information until 500ms after this information became auditorily

available. As can be seen in Figure 2, the main effects during this 1500ms period were

characterized by the hypothesized preference to fixate the good outcome following a "good"

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[2] Note that this 2500ms anticipatory period was chosen to correspond to the minimum time difference between onset of the auditory target sentence and onset of disambiguating information across the twenty experimental items. In this way, the main analysis period reflected only those eye movements that were triggered by the evolving language input, and not the initial preview period.

person context, and a preference to fixate the bad outcome following a "bad" person context (See Supplementary Materials for a video depicting some participants' fixation patterns around the target image in each of the four conditions).

Thus, it seems that despite showing no initial biases to fixate one or the other target referent, participants were cued by the language input to expect the outcome that was context-appropriate. Importantly, the fact that context influenced visual preferences in the regions just prior to the onset of disambiguating auditory information (-1000ms to 500ms), but not in the earlier (language-free) preview period, demonstrates that people's predictions about the story outcome were being driven by expectations based on the unfolding target sentence, and emerged time-locked to the onset of disambiguating information. As such, we can be confident that the context-based anticipation seen here is not simply due to priming or low-level biases, as such basic effects would have influenced participants' gaze throughout the analysis period.

Analyses of the subsequent time periods revealed a main effect of outcome emerging from 500ms after the onset of disambiguating information and lasting through the remaining analysis windows. This effect was driven by participants biasing their gaze to the appropriate good/bad outcome, as described in the auditory sentence. As can be seen in Figure 2, no main effects of context or an interaction between variables was found in any of these regions (see Table 2). As such, the effects following the onset of disambiguating information reflect the fact that despite their initial expectations, participants rapidly switched their gaze according to incoming information, regardless of the valance of the preceding context.

Conclusions

A long tradition of just-world research has shown that people construe and reconstruct past events in ways that render those events more consistent with the belief that people get what they deserve (Hafer & Begue, 2005; Lerner, 1980). The study reported here extends this

research by highlighting how quickly people are able to predict a "just-world" congruent future while listening to unfolding narratives describing good/bad people. Specifically, participants' knowledge of a protagonist's moral worth biased their eye gaze towards good or bad outcomes within the "visual world" *before* the actual outcomes were known. These results suggest that just-world expectations encourage attention to outcomes that are "seen" as deserved for the central character of an unfolding narrative. This analysis is consistent with the view that people's motivations and expectations—in this case, their just-world concerns—affect how they perceive their social world (Bruner, 1957; Fiske & Taylor, 2008; Taylor & Crocker, 1981).

It is important to note that this study also provides good evidence that these anticipatory effects are not simply driven by affective priming or the matching of good/bad people to corresponding outcomes. First, the use of a fully-crossed design meant that there were no predictable contingencies between context and outcome, and our preview analysis confirms this. Second, the items were constructed such that they always included some "innocent" (good) victim. If our effects were due to priming alone, then this "double priming" in the good contexts should lead to a general "good outcome" advantage, and perhaps no difference between the two outcomes in a bad person context. In fact, we find the opposite is true—people seemed more likely to fixate the "bad outcome" overall (as would be expected given that "bad is stronger than good"; Baumeister et al., 2001), and seem to settle on a bad outcome faster following disambiguation. Finally, the fact that these expectation effects were time-locked to the onset of disambiguating information and not simply throughout the analysis period, demonstrates that they are being driven directly by cues provided by the evolving language input.

This work offers important insights into how the wider context and our personal beliefs interact to influence language understanding. The results reported here demonstrate

that updating one's perception of a protagonist's character, based on incoming contextual information, is an important element of story comprehension that sets up expectations for future events in the narrative. Moreover, these expectations are influenced by our own moral judgments and assessments of the "appropriate" punishment or reward. These findings thus extend previous psycholinguistic research by showing that conceptual properties of characters (e.g., moral worth), in addition to the well-documented concrete properties (e.g. real-world constraints; see Kamide, Altmann, & Haywood, 2003; Filik, 2008; Nieuwland & Van Berkum, 2006; Ferguson & Sanford, 2008; Ferguson et al., 2010), can influence the expectations that are set up during discourse processing.

It is worth noting that although we demonstrated that people predict a just-world congruent future within the visual world, the interplay between these initial gaze preferences and people's subsequent efforts to make sense out of the good (bad) things that happen to bad (good) people has yet to be investigated. We speculate that this initial just-world bias might facilitate the various types of retrospective sense-making activities people engage in (Hafer & Bègue, 2005). For example, they may bias how people construe ambiguous outcome information in a just-world consistent way or what they attend to, encode, and remember about just-world inconsistent information in more complex and dynamic environments. Future research that examines both people's immediate visual preferences for particular good/bad outcomes and their reactions to those outcomes, such as victim derogation and memory reconstruction, may help further our understanding of the psychological processes involved in maintaining a belief in a just world.

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Table 1. *Good/bad advantage scores during the picture preview period, displaying means and standard errors for the 0-500ms and 500-1000ms time windows.*

	Mean	Standard error
0-500ms		
Good context- Good outcome	-0.06	0.04
Good context- Bad outcome	0.02	0.05
Bad context- Good outcome	0.04	0.05
Bad context- Bad outcome	-0.09	0.05
500-1000ms		
Good context- Good outcome	-0.09	0.06
Good context- Bad outcome	-0.10	0.06
Bad context- Good outcome	-0.01	0.06
Bad context- Bad outcome	0.01	0.07

Table 2. *Analysis of variance results for each time window of interest.*

	df	F1 value	*p*-value	$_p\eta^2$	df	F2 value	*p*-value	$_p\eta^2$
-2500 to -2000ms								
Context	1, 43	2.07	0.16	0.05	1, 18	2.53	0.13	0.12
Outcome	1, 43	1.23	0.27	0.03	1, 18	1.48	0.24	0.07
Context x Outcome	1, 43	0.41	0.53	0.01	1, 18	0.36	0.56	0.02
-2000 to -1500ms								
Context	1, 43	0.01	0.91	0	1, 18	0.01	0.93	0
Outcome	1, 43	0.04	0.85	0	1, 18	0.06	0.8	0
Context x Outcome	1, 43	0.39	0.53	0.01	1, 18	0.31	0.58	0.02
-1500 to -1000ms								
Context	1, 43	1.04	0.31	0.02	1, 18	1.33	0.26	0.07
Outcome	1, 43	0.58	0.45	0.01	1, 18	1.02	0.33	0.05
Context x Outcome	1, 43	1.44	0.24	0.03	1, 18	1.13	0.3	0.06
-1000 to -500ms								
Context	1, 43	4.84	0.03*	0.1	1, 18	3.85	0.06	0.17
Outcome	1, 43	0.25	0.62	0.01	1, 18	0.55	0.47	0.03
Context x Outcome	1, 43	0.74	0.39	0.02	1, 18	0.91	0.35	0.05
-500 to 0ms								
Context	1, 43	3.97	0.05*	0.09	1, 18	5.22	0.03*	0.22
Outcome	1, 43	0.11	0.74	0	1, 18	1.94	0.18	0.09
Context x Outcome	1, 43	0.12	0.73	0	1, 18	0.02	0.89	0
0 to 500ms								
Context	1, 43	4.08	0.05*	0.09	1, 18	10.29	0.004**	0.36
Outcome	1, 43	0.11	0.74	0	1, 18	1.45	0.24	0.07
Context x Outcome	1, 43	0.54	0.47	0.01	1, 18	0.52	0.48	0.3
500 to 1000ms								
Context	1, 43	2.06	0.16	0.05	1, 18	3.43	0.08	0.15
Outcome	1, 43	30.26	<0.001***	0.41	1, 18	44.93	<0.001***	0.7
Context x Outcome	1, 43	0.06	0.81	0	1, 18	0.15	0.7	0.01
1000 to 1500ms								
Context	1, 43	0.97	0.33	0.02	1, 18	1.87	0.19	0.09
Outcome	1, 43	70.47	<0.001***	0.62	1, 18	82.62	<0.001***	0.81
Context x Outcome	1, 43	0.01	0.92	0	1, 18	0.02	0.9	0
1500 to 2000ms								
Context	1, 43	0.3	0.59	0.01	1, 18	1.07	0.31	0.06
Outcome	1, 43	74.9	<0.001***	0.63	1, 18	68.47	<0.001***	0.79
Context x Outcome	1, 43	3.32	0.07	0.07	1, 18	1.66	0.21	0.08

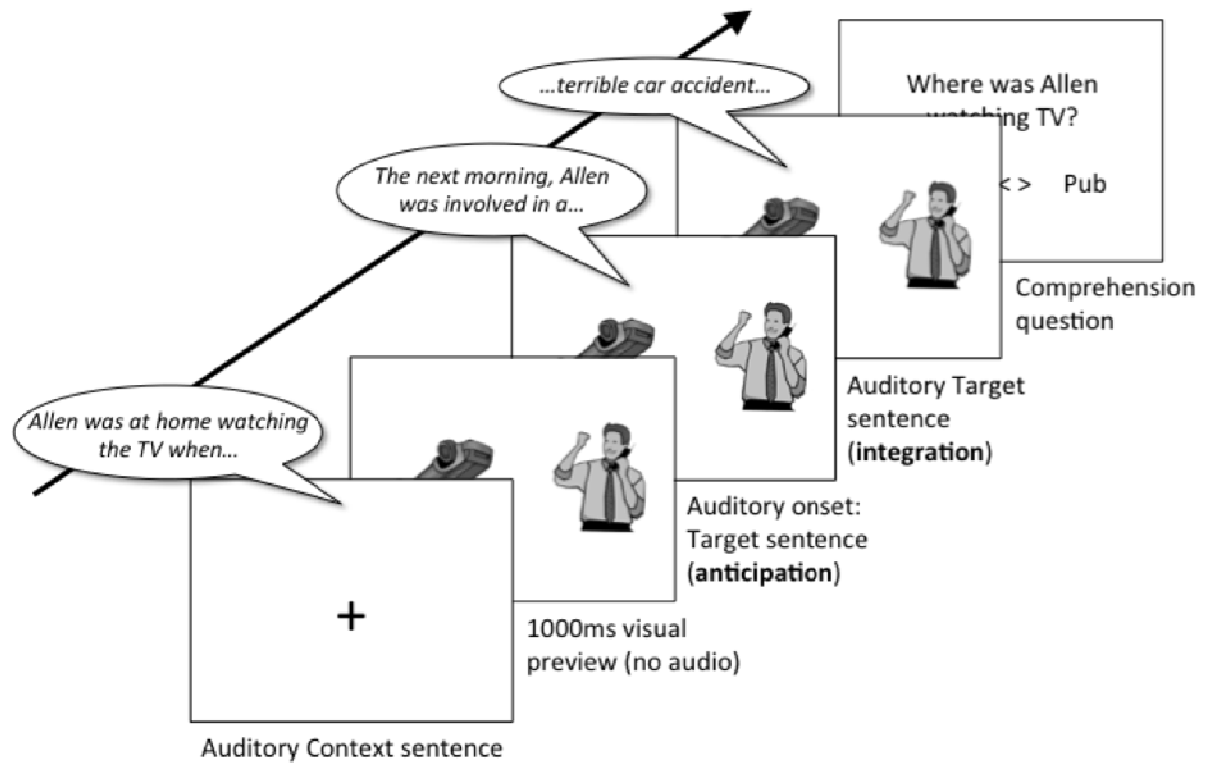*Note.* * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

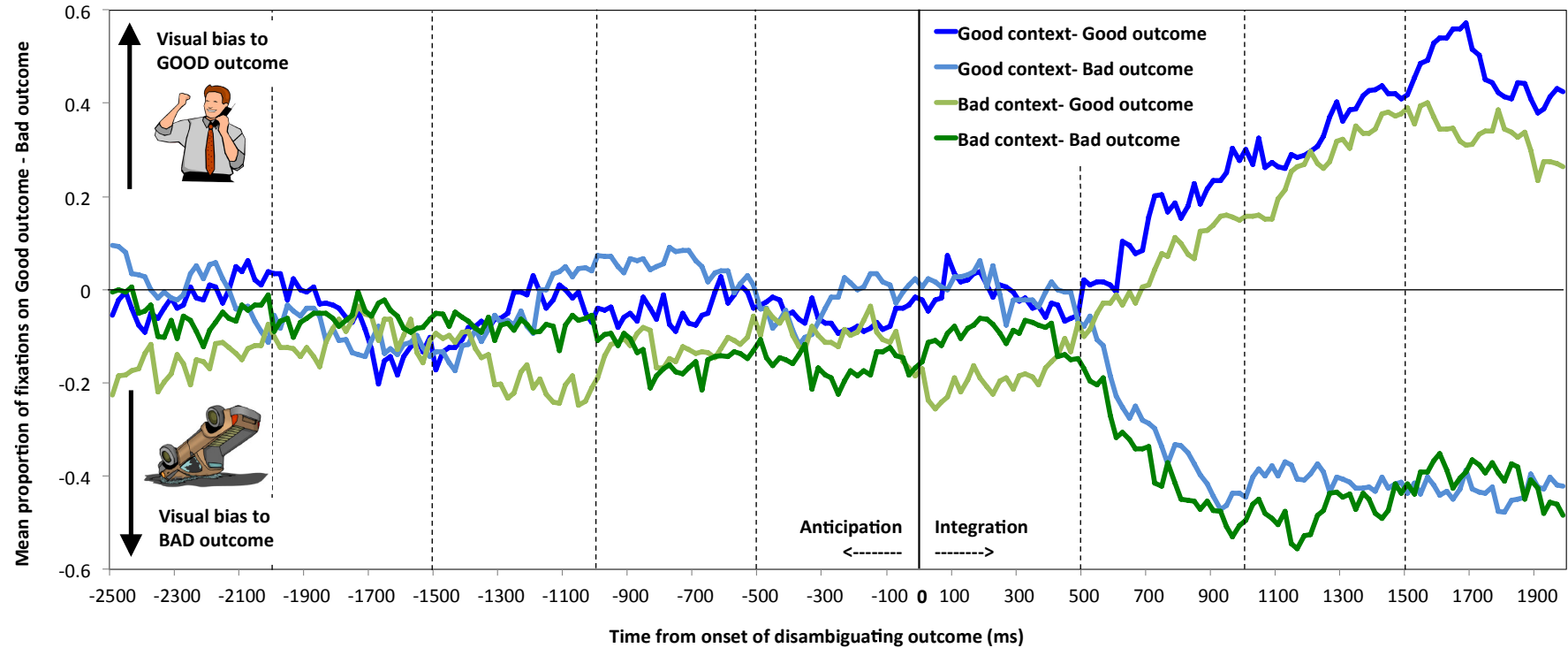*Figure 1*. Illustration of the experimental procedure.

Figure 2. The average good/bad advantage scores for each condition. The solid black vertical line (t=0) indicates the onset of disambiguating

information and dashed vertical lines represent the 500ms timeslots that were used for statistical analysis.

<u>Experimental items</u>
Note that for each of the items below, text is listed in the order: good context, bad context, good outcome, and bad outcome. Target sentences (presented alongside target image) are displayed in italics and the asterisk indicates the onset of disambiguating information in each item.

1.
A fortnight ago, Jordan was walking along the River Avon when he spotted a German shepherd puppy caught in the river. Risking his own life, Jordan dived into the river and saved the puppy.

A fortnight ago, Jordan was walking along the River Avon when he spotted a German shepherd puppy on the bank of the river. For whatever reason, Jordan decided to kick the puppy into the river.

*One week later, Jordan was sitting in his study when he received news that *he won a brand new car from a sweepstakes he entered.*

*One week later, Jordan was sitting in his study when he received news that *his wife had died suddenly.*

2.
Last week, Frank was in a shop buying some groceries. After paying for his items and whilst no one was looking, he put all of his spare change into a charity pot for the National Children's Cancer Society.

Last week, Frank was in a shop buying some groceries. After paying for his items and whilst no one was looking, he stole all of the change from a charity pot for the National Children's Cancer Society.

*As he was leaving the shop, Frank *was told that he was the 100th customer that day and won a year's supply of groceries.*

*As he was leaving the shop, Frank *slipped on some spilled water and broke his arm.*

3.
John was walking to work when he passed by a blind homeless man asking for some food. Although John was in a hurry, he still found time to buy the man a kebab from a nearby kebab shop before making it to work.

John was walking to work when he passed by a blind homeless man asking for some food. Although John was in a hurry, he still found time to spit on the man and call him a "greasy tramp" before making it to work.

*The following week, John was called into his boss's office and was *promoted from his job.*

*The following week, John was called into his *boss's office and was fired from his job.*

4.

Mark was in the London Underground, heading towards St. James's park to meet his girlfriend for an outdoor picnic lunch. The weather forecast that morning had predicted a 50-50 chance of thunderstorms that afternoon. At one of the stations, an elderly woman on crutches entered the train to find that there were no seats available. Mark quickly got out of his seat so that the elderly woman could sit down.

Mark was in the London Underground, heading towards St. James's park to meet his girlfriend for an outdoor picnic lunch. The weather forecast that morning had predicted a 50-50 chance of thunderstorms that afternoon. At one of the stations, an elderly woman on crutches entered the train to find that there were no seats available. Mark scoffed at the elderly woman and refused to give up his seat for her.

When Mark exited the underground at St. James's park, he looked up and noticed that the sky had *cleared and the sun was shining.

When Mark exited the underground at St. James's park, he looked up and noticed that the sky had *clouded over and a heavy rain was pouring down.

5.
Last year, Jack was in Heathrow airport waiting for a flight to Los Angeles. Whilst waiting, he noticed a woman's wallet fall out of her bag as she headed towards her departure gate. Jack quickly picked up the wallet and ran after the woman to give her the wallet back.

Last year, Jack was in Heathrow airport waiting for a flight to Los Angeles. Whilst waiting, he noticed a woman's wallet fall out of her bag as she headed towards her departure gate. Jack quickly nicked the wallet by slipping it into his carry-on bag.

After checking-in for his flight, Jack was told that because of *an airline promotion, he had been randomly chosen for an upgrade to first class.

After checking-in for his flight, Jack was told that because of *unforeseen maintenance issues, his flight was cancelled.

6.
Andrew, a married father of three, took a day off work last week to give blood at the local hospital. It turns out that he does this regularly because he has a very rare blood type though he doesn't like the sight of blood himself.

Andrew, a married father of three, took a day off work last week to meet up with a prostitute at a seedy motel. It turns out that he does this regularly and deliberately keeps it a secret from his family.

The following evening, Andrew watched his favourite football team play and they *won the match.

The following evening, Andrew watched his favourite football team play and they *lost the match.

7.

Last Tuesday, Marty returned home from a 6-month tour of service as an army cadet in Afganistan. His role there was to protect civilians from the vicious fighting that was ongoing in the region.

*The following day, Marty was walking down the high street when he *found a £100 note on the ground.*

*The following day, Marty was walking down the high street when he *was hit on the head by a falling brick.*

8.
Last winter, George was holidaying in the Canary Islands. He decided to have lunch at a restaurant near his hotel that his friend recommended. Although the restaurant was very busy, George was particularly impressed by the food and service. He noticed that his waiter was tied up with another customer, but he waited patiently to compliment the waiter and give him a tip. Later that afternoon, George went to the beach for a swim. While swimming, he got caught up in a rip current and was dragged out to sea.

Last winter, George was holidaying in the Canary Islands. He decided to have lunch at a restaurant near his hotel that his friend recommended. Although the restaurant was very busy, George was particularly impressed by the food and service. He noticed that his waiter was tied up with another customer, so he decided to leave the restaurant without paying his bill. Later that afternoon, George went to the beach for a swim. While swimming, he got caught up in a rip current and was dragged out to sea.

*The lifeguard spotted George * and was able to rescue him before he drowned.*

*The lifeguard spotted George *but was too late to rescue him before he drowned.*

9.
Frank spends every Friday afternoon going to colleges around Suffolk to tell students about the dangers of abusing drugs and alcohol.

Frank spends every Friday afternoon going to colleges around Suffolk to sell students drugs and alcohol.

*On his walk home from the train station one Friday afternoon, Frank was approached by two men who *had found his wallet on the train and ran after him to return it.*

*On his walk home from the train station one Friday afternoon, Frank was approached by two men who *assaulted him and stole his wallet and jacket.*

10.
Mark drove his car to the post office to send a parcel. He noticed there was a long queue. Although he was in a hurry, he let a frail old lady go ahead of him in the queue. After sending his parcel, he left the post office and approached his car parked along the street.

Mark drove his car to the post office to send a parcel. He noticed there was a long queue. Because he was in a hurry, he decided to push in front of a frail old lady in the queue. After sending his parcel, he left the post office and approached his car parked along the street.

As he approached the car, Mark noticed that his parking ticket had *been topped up by a passer-by before it expired.

As he approached the car, Mark noticed that his parking ticket had *expired and he had received a parking ticket.

11.
Allen was at home watching the TV when his wife came home from work. Because she had been working a lot of overtime recently, she was tired and wanted to sit down and relax. Knowing this, Allen gave her a bouquet of flowers he bought earlier that day and made her favorite dinner while she put her feet up.

Allen was at home watching the TV when his wife came home from work. Because she had been working a lot of overtime recently, she was tired and wanted to sit down and relax. Allen yelled at her to make him his dinner. When she said she wanted to relax for a moment, he called her a "lazy bitch" and slapped her across the face.

The next morning, Allen was involved in a *hugely successful business contract at work and was congratulated by his boss.

The next morning, Allen was involved in a *terrible car accident on the way to work and suffered major head injuries.

12.
Jim was sitting at home when he received a phone call from a distressed friend. The friend told Jim that her car had broken down on the opposite side of the city from Jim's house. She asked Jim if he could bring her some jump leads to jump start her car. Jim wasn't doing much at home and was happy to help so he went out and gave his friend a jump start.

Jim was sitting at home when he received a phone call from a distressed friend. The friend told Jim that her car had broken down on the opposite side of the city from Jim's house. She asked Jim if he could bring her some jump leads to jump start her car. Even though Jim wasn't doing much, he told his friend that he was too busy and couldn't help her out.

The next day, Jim was checking his emails when *he learned that he won a prestigious scholarship to study at Cambridge.

The next day, Jim was checking his emails when *his computer crashed and he lost all of his important files.

13.
John, a 40-year-old mechanic, just returned from spending two months in Africa volunteering at an orphanage that provides educational opportunities for orphaned, rescued, and abandoned children. On his way home from the airport, he stopped to buy milk and a Lotto scratch-card from his local shop.

John, a 40-year-old mechanic, appeared in court charged with assaulting and raping a woman in a park. He was released on bail pending further enquiries. On his way home from the law courts, he stopped to buy milk and a Lotto scratch-card from his local shop.

As he walked across the road, John began scratching the Lotto card and was *elated to find that he had won £100,000.

As he walked across the road, John began scratching the Lotto card and was *hit by an oncoming car.

14.
Last week Jez was going through his wardrobe and realised that he had a lot of clothes he didn't wear anymore. He decided to bag up his old clothes and walk to town to donate them to Oxfam for the homeless.

Last week Jez was going through his wardrobe and realised that he had a lot of clothes he didn't wear anymore. At first he thought about donating his old clothes to Oxfam, but he didn't want to carry them into town. Instead, he bagged up his old clothes and threw them in the rubbish bin.

The next morning he woke up to find that *his wife had made him breakfast in bed.

The next morning he woke up to find that *he had a terrible flu.

15.
For the last few years, Andrew has helped build and renovate homes for poorer families in the UK through a charity called 'Habitat for Humanity'. Among his colleagues, Andrew has built up a reputation for being very hard-working and generous to those people the charity is trying to help.

For the last few years, Andrew has worked for a repossession agency called 'Repo Call'. Among his colleagues, Andrew has built up a reputation for bullying poor and working families into making payments or giving up their possessions.

One Saturday evening, Andrew took his long-term girlfriend out for dinner, during which she *happily accepted his proposal of marriage.

One Saturday evening, Andrew took his long-term girlfriend out for dinner, during which she *told him she's been seeing another man and wanted to break up.

16.
Jack went to the drycleaners to pick up a pair of trousers he had put in a week ago. After paying for his drycleaning, Jack realised that the cashier had accidently undercharged him by £20. Straight away, he went back into the shop to tell the cashier about the mistake and handed over the extra £20 he owed.

Jack went to the drycleaners to pick up a pair of trousers he had put in a week ago. After paying for his drycleaning, Jack realised that the cashier had accidently undercharged him by

£20. Straight away, he decided to keep the extra £20 instead of going back into the shop to tell the cashier about the mistake.

*When he came outside, he collected his bicycle and *enjoyed a speedy cycle ride home.*

*When he came outside, he collected his bicycle and *found that it had a puncture so he had to push it all the way home.*

17.
Gerry was at the end of his shift when he received a phone call from one of his coworkers saying that he would be late for work because his child was ill and needed to be taken home from school. His coworker asked Gerry if he could cover his shift for a couple of hours. Although Gerry already had plans after work, he told his coworker that it was not a problem and agreed to cover his shift for a couple of hours.

Gerry was at the end of his shift when he received a phone call from one of his coworkers saying that he would be late for work because his child was ill and needed to be taken home from school. His coworker asked Gerry if he could cover his shift for a couple of hours. Although Gerry didn't have any plans for after work, he lied to his coworker and told him he would have to find someone else to cover his shift because he was busy.

*When Gerry got home that evening, his neighbour *invited him over for a brilliant party.*

*When Gerry got home that evening, his neighbour *had a loud party into the morning and he wasn't able to sleep the whole night.*

18.
Mark was travelling in Madrid last winter. Because of unseasonably cold weather, he was underdressed and feeling a little cold as he walked to his hotel to check-in. He passed by a homeless woman lying on the ground shivering. Although he was feeling cold himself, he decided to give her his spring jacket.

Mark was travelling in Madrid last winter. Because of unseasonably cold weather, he was underdressed and feeling a little cold as he walked to his hotel to check-in. He passed by a homeless woman lying on the ground shivering. Because he was feeling cold, he decided to nick the spring jacket the woman had covered over herself.

*When Mark got to the hotel, he was informed by the receptionist that because of a computer mix up, his booking had been *upgraded to a posh suite.*

*When Mark got to the hotel, he was informed by the receptionist that because of a computer mix up, his booking had been *downgraded to a shabby dorm room.*

19.
Alex had lived alone in his bungalow in Cambridge for over thirty years. Both of his neighbours were elderly widows and he visited them regularly with shopping, flowers and company. They really appreciated these frequent visits.

Alex had lived alone in his bungalow in Cambridge for over thirty years. Both of his neighbours were elderly widows but he very rarely visited them as he didn't like old people and thought that their houses smelt bad. He was really glad that he managed to avoid them.

Last weekend, Alex decided to drive out to the country for a day-trip *but got stuck in hours of long traffic jams and missed most of the day.

Last weekend, Alex decided to drive out to the country for a day-trip *and enjoyed the lovely clear roads and that allowed him to make the most of the day.

20.
John was studying for a degree in computing at University. Once a week he also volunteered as a counselor at his local Childline call centre, helping young children deal with troubling issues in their lives.

John was studying for a degree in computing at University. The University often tried to recruit volunteers to help out as counselors at the local Childline call centre, but John felt that this was a waste of his time and effort and rudely told the organizers to get lost.

One evening as John arrived at the train station to go home, he was informed that all trains were *cancelled due to a fire on board an earlier train.

One evening as John arrived at the train station to go home, he was informed that all trains were *operating on time due to enforced train regulations.

Example filler items
Note that target sentences (presented alongside target image) are displayed in italics, and objects used for each item are shown in square brackets.

1.
Matthew regularly visited his elderly aunt in the hospital. On his last visit, Matthew wanted to bring his aunt a gift to cheer her up since she had been feeling low for a few days. He thought there was no point in buying her fruit since she was unable to eat anything. *Instead Matthew decided on a big bunch of flowers that would hopefully cheer her up.* [flowers/chocolates]

2.
Jodie had to take a month off work last year. Her sister had been diagnosed with renal failure so Jodie generously offered to donate one of her kidneys to her sister. It had been a painful operation for them both, but Jodies's sister was now healthy and able to live a long and happy life. *The week after the operation, Jodie had gone on holiday to rest and recover in the sun.* [person sunbathing/person skiing]

3.
Gemma worked hard in her day job as a nurse and really enjoyed letting her hair down at weekends. However, last weekend she had far too much to drink and ended up being sick and having to go home early. *On her next night out Gemma deliberately stuck to drinking orange juice all night and had a great night.* [Orange juice/wine]

4.

Angela tidied up her house and put her dirty laundry into the washing machine. While she was out of the house, Angela's son noticed that the washing machine was finished and hung the washing on the line in the garden. *When Angela got home that afternoon she looked for the washing in the machine and was overjoyed to find that it was already hung up.* [Washing line/washing machine]