

RUNNING TITLE: Emergent Attributes

Emergent Attributes in Person Perception:
A Comparative Test of Response Time Predictions

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Abstract

In person perception, emergent attributes are attributes that people ascribe to members of a rare or novel category combination, although they would not ascribe the same attributes to members of either of the constituent categories. The present paper first describes the processing mechanisms suggested by three theoretical models of attribute emergence. Then, competing response time predictions are derived from the models' respective mechanisms. An empirical test of these predictions in a laboratory experiment with university students ($N = 45$) is then reported. Results support Hastie, Schroeder, and Weber's (1990) two-stage model, but not Kunda, Miller, and Claire's (1990) impression-formation model or Smith and DeCoster's (1998) connectionist account.

KEYWORDS: person perception, impression formation, emergent attributes

Emergent Attributes in Person Perception: A Comparative Test of Response Time Predictions

Social psychologists have long been interested in the mechanisms whereby people form impressions of others. In studies designed to investigate the underlying processes, researchers sometimes describe a target person in just one or two words; then, they ask research participants to elaborate on that person's likely characteristics (e.g., Asch, 1946; Asch & Zukier, 1984). The resulting elaborations often do not go far beyond stereotypical knowledge. For example, a person described as a carpenter may be ascribed attributes such as handy or rugged; similarly, a person described as being Harvard-educated may be ascribed attributes such as intelligent or affluent. Interestingly, people's perception of members of *single social categories* does not always predict their perception of members of *social category combinations*. For example, Kunda, Miller, and Claire (1990) found that a Harvard-educated carpenter was perceived as non-materialistic, although non-materialism was not ascribed to either Harvard-educated persons or carpenters *per se*. The emergence of novel attributes for a category conjunction (in comparison to the constituent categories) is a recurrent finding in research on person perception; novel attributes are particularly likely to emerge when conjunctions are uncommon and surprising (Hastie, Schroeder, & Weber, 1990; Hutter & Crisp, 2005; Hutter & Crisp, 2006; Kunda et al., 1990).

Whereas the emergence of novel attributes is a readily observable phenomenon, the precise cognitive mechanisms underlying this phenomenon are still under discussion. Below I describe three theoretical models that have been suggested in the literature. To preview, all models predict novel attributes to emerge if people draw on broader world knowledge. The models differ, however, in assumptions about how, why, and when people access such knowledge. From the models' respective process mechanisms I derive competing hypotheses concerning response latency. Then I present the results of a laboratory experiment designed to test these competing hypotheses.

Impression Formation Model: Causal Reasoning Triggered by Surprise

Kunda and colleagues (1990) argued that people aim to form a unified impression of others, that is, a coherent set of expectations. Whereas some combinations of categories can be readily integrated into a unified impression, other combinations may give rise to conflicting expectations, for instance when a person is described as being both blind and a marathon runner. Encountering a member of two categories with apparently conflicting implications should trigger surprise and puzzlement. To resolve the puzzlement, people would construct an explanatory account for the person's simultaneous membership in both categories. The construction of an explanation may involve causal reasoning that draws on world knowledge outside the constituent categories. Thereby, people may ultimately form a unified impression that includes novel attributes. For instance, a blind marathon runner may be perceived as a particularly courageous person, although courageousness may not be seen as typical of someone who is either blind or a marathon runner, or of a blind person in other conjunctions. In sum, Kunda et al.'s impression formation model explains the emergence of novel attributes as the result of causal reasoning that is triggered by the surprise experienced when encountering apparently conflicting category combinations.

Two-stage Model: Complex Processes Triggered by the Failure of Simple Processes

Hastie and colleagues (1990) suggested that generic social categories may be represented in frame structures in long-term memory. Frames are assumed to have slots that store information about the category, for instance about typical gender, race, and personality attributes. For a given social category, each slot would be associated with default values reflecting a central tendency and a permissible range of variability. To determine the attributes of a member of a category conjunction, people would draw on the frames representing the constituent categories. For common conjunctions such as female and nurse, or male and mechanic, appropriate values can be derived from relatively simple processing, e.g. by computing a weighted average of corresponding values from the constituent categories. For less common conjunctions, such as male and nurse, or female and mechanic,

the values in the constituent categories' frames may be too discrepant to be integrated by simple processing. In such cases, simple processing would signal the impossibility of computing a plausible value. That signal would initiate more complex forms of processing, such as analogical reasoning, the application of abstract rules, or a mental simulation of the target person. Complex processing may draw on broader world knowledge such as "A woman in a man's job has to be tough" and, thereby, bring novel attributes into play. In sum, Hastie et al.'s two-stage model explains the emergence of novel attributes as the result of complex processing that is triggered by the failure of simple processing.

Connectionist Model: Simultaneous Application of Multiple Knowledge Structures

Smith and DeCoster (1998) used a connectionist network to computer-simulate the emergence of novel attributes. In their theoretical model, people hold a multitude of knowledge structures such as stereotypes in long-term memory, for instance (a) "Harvard-educated persons are qualified for high-paying occupation," (b) "Carpenters are low paid," and (c) "If a person is qualified for a high-paying occupation and is low paid, it might be because he or she is non-materialistic." A stereotype may become active in mind if some part of it is observed, such as the category label. Thus, when a target person is described as being Harvard-educated and a carpenter, the stereotypes (a) and (b) should become active, and the target person would be perceived as being both qualified for a high-paying occupation and low paid. The concepts of high qualification and low payment, though, are also part of stereotype (c). Therefore, as stereotypes (a) and (b) become active, stereotype (c) becomes activate simultaneously. Consequently, the attribute non-materialistic would also become salient in the perceiver's mind. Non-materialism would be most strongly activated if a target person is both a carpenter and Harvard-educated, but less so if a target person belongs to only one of the categories, or to a different conjunction where only one of the constituents gives rise to stereotypes sharing concepts with stereotype (c).

The connectionist mechanism just described aims to model automatic and

preconscious processes that shape an individual's conscious experience. Different from the previous two models, when encountering a Harvard-educated carpenter, perceivers need not engage in causal reasoning or other forms of complex processing; instead, they would immediately perceive a non-materialistic person. In sum, Smith and DeCoster's connectionist account explains the emergence of novel attributes as the result of the simultaneous application of multiple knowledge structures in a subconscious processing system.

Testing the Mechanisms

Above I described three theoretical mechanisms from the literature whereby people may generate novel attributes. The goal of the present research was to test the viability of each of these models. To do so, I designed a person perception study where emergent attributes were likely to occur. In that study, I collected additional process evidence, namely participants' response latency. As will be described below, distinct predictions of response latency can be derived from the models. Beyond correctly predicting when novel attributes will and will not emerge, a viable model of attribute emergence should also correctly predict how long that process takes.

Preparing attribute emergence. The study to be reported below was set up such that participants provided attribute typicality ratings for either common and unsurprising conjunctions (female nurse, male mechanic) or for rare and surprising conjunctions (male nurse, female mechanic). Using the same conjunctions, prior research repeatedly found participants to generate a greater amount of emergent attributes in response to the rare conjunctions, as compared to the common ones (Hastie et al., 1990; Hutter & Crisp, 2005).

Preparing response latency measurement. Research on person perception often used a free-response format (Asch, 1946; Asch & Zukier, 1984; Hastie et al., 1990; Hutter & Crisp, 2005; Hutter & Crisp, 2006; Kunda et al., 1990) that does not lend itself readily to the exact measurement of response latency. Fortunately, a closed-response format for the assessment of attribute emergence does also exist (Hastie et al., 1990; Kunda et al., 1990). In this format,

participants indicate, on rating scales, the typicality of various experimenter-provided attributes for members of categories and category combinations. Attributes are considered novel if the rating for a conjunction exceeds the bounds defined by the ratings for the constituent categories. This format was used in the present study to assess both perceived attribute typicality and rating response latency.

Derivation of competing hypotheses. From each of the models I derived response latency predictions for the task of providing multiple attribute typicality ratings. These predictions will be presented as a hierarchical set of competing hypotheses. The first set of hypotheses pertains to predictions that differ between the connectionist model on the one hand, and both the impression formation model and the two-stage model on the other. Should the two classic models receive empirical support in that stage, then another set of competing hypotheses allows further distinction: The second set of hypotheses pertains to predictions that differ between the impression formation model and the two-stage model.

Differential predictions between connectionist vs. classic models. Smith and DeCoster's (1998) model emphasizes the efficiency of the processes involved. All cognitive processing is assumed to be conducted in an automatic memory system, and to take place simultaneously (as opposed to: sequentially). From the connectionist model I therefore derived the prediction that response latency should *not* differ between rare and surprising combinations on the one hand, and common and unsurprising combinations on the other. In contrast, Kunda et al.'s (1990) as well as Hastie et al.'s (1990) models comprise cognitively demanding elements such as causal reasoning. These processes should take place when encountering rare and surprising conjunctions, but not otherwise. Accordingly, from both of the classic models I derived the prediction that processing should require more time if conjunctions are rare and surprising rather than common and unsurprising. In sum, I derived competing hypotheses concerning *overall processing time requirements*: In comparison to unsurprising combinations, surprising combinations should (both of the classic models)

versus should not (connectionist model) increase the overall time spent on the rating task.

Differential predictions between impression formation vs. two-stage model. At the core of Kunda and colleagues' (1990) model is the goal of forming a unified impression of the target person, or a coherent set of expectations. If dual category membership gives rise to conflicting expectations, puzzlement will be experienced and will trigger causal reasoning. From the impression formation model I derived the prediction that overall response latency differences between surprising and unsurprising combinations should be due to a participant's *first* rating of a conjunction, because at that point a unified impression will not yet be available, whereas for subsequent ratings, it will. Hastie and colleagues (1990) model revolves around deriving appropriate values for a conjunction member's attributes. This may be achieved by simple processing if values in the constituent categories' frames are not too discrepant, or by more complex processing otherwise. Importantly, the task of deriving an appropriate value should present itself anew for each attribute. From the two-stage model I therefore derived the prediction that increased response latency should *not* occur selectively for the first rating, but repeatedly while rating attributes. In sum, I derived competing hypotheses concerning *specific processing time requirements*: Greater overall processing time requirements for surprising conjunctions should (impression formation model) versus should not (two-stage model) be selectively due to a participant's first response (versus: subsequent ones).

Method

Participants

Forty-five psychology students of the University of Kent (United Kingdom) participated in partial fulfillment of course requirements. Their mean age was 22.64 years (range 18-38). Thirty-two students were female, 11 were male, and two did not disclose their gender.

Materials and Procedure

Category labels. Participants practiced the experimental task with a neutral category label (*teacher*). Four single category labels were then used (*female, male, nurse, and mechanic*), as well as two conjunction labels that were derived from the single categories. Depending on experimental condition (see below), the conjunction labels were either *female nurse* and *male mechanic* (unsurprising combinations), or they were *male nurse* and *female mechanic* (surprising combinations). Single category labels were presented in the constant order described above, whereas the order of conjunction labels was counterbalanced between participants.

Attribute rating scales. Fifteen opposing trait adjective pairs from Hastie et al. (1990) were used to construct nine-point bipolar attribute rating scales. These were presented in the following, constant order: *ambitious-unambitious, warm-cold, hostile-friendly, introverted-extroverted, intelligent-unintelligent, lower class-upper class, likeable-unlikeable, adventurous-cautious, honest-dishonest, calm-anxious, strong-weak, active-passive, dominant-submissive, imaginative-unimaginative, and conscientious-careless.*

Procedure. The study was controlled by a computer program that participants completed individually and in a self-paced fashion, using the computer mouse as the input device. Participants learned that the study aimed to identify the attributes of typical members of various groups. Instructions stated that responses as well as response latencies would be recorded; participants were encouraged to answer both quickly and accurately.

The main participant screen comprised an instruction, a category label, and one attribute rating scale. The instruction stated "Please click on that point of the scale that would best describe a typical ..." and was followed, on a new line, by the category label. The attribute rating scale appeared below the category label. Each response was followed by a one-second blank-screen interval. Then, a screen appeared that showed the same instruction and category label as before, but displayed the next attribute scale. For each response, two variables were recorded: firstly, the scale point selected, and further, how long the scale had

been displayed before the response was given. When the pool of attribute scales was exhausted for a given category label, participants were asked to initiate the next step as soon as they were ready.

The sequence of 15 typicality ratings was then repeated using the same instruction and attribute scales, but replacing the category label by the next one. Participants were not forewarned about category labels. Instead, they encountered each new label together with the first attribute scale. Note that with this setup, the first response latency score *included* any time required to process new category information. That was done to capture the processing steps that people may engage in when first encountering a category or category combination (for instance because they try to form a unified impression, as suggested by Kunda et al.'s model).

Surprisingness manipulation check. After completion of all rating tasks, the category labels were presented once more, one at a time. They were preceded by the prompt "How surprised would you be to learn that a person is (a) ..." and were followed by a nine-point scale from 1 (*not at all surprised*) to 9 (*very surprised*). Afterwards, participants reported their age and gender.

Design and Variables

Participants were exposed either to both of the unsurprising conjunctions (*female nurse, male mechanic*) or to both of the surprising conjunctions (*male nurse, female mechanic*). Thus, the study featured a fully factorial, mixed design with one between-subjects factor (conjunction surprisingness: unsurprising vs. surprising) and one within-subjects factor (target profession: nurse vs. mechanic). Hypotheses pertained to the surprisingness of the conjunction, whereas the repeated measures on target profession merely served as a stimulus replication. The major dependent variables were participants' thirty response latency scores when rating conjunctions.

Results

Surprisingness Manipulation Check

Separately for each target profession, participant's surprise ratings were submitted to independent-samples *t*-tests with conjunction surprisingness as the group factor. As expected, participants reported greater surprise if a nurse was male ($M = 5.04$, $SD = 2.21$) rather than female ($M = 2.36$; $SD = 1.43$), $t(37.96) = 4.86$, $p < .001$. Also as expected, the analysis revealed greater surprise ratings if a mechanic was female ($M = 6.26$, $SD = 1.69$) rather than male ($M = 2.77$; $SD = 1.88$), $t(43) = 6.57$, $p < .001$. The manipulation check data thus confirmed that conjunctions intended to trigger greater surprise were in fact rated as more surprising.

Proportion of Emergent Attributes

Separately for each conjunction, a score indicating the proportion of novel attributes was computed following the procedure described in Hastie et al. (1990, p. 244). Specifically, for each attribute, a participant's rating for a conjunction was compared to his or her ratings for the constituent categories. If the rating for the conjunction was either more than one scale point higher than both or more than one scale point lower than both of the ratings for the constituents, the attribute qualified as novel, or emergent. The count of novel attributes across the 15 attributes was transformed into a proportion score. Thus, novel-attribute scores could range from 0 (no novel attribute) to 1 (all attributes novel).

Participants' two novel-attribute scores each were submitted to a mixed-model ANOVA with the between-subjects factor conjunction surprisingness (unsurprising vs. surprising), and repeated measures on target profession (nurse vs. mechanic). As expected, the analysis revealed a main effect of conjunction surprisingness such that a greater proportion of novel attributes was found when a conjunction was surprising ($M = .07$) rather than unsurprising ($M = .03$), $F(1,43) = 5.15$, $p < .03$, $MSE = .009$. Other effects were not observed, $F_s < 2.3$, *ns*. For cell means and standard deviations, see Table 1 (left-hand column).

Thus, the empirical phenomenon "attribute emergence" was successfully replicated in

the present study. It was therefore appropriate to use the present data set for testing response time predictions derived from theoretical models of attribute emergence.

Response Latency Data

Participants rated each of two conjunctions on each of 15 attribute scales. On average, they spent 2.78s ($SD = .75$) for a rating, the range was .71s to 19.03s. For analyses, implausible response latencies of more than 6.00 s were recoded to 6.00s (less than 4% of data points were affected) ¹.

Overall Time Spent on the Rating Task

Separately for each conjunction, response latencies were summed across the associated 15 attribute ratings. The resulting score reflects the total time a participant spent providing ratings for a conjunction (disregarding blank-screen intervals). Participants' two summary scores each were submitted to a mixed-model ANOVA. The between-subjects factor was conjunction surprisingness (unsurprising vs. surprising). Repeated measures were on target profession (nurse vs. mechanic).

This analysis tests predictions of overall processing time requirements (first set of competing hypotheses). To recapitulate, both the impression formation model and the two-stage model predict that participants should spend more time overall if conjunctions are surprising rather than unsurprising; the connectionist model does not predict such a difference.

The analysis revealed a main effect of conjunction surprisingness such that more time was required when a conjunction was surprising ($M = 43.88s$) rather than unsurprising ($M = 37.11s$), $F(1,43) = 6.77$, $p < .02$, $MSE = 152.68$. Target profession did not exert a main effect, $F < 1$, but entered into an interaction with conjunction surprisingness, $F(1,43) = 6.60$, $p < .02$, $MSE = 18.89$. Testing the simple effects within levels of target profession revealed a difference in magnitude, but not in direction: The increase was significant for the mechanic, $F(1,43) = 9.76$, $p < .004$, $MSE = 96.15$, and was marginally significant for the nurse, $F(1,43)$

= 2.92, $p < .10$, $MSE = 75.43$ (see Table 1, right-hand column, for cell means and standard deviations).

In sum, with respect to overall processing time requirements, these results support a prediction shared by the classic models, but do not support a prediction derived from the connectionist account. Because the classic models' shared prediction of overall processing time requirements (first set of competing hypotheses) was supported by the data, it was appropriate to test these models' differential predictions of specific processing time requirements (second set of competing hypotheses) next.

Response Latency for First Versus Subsequent Ratings

Separately for each conjunction, response latencies of the last 14 (of 15) attribute ratings were averaged to form an index of subsequent-rating latency. The two first-rating latency scores and the two subsequent-rating latency indices per participant were entered into a mixed-model ANOVA. The between-subjects factor in this analysis was conjunction surprisingness (unsurprising vs. surprising). Repeated measures were on target profession (nurse vs. mechanic), and on ordinal position of the latency score (first vs. subsequent).

To recapitulate, the impression formation model predicts a specific interaction such that surprising (vs. unsurprising) conjunctions should selectively increase the response latency of first (but not of subsequent) ratings. The two-stage model does not assign a special role to the first rating and is therefore compatible with the absence of that interaction.

The analysis revealed a main effect of ordinal position such that participants required more time for their first rating ($M = 4.55s$, $SD = 1.00$) than for subsequent ratings ($M = 2.57$, $SD = .61$), $F(1,43) = 355.20$, $p < .001$, $MSE = .495$. This indicates that, as intended in the setup of experimental procedures, first-rating response latency included the time required to process category information when encountering it for the first time. Of greater interest, an interaction of ordinal position with conjunction surprisingness was observed, $F(1,43) = 5.74$, $p < .03$, $MSE = .495$. Counter to predictions from the impression formation model, tests of

simple effects revealed that first-rating latency exceeded subsequent-rating latency *less* pronouncedly when a conjunction was surprising ($M_{\text{first rating}} = 4.54\text{s}$, $M_{\text{subsequent rating}} = 2.81\text{s}$), $F(1,43) = 138.40$, $p < .001$, rather than unsurprising ($M_{\text{first rating}} = 4.55\text{s}$, $M_{\text{subsequent rating}} = 2.33\text{s}$), $F(1,43) = 220.71$, $p < .001$. Other effects were not observed, $F\text{s} < 1.2$, *ns*.

Because attributes were presented in a constant order, it may be argued that an interpretation of this result in line with the impression formation model is still conceivable. Specifically, the first attribute (“ambitious-unambitious”) may have been easy to rate with respect to a member of an unusual and surprising conjunction even before a unified impression had been formed. If so, then we should expect to see the costs (high response latency when forming an impression) and benefits (low response latency once an impression has been formed) of a unified impression at a later position in the rating task than was tested in the analysis above. However, note that the attribute-wise means did *not* indicate such a cost-benefit-pattern in any part of the rating task: Collapsed across target profession, response latency for each of the 14 subsequent attribute ratings was numerically greater for surprising than for unsurprising conjunctions; pairwise comparisons revealed the difference to be significant or marginally significant (one-tailed test) in 13 cases (see Figure 1 for detail).

In sum, whereas the impression formation model predicts a particularly pronounced decrease from first- to subsequent-rating latency for the surprising conjunctions (second set of competing hypotheses), the analysis revealed a more pronounced decrease for the unsurprising conjunctions. These results do not support a specific prediction derived from the impression formation model, but are still in line with predictions from the two-stage model.

Discussion

The present study was designed to test response time predictions derived from theoretical models of attribute emergence. Materials and procedures were adapted from previous studies (Hastie et al., 1990; Hutter & Crisp, 2005). In addition to attribute rating scores, I recorded the associated response latencies.

The analysis of manipulation check variables showed that the experimental conditions had been established successfully: Category combinations designed to trigger less (vs. more) surprise actually did trigger less (vs. more) surprise. The analysis of proportions of emergent attributes showed that the empirical phenomenon had been successfully replicated: the only significant effect in the data was a main effect of conjunction surprisingness such that more (vs. less) surprising category combinations led to greater (vs. lesser) proportions of emergent attributes. Thus, it was appropriate to test the models' response time predictions with the present dataset.

A first set of competing hypotheses concerned the overall time required to complete the rating task. From Kunda et al.'s impression formation model as well as from Hastie et al.'s two-stage model I had derived the prediction that overall time requirements should be greater if category combinations were surprising rather than unsurprising; from Smith and DeCoster's connectionist model I had derived the prediction that response time requirements should be the same. The data showed greater requirements for surprising than for unsurprising combinations; the effect was significant for the mechanic and marginally significant for the nurse. This suggests that classic models of attribute emergence provide a more appropriate explanation than the connectionist model.

A second set of competing hypotheses concerned the specific position of increased time requirements. From the impression formation model I had derived the prediction that increased processing time requirements for surprising (versus unsurprising) category combinations should affect in particular a participant's first rating, but not subsequent ones; the two-stage model, in contrast, allowed for increased processing time spread throughout the rating task. Due to the setup of the study, first responses took generally longer than subsequent ones, but, counter to predictions from the impression formation model, response latency then decreased more strongly if a conjunction was unsurprising rather than surprising. Thus, the specific prediction derived from Kunda et al.'s model was not supported by the

present data. In sum, only Hastie et al.'s two-stage model was in line with the results of all analyses conducted, and was thus the model best supported by the present data.

A limitation of the present study stems from the use of a constant order of attributes in the rating task. The test of the impression formation model's prediction of specific processing time demands relied on a comparison of the first-rating latency with the averaged latency of the subsequent ratings. Because the order of attributes was constant, I cannot exclude the possibility that, in addition to its position, the specific contents of the first attribute may have affected the result of the analysis to some degree. The test of predictions of overall processing time demands, in contrast, relied on the latency summed across all attributes and appears thus less prone to alternative interpretations revolving around the attribute presentation order. Future research should avoid the issue by independently varying the position and the contents of attributes.

Overall, the results of the present study suggest that attribute emergence is not well explained as an automatic and pre-conscious phenomenon, but does require sizeable amounts of cognitive effort. Congenial findings were recently reported by Hutter and Crisp (2006). These authors created conditions conducive to the generation of emergent attributes, using an "Oxford-educated bricklayer" as a surprising category combination. Participants in the experimental condition completed the task under cognitive load, whereas control group participants were not depleted of cognitive resources. The authors observed that significantly more emergent attributes were generated in the no-load condition than in the high-load condition. Complementing these findings, the present results further suggest that availability of cognitive resources may be a necessary, but not a sufficient condition of attribute emergence. Specifically, merely encountering a rare or surprising category combination did not immediately give rise to cognitively taxing processes such as the construction of a causal narrative (Kunda et al.) in the present study. Instead, for uncommon category combinations, participants seem to have invoked additional processing stages (Hastie et al.) not before the

results of such processing were actually required later on in the rating task. Whereas people are certainly able to form an impression of others in the considered way described by the impression formation model, it remains to be shown what the factors are that may motivate them to actually do so.

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Footnotes

¹ Cut-off criteria like this are commonly used to safeguard against undue effects of response time outliers. The value of six seconds was chosen as a conservative criterion that identified extreme response latency scores (more than four standard deviations above the grand mean) while affecting less than five percent of scores overall. Because one of the theoretical models predicted increased response latency to occur in some conditions, extreme scores were conservatively recoded into the cut-off criterion value (as opposed to: discarded).

Table 1

Attribute Emergence and Overall Time Requirement as a Function of Conjunction Surprisingness and Target Profession.

	Proportion of emergent attributes	Overall time (seconds)
Conjunction		
Unsurprising		
Target profession		
Nurse	.03 (.06)	38.21 (7.26)
Mechanic	.02 (.04)	36.00 (8.28)
Surprising		
Target profession		
Nurse	.08 (.11)	42.63 (9.86)
Mechanic	.06 (.07)	45.14 (11.07)

Note. Standard deviations are given in parentheses. Cell n = 23 (surprising conjunctions) and 22 (unsurprising conjunctions).

Figure Captions

Figure 1. Response time as a function of conjunction surprisingness, attribute position, and target profession.

