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Seeing Less and Knowing More
The Benefits of Perceptual Ignorance

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ABSTRACT

We suggest that dispositions are more automatically inferred from nonlinguistic than from linguistic behavior, and thus the attributional processing of linguistic behavior is more easily impaired by peripheral cognitive activities. In Experiment 1, subjects observed an applicant who claimed to possess the requisite attributes for a desirable job, but who failed to display nonlinguistic behavior to support that claim. Subjects who performed a concurrent visual detection task based their attributions primarily on the applicant's nonlinguistic behavior and drew less biased inferences than did control subjects. In Experiments 2 and 3, subjects heard an unenthusiastic essayist who was constrained to read a political speech. Subjects who performed either a concurrent visual detection task or a concurrent social influence task drew less biased inferences than did control subjects. These studies suggest that person perception includes subprocesses that differ in their characteristic degrees of automaticity and that performing simultaneous cognitive operations may enable perceivers to avoid certain kinds of inferential errors.

An alien who stopped by a psychologist's laboratory would come to a rather odd conclusion: Social perception is a very lonely enterprise. Uncontaminated by interaction with the object of his or her scrutiny, the passive person perceiver has for decades been the focus of laboratory science. Although much has been learned from this simple model system, it has become increasingly clear that active perceivers (who are immersed in the social interactions they seek to interpret) differ from passive perceivers in some very fundamental ways (Berger & Bradac, 1982 ; Gilbert, Jones, & Pelham, 1987 ; Jones & Nisbett, 1971 ; Jones & Thibaut, 1958 ; Swann, 1984).

One such difference is that active perceivers must perform many complex cognitive operations at once and are therefore busier than passive perceivers. People routinely form impressions of others, but when engaged in social interaction they must at the same time manage their own impressions ("I'll tell her I'm a psychologist"), simulate future events ("What if she hates psychologists?"), recount the past ("The last one only liked zoologists"), analyze alternatives ("Maybe the blonde in the corner likes psychologists"), and remain alert to a continuously changing environment ("My wife may show up any minute"). This report is an attempt to explain how such cognitive busyness affects the inferences we draw from social behavior.

The Components of Action

Any meaningful action is composed of many separate physical events that impress the perceiver through a multitude of sensory channels: Even the simplest utterance is a unique permutation of words, vocal tones, body movements, and facial expressions. Psychologists have found it useful to categorize these events into two broad classes–the linguistic and the nonlinguistic–acknowledging the fact that words and their meanings seem, on the face of it, qualitatively different from the host of grunts, growls, and contortions that accompany them. Person perceivers, then, must sense, encode, categorize, and draw inferences from all of the events in this behavioral complex.

Our claim is simple. We contend that the peripheral tasks in which the active perceiver is constantly engaged tend to impair the processing of linguistic behaviors more readily than the processing of nonlinguistic behaviors. As a result, the active perceiver's attributions about others emphasize linguistic behaviors less than do those of the passive perceiver. This hypothesis is easily framed in information-processing terms: If processing is enabled by a single, general resource (Kahneman, 1973), then we would say that the processing of nonlinguistic behaviors is more *automatic* than the processing of linguistic behaviors and thus is less easily disrupted by peripheral cognitive tasks. Two questions arise. First, why should linguistic processing be more easily impaired than nonlinguistic processing? Second, what are the consequences of this impairment?

Linguistic and Nonlinguistic Processing

Our hypothesis states that language is less easily processed than nonlanguage and, as a result, linguistic processing is more easily impaired by peripheral cognitive activity. There are two reasons to suspect that this is the case.

The Complexity of Language

Language is more temporally extended than is nonlanguage. To understand what someone is saying one must integrate phonemes to construct words, words to construct sentences, and sentences to construct higher order ideas; one may draw inferences about a speaker only after these preliminary identification processes are completed. Linguistic information occurs in linear sequence and must be integrated over time; thus, if a peripheral cognitive task depletes a perceiver's processing resources, the perceiver may be unable to transform the smaller units (words) into larger ones (arguments). Most of us have had the experience of being asked a question while in the midst of writing, and although we hear and remember the questioner's words, we may have to stop writing in order to understand the meaning of the question. Furthermore, even when we do comprehend the meaning of language, scant resources may prevent us from subsequently drawing inferences about the speaker. Linguistic processing, then, may be impaired at any one of several stages.

Nonlanguage, on the other hand, is somewhat more static and redundant than language (cf. Bateson, 1968). One need not watch an angry face for very long in order to identify the expression, and a single vocalization of great intensity ("Arghhh!") can be readily interpreted in affective terms. Thus, whereas language is like a rapidly changing motion picture that requires cognitive integration of frames over time, nonlanguage is more like a still photograph whose meaning may be apprehended in a single optical gulp. As a result, the encoding and categorization of nonlinguistic acts is relatively simple, and dispositional inferences may be drawn from these acts with relative ease. This is not to say that nonlanguage lacks complexity but rather that it is generally less complex than language, which has a virtually infinite capacity for permutation of elements over time. As such, the processing of language exerts greater demands on the perceiver.

The Development of Language Comprehension

Cognitive operations benefit from practice and may become automatized through repetition. It is thus worth noting that the comprehension of nonlinguistic acts is both phylogenetically and ontogenetically older than is the comprehension of language. Although the origin of language remains a mystery, most scholars agree that rudimentary nonlinguistic modes of communication (whether hand signs, postures, or snorts) historically preceded the emergence of more complex symbolic systems (Miller, 1981).

This process is mirrored in ontogeny: Children respond to many sorts of nonlinguistic cues long before they are capable of understanding speech (Brown, 1973 , 1977), and even infrahumans that lack the capacity for language are able to interpret nonlinguistic acts (e.g., a cat will readily approach a person who soothingly purrs, "I want to eat you"). We suspect that persons' relatively greater experience with the processing of nonlanguage (combined with its relative structural simplicity) renders that processing relatively impervious to disruption.

The Consequences of Impaired Linguistic Processing

As noted, the processing of language includes several steps: Perceivers must encode linguistic information, extract meaning from these encoded representations, and draw inferences from these meanings. We suggest that active perceivers are unlikely to complete all of these steps. Cognitively busy perceivers may fail to encode language, may encode language but fail to extract meaning from these codings, or may extract meaning but fail to draw dispositional inferences from this meaning. Disruption at any stage of linguistic processing should result in attributions that emphasize the nonlinguistic rather than the linguistic behaviors of the target.

This hypothesis has provocative consequences. One of the more widely held perspectives to emerge from the literature on lie detection is that language (more than any other mode of expression) is under the conscious control of the individual and is thus the most fertile medium for deceit and subterfuge (Depaulo, Stone, & Lassiter, 1985 ; Ekman & Friesen, 1969 ; Zuckerman, Depaulo, & Rosenthal, 1981). People lie by *telling* lies. This characteristic of behavioral expression is complemented by an equally robust aspect of behavioral perception: Human perceivers are particularly susceptible to the control of language. Correspondence bias (Gilbert, 1987 ; Gilbert & Jones, 1986 ; Jones, 1979) or the fundamental attribution error (Ross, 1977) often describes the inability of perceivers to discount linguistic claims even when the perceiver knows that these claims are mere fabrications. Thus, the very medium that is most amenable to expressive duplicity is the same medium that perceivers seem most unable to ignore.

The impairment of linguistic processing should have important implications for the perceiver's tendency toward such biases. Because nonlanguage is generally less controllable than language, it often betrays the actor's true intents and motivations. Thus, when the target's nonlinguistic behavior is more diagnostic of underlying dispositions than is the target's linguistic behavior, emphasis on the former aspect of the behavioral complex should enable active perceivers to draw more normative attributions than passive perceivers.

Two further points deserve mention. First, it is generally agreed that correspondence bias is a failure to adjust initial dispositional inferences (which are drawn from language and nonlanguage alike) with information about the situational constraints that evoked the actor's behavior (Gilbert, 1987 ; Gilbert, Pelham, & Krull, in press ; Jones, 1979 ; Quattrone, 1982 ; Trope, 1986). We do not wish to argue that active perceivers who engage in simultaneous cognitive operations are better than passive perceivers at performing this adjustment; rather, we will argue that active perceivers may initially fail to draw dispositional inferences from the linguistic components of action and that their subsequent failure to take situational constraints into account is offset by this initial failure. Under some circumstances, this will result in more normative attributions.

Second, our hypothesis calls on the notion of *capacity interference* , not *structural interference* (see Kahneman, 1973). It is only trivially true that if competing auditory stimuli prevent perceivers from hearing language (structural interference), then these perceivers will be unlikely to use linguistic information. Our contention is that some peripheral tasks do not structurally impair the encoding of linguistic behavior but rather reduce the perceiver's general cognitive capacity. When capacity is reduced, controlled or effortful processes are (by definition) the first to deteriorate (Bargh, 1984 ; Kahneman, 1973 ; Schneider & Shiffrin, 1977). If, as we suggest, the complete processing of language is a more complex and effortful task than is the complete processing of nonlanguage, then even peripheral tasks that do not impair the early stages of linguistic processing (i.e., tasks that allow the perceiver to hear and understand language) should nonetheless impair the latter stages of linguistic processing (i.e., the drawing of dispositional inferences from language).

Experiment 1

Method Overview

Subjects watched a videotape of a male applicant being interviewed for a job by an interviewer who pressed the applicant to present himself as either introverted or extraverted. The applicant made either introverted or extraverted statements in response to this pressure but failed to display corresponding nonlinguistic behavior. One third of the subjects (the *no-load* group) merely watched the interview and made judgments about the applicant's true personality. The remaining subjects performed a visual detection task as they watched the interview: One third attempted to detect one target letter (*medium-load* group) and one third attempted to detect several target letters (*high-load* group) from a rapidly changing visual display that was superimposed on the videotape.

Stimulus Materials Interview tapes.

Two stimulus tapes were constructed. In the *introverted* tape, the interviewer stressed that the job of library researcher paid very well and that the successful candidate would be someone who worked well in isolation, enjoyed solitude, and could be quiet and unobtrusive for many hours. The interviewer further probed for evidence of introversion with questions such as, "What hobbies do you have that would make me think you are a loner?" The interviewee always responded to these probes with evidence of introversion (e.g., "My favorite hobby is playing chess against my personal computer"). The *extraverted* tape showed the job applicant being interviewed for the position of research organizer, whose duties included organizing the activities and solving the problems of a visiting group of high-school seniors. The interviewer probed for evidence of extraversion with questions such as "What hobbies do you have that would convince me you're an outgoing, energetic person?" The interviewee always responded to these probes with evidence of extraversion (e.g., "I really enjoy the tennis club").

Pretesting of interview tapes.

The actor who played the part of the job applicant tried to display introverted or extraverted linguistic behavior in the respective conditions but took great pains to keep his tone-of-voice, facial expressions, and body posture constant across these conditions. To gauge the success of these efforts the interview tapes were transcribed, leaving only the applicant's linguistic behavior. In addition, copies of the tapes were subjected to low-pass audio filtering, which rendered the speech unintelligible while preserving the fundamental frequency of the voice, thus leaving nonlinguistic cues intact.

A total of 26 pretest subjects read the interview transcripts and rated the job applicant's personality on several 13-point scales relevant to introversion–extraversion, providing a check on the linguistic content of the tapes. As expected, the interviewee's statements alone led subjects to believe that he was either extraverted (M = 9.00) or introverted (M = 4.36), t 24 = 6.03, $p < .001$.

Another 26 pretest subjects viewed the content-filtered tapes and rated the interviewee on similar dimensions. Subjects did rate the nonlinguistic behavior of the extraverted interviewee as slightly more extraverted (M = 6.9) than that of the introverted interviewee (M = 5.6), but as we had hoped, this difference was not significant, t 24 =

1.77, *ns* . It is worth noting that to the extent that the nonlinguistic behavior did differ across the two content-filtered tapes, (i.e., if the nonlinguistic behavior was in fact congruent with the linguistic behavior), this difference should work *against* the hypothesis.

Rapidly changing visual display.

A computerized video editor was used to superimpose letters on the two videotapes. For the duration of the two interviews (which were approximately 218 s each), one uppercase Roman letter appeared at a randomly selected location on the television screen every 1 to 3 s, where it remained for approximately 400 ms.

Procedure Subjects.

Subjects were 26 male and 29 female students at the University of Texas at Austin who participated to fulfill a course requirement.

Instructions.

Subjects were invited to participate in an experiment on "reading people's personalities." Subjects were told that they would watch a videotaped job interview that purportedly took place the previous summer and then make ratings of the applicant's personality. To increase subjects' motivation to be accurate, subjects were told that their ratings would later be compared with those made by professional interviewers.

Subjects were seated at a table with a television monitor and a metal box with a push-button on its top. Subjects were randomly assigned to watch either the extraverted or introverted tape, with the goal of diagnosing the applicant's true personality.

Within each of these conditions, subjects were randomly assigned to one of three levels of cognitive load. Subjects in the no-load condition were told to ignore the flashing letters that would appear on the television screen "because those are just there for people in other conditions of the experiment." In the medium-load condition, subjects were told to press the push-button on the metal box each time the letter *A* appeared on the television screen. In the high-load condition, subjects were instructed to press the button each time any one of the letters *R* , *S* , or *T* appeared. Thus, cognitive load was operationalized in terms of the search-set size (e.g., 0 in the no-load condition, 1 in the medium-load condition, and 3 in the high-load condition; cf. Schneider & Shiffrin, 1977).

Practice trials.

Prior to watching the interview, all subjects watched a 120-s practice tape on which single-digit numbers appeared and disappeared at randomly selected locations on a black background. Subjects in the medium- and high-load conditions were told to press the button each time the number *3* appeared on the screen. These subjects were told that this task would familiarize them with the mechanics of the visual detection task. It was stressed that the experimenter would not record the subject's performance on these practice trials. Subjects in the no-load condition were told that they should simply watch the practice tape in order to habituate to the flashing numbers, thus enabling them to ignore the flashing letters that would appear during the interview.

Dependent Measures

After watching the interview and (in the medium- and high-load conditions) simultaneously performing the visual detection task, subjects were asked to rate the applicant's true personality on three 13-point scales anchored at the endpoints with one of the members of each of the following pairs: *introverted–extraverted* , *sociable–unsociable* , and *shy-outgoing* . Subjects were then asked to read a list of 30 trait adjectives that had previously been rated by Cantor and Mischel (1977) as prototypically extraverted, prototypically introverted, or neutral and to circle all those that described the applicant. Finally, all subjects completed a recognition-memory test for the content of the taped interviews. At the conclusion of the experiment, subjects were fully debriefed. [1]

Results and Discussion Trait Scales

There were no effects of sex on any of the measures to be discussed. Subjects' ratings of the applicant's sociability, extraversion, and outgoingness were each subjected to a 2 (linguistic behavior: introverted or extraverted) × 3 (cognitive load: none, medium, or high) analysis of variance (ANOVA). As Table 1 shows, the analyses revealed main effects of linguistic behavior on each of the measures, F 1, 49 = 64.26, 64.36, and 65.53 , respectively, all p s < .0001. Overall, subjects attributed dispositions to the applicant that were congruent with the applicant's constrained linguistic self-presentation (i.e., subjects showed correspondence bias).

However, these main effects were qualified by the predicted Linguistic Behavior × Cognitive Load interactions, F 2, 49 = 3.58, 4.24, and 3.21 , respectively, all p s < .05. As Table 1 shows, no-load subjects considered the self-proclaimed extravert to be much more extraverted than the self-proclaimed introvert, whereas extra-load subjects were less likely to do so. Although the differences in the extra-load conditions were, by and large, nonsignificant, a conservative interpretation of these null effects is that cognitive load attenuated (rather than eliminated) the tendency toward correspondence bias.

Trait-Count Measures

Subjects read a list of 10 introverted, 10 extraverted, and 10 neutral traits and circled those they felt described the applicant. A 2 × 3 ANOVA (as described before) on the number of introverted traits ascribed to the applicant revealed a main effect of linguistic behavior, F 1, 49 = 40.66, p < .0001 , and a Linguistic Behavior × Cognitive Load interaction, F 2, 49 = 3.24, p < .05 . As Table 2 shows, increased cognitive load once again attenuated the tendency to ascribe more introverted traits to the self-proclaimed introvert than to the self-proclaimed extravert.

The number of extraverted traits circled was subjected to a 2 × 3 ANOVA (as described before), which revealed a main effect of linguistic behavior, F 1, 49 = 21.43, $p < .001$. Overall, the self-proclaimed extravert was attributed a greater number of extraverted traits than was the self-proclaimed introvert. Although post hoc tests revealed the expected differences within conditions (i.e., a significant difference between the two interview conditions for no-load subjects, but not for extra-load subjects) the overall interaction did not achieve significance. The generally low number of extraverted traits ascribed to the self-proclaimed introvert ($M = .9$) suggests that a floor effect may have attenuated the expected interaction. Apparently, the constraining nature of the job-interview setting (in which even a true extravert cannot sing bawdy songs, but must remain politely seated) created a tendency to see both applicants as somewhat introverted.

Finally, it is worth noting that a similar ANOVA performed on the number of neutral traits ascribed to the applicant revealed no effects: Extra-load subjects attributed the same number of neutral traits to the applicant ($M = 3.6$) as did no-load subjects ($M = 4.1$), $F < 1$, a point to which we will shortly return.

Recognition Memory

Subjects read four statements taken verbatim from the applicant's statements (presented items) and four statements that were not among those made by the applicant (foils). A 2 × 3 ANOVA (as described before) performed on the number of presented items that subjects correctly recognized as such (hits) revealed no significant effects. A similar ANOVA on the number of foils that subjects mistook for presented items (false alarms) revealed only a marginal (and unimportant) main effect for linguistic behavior, F 1, 49 = 3.78, $p < .06$, such that subjects who saw an applicant claiming extraversion endorsed more foils than did subjects who saw an applicant claiming introversion. Of importance is the fact that no significant effects of or involving cognitive load emerged: Subjects in the extra-load conditions were just as able to recognize correctly the applicant's linguistic behavior as were subjects in the no-load condition.

Note, however, that subjects in the extra-load conditions displayed excellent overall memory: On the average, they incorrectly endorsed only 20% of the foil items and correctly endorsed 94% of the presented items. Unfortunately, this means that the failure to find a difference between the memories of extra-load and no-load subjects may reflect the insensitivity of the recognition memory test rather than true equality of memory. Nonetheless, the important point is that extra-load subjects did very well in an absolute sense, indicating that they indeed heard and remembered the target's claims.

Summary

The results of Experiment 1 are clear: Subjects who engaged in a peripheral cognitive task were less likely to draw dispositional inferences from a target's constrained linguistic behavior than were subjects who performed no peripheral task. Rather, extra-load subjects seemed to rely less on linguistic than nonlinguistic cues (tone of voice, facial expression, gestures, and so forth), and thus drew more normative inferences about an interviewee whose claims were evoked by the interviewer. In addition, the recognition memory data suggest that these subjects indeed *heard* the linguistic information, but simply emphasized it less in their judgments.

Still, an important question remains. Our argument rests on the fact that extra-load subjects rated the target person less extremely than did no-load subjects. It is possible that extra-load subjects believed themselves to be operating under imperfect conditions and therefore felt less certain about the information they obtained. This may have caused extra-load subjects to moderate their ratings toward the midpoints of the trait scales, thus producing the predicted effect for rather less interesting reasons. Of course, extra-load subjects attributed just as many neutral traits to the applicant as did no-load subjects and displayed good memory for the applicant's behavior; both of these facts argue against this interpretation. Nonetheless, it did seem necessary (a) to explore a circumstance in which our hypothesis would predict equally extreme ratings for extra-load and no-load subjects, (b) to manipulate nonlinguistic behavior directly, and (c) to collect certainty ratings in order to rule out this alternative hypothesis.

In the first experiment the linguistic behavior of the target (extraverted or introverted) differed across conditions while the nonlinguistic behavior was held constant. In our second experiment we presented a target whose linguistic behavior suggested extreme characteristics of one sort (e.g., a pro-abortion attitude) but whose nonlinguistic behavior (tone of voice) suggested extreme characteristics of precisely the opposite sort (e.g., an anti-abortion attitude). Furthermore, the nonlinguistic behavior was language dependent, in that it had no meaning in and of itself but rather served only to modify the meaning of the linguistic behavior. Thus, extra-load subjects who did not hear the target's words would have a difficult time making sense of the target's nonlinguistic actions.

Experiment 2

Method Overview

Subjects heard a pro- or anti-abortion speech purportedly written by a male student who had been assigned to defend a particular point of view. Although the linguistic content of the speech was quite extreme, the target read the speech with a pronounced lack of enthusiasm. Thus, for example, the linguistic content of the pro-abortion speech suggested that the target was indeed in favor of abortion, whereas the nonlinguistic content suggested that he in fact did not believe what he was saying. Thus, both linguistic and nonlinguistic behavior were manipulated in an incomplete factorial design. Half of the subjects heard the speech while concurrently performing a visual detection task, and the remaining subjects heard the speech but performed no concurrent task. After hearing the speech, all subjects were asked to estimate the target's true attitude toward abortion.

Procedure Subjects.

Subjects were 34 male and 25 female students at the University of Texas at Austin who participated to fulfill a course requirement.

Instructions.

Subjects were invited to participate in an experiment on "reading people's attitudes" and, as in Experiment 1, were told that their judgments would later be compared with those of professional person perceivers (therapists, personnel managers, etc.). Subjects were seated at a table with a video monitor and a push-button (as in Experiment 1) and were told that they would hear a tape of a student from a previous experiment reading an essay that he had written. It was stressed that the essayist had been assigned to defend either a pro- or an anti-abortion position and had had no choice with regard to the ideological stance of his speech (cf. Jones & Harris, 1967). Subjects were randomly assigned to hear either the pro- or anti-abortion speech and were told in all conditions that their primary task was to diagnose accurately the student essayist's true attitude toward abortion.

The speeches.

Both the pro- and anti-abortion speeches contained several strong and well-reasoned arguments supporting their respective points of view. However, the speaker read each of these speeches with a decided lack of enthusiasm, failing to emphasize important points, slowly speaking in a stilted, blunted monotone and inserting inappropriate pauses. Thus, the linguistic content of the pro-abortion speech, for example, suggested a strong pro-abortion attitude, whereas the nonlinguistic content suggested precisely the opposite attitude (cf. Jones, Worchel, Goethals, & Grumet, 1971).

Cognitive load.

Half of the subjects were randomly assigned to the extra-load condition. Subjects in this condition were asked to watch a video monitor as they heard the audiotaped speech. A two-digit number appeared on the video monitor approximately every 1,500 ms where it remained, against a black background, for approximately 400 ms. These subjects were told that in addition to their primary task of diagnosing the essayist's true attitude, they were also to press the button whenever an even number appeared on the monitor. [2] Subjects in this condition performed a 10-item practice trial of the visual detection task in order to familiarize them with its mechanics. Subjects in the no-load were given no visual detection task and the video screen remained blank.

Dependent Measures

After listening to the speech and (in the extra-load condition) concurrently performing the visual detection task, subjects were asked to rate the essayist's true attitude on a 13-point scale anchored at the endpoints with the phrases *very much against legalized abortion* and *very much in favor of legalized abortion* . Subjects then rated (on similar scales) the essayist's attitude on three related political issues, the essayist's overall political orientation (liberal or conservative), their own certainty about the preceding ratings, and their own attitude toward abortion. Finally, subjects completed a recognition-memory test for the content of the essay they had heard. At the end of the experiment subjects were fully debriefed.

Results and Discussion Perceived Attitude Toward Abortion

There were no effects of sex on any of the measures to be discussed. A 2 (linguistic behavior: pro- or anti-abortion) × 2 (cognitive load: none or extra) ANOVA on subjects' ratings of the essayist's true attitude toward abortion revealed only the expected interaction, F 1, 55 = 4.10, $p < .05$. As Table 3 shows, no-load subjects (who merely listened to the essayist's speech) attributed to the essayist an attitude congruent with the linguistic content of the speech. These subjects showed the typical correspondence bias effect. However, extra-load subjects (who performed a concurrent visual detection task) attributed to the essayist an attitude *opposite* to that suggested by the linguistic content of the speech–a complete *reversal* of the correspondence bias effect. [3]

Perceived Attitude on Related Issues

Similar analyses of subjects' ratings of the essayist's attitudes on 3 related issues revealed no significant effects. Of course, this measure relies on subjects' realization that a person's stance on the abortion issue suggests specific attitudes on other issues, such as marijuana legalization and school prayer. Apparently, many college freshmen do not have a well-developed intercorrelation matrix of political attitudes, a finding that (although lamentable) is consistent with our previous experience (e.g., Gilbert & Jones, 1986 ; Gilbert, Jones, & Pelham, 1987). Given this fact, the additional failure to find any effects for political orientation is unremarkable.

Inferential Certainty

Were extra-load subjects less certain of their attributions than were no-load subjects? A 2 × 2 ANOVA (as described before) on the certainty measure revealed no significant effects. Extra-load subjects were just as certain about the accuracy of their attributions (M = 7.6) as were no-load subjects (M = 8.1).

Recognition Memory

Subjects read 5 statements taken verbatim from the essayist's speech (presented items) and 5 statements that were not among those made by the essayist (foils). A 2 × 2 ANOVA (as described before) performed on the number of presented items that subjects correctly identified as such (hits) revealed no significant effects. A similar ANOVA on the number of foils that subjects mistook for presented items (false alarms) revealed an unimportant main effect of linguistic behavior, F 1, 55 = 7.63, $p < .01$, such that subjects who heard a pro-abortion speech endorsed more foils (M = 1.46) than did subjects who heard an anti-abortion speech (M = 0.85). There was, however, a potentially important main effect of cognitive load, F 1, 55 = 11.3, $p < .01$, such that extra-load subjects endorsed more foils (M = 1.53) than did no-load subjects (M = 0.28).

Does the tendency for extra-load subjects to endorse more foils indicate that they had poorer memory than did no-load subjects? Unfortunately, we cannot be sure. In this recognition memory test (unlike that used in Experiment 1) all of the foils were statements that supported a position opposite to that endorsed by the essayist. Because of this oversight, the false-alarm data show only that extra-load subjects remembered the pro-abortion essayist as having made some anti-abortion statements and vice versa. Is this because extra-load subjects did not actually hear the statements, or is this because having already attributed the opposite attitude to the essayist, extra-load subjects sought to justify their peculiar attributions by claiming that the essayist had actually made statements in line with the subjects' attributions?

Subjects' Attitudes Toward Abortion

Some light is shed on this issue by subjects' reports of their own attitudes toward abortion. Recall that the speeches subjects heard contained many well-reasoned arguments, and thus some persuasion effects may be expected. An ANOVA (as described before) on subjects' self-reported attitudes toward abortion revealed a marginal main effect of linguistic behavior, F 1, 55 = 3.82, $p < .06$, indicating that subjects who heard a pro-abortion speech were, at the end of the experiment, more in favor of abortion (M = 9.3) than were subjects who heard an anti-abortion speech (M = 7.3). The lack of a significant interaction on this measure indicates that subjects in both extra- and no-load conditions were equally persuaded by the linguistic content of the essayist's speech. Thus, for example, extra-load subjects who heard a pro-abortion speech attributed an anti-abortion attitude to the essayist, but the subjects themselves became more pro-abortion. It seems unlikely that extra-load subjects could have been persuaded had they not heard the essayist's rhetoric. These data, along with the fact that the nonlinguistic information served only to modify the linguistic information, strongly suggest that extra-load subjects heard the speech quite clearly and that their somewhat greater tendency to endorse foils is a (not uninteresting) attempt to justify an odd pattern of attributions.

Experiment 3

In Experiments 1 and 2 cognitive load was increased by asking subjects to attend to a rapidly changing visual display. Although this task adequately models a variety of peripheral cognitive activities, it seemed important to demonstrate that a truly social task could produce similar effects. In the real world, the active perceiver's cognitive load is often increased by his or her attempt to pursue several goals simultaneously (Gilbert, Jones, & Pelham, 1987). For example, during an ordinary conversation we may listen to a person's political opinions, but we may at the same time be trying to make the person like us, obey us, listen to us, or simply leave us alone.

In Experiment 3 extra-load subjects listened to the speeches used in Experiment 2, but rather than tracking a visual display, extra-load subjects were asked to perform a social influence task (viz., to make the essayist laugh as he delivered his speech). We predicted that this additional social task would produce the inferential effects demonstrated in

Experiment 2 (i.e., that subjects who tried to make the essayist laugh would show a complete reversal of the typical correspondence bias effect).

Method Overview

Subjects heard a male essayist read either a pro- or anti-abortion speech that he had purportedly written at the request of the experimenter. As in Experiment 2, the essayist read the speech with a pronounced lack of enthusiasm. Half of the subjects were asked simply to listen to the speech (the no-load condition) and the remaining subjects were asked to use nonverbal means to make the essayist laugh during his presentation (the extra-load condition). Thus, once again, linguistic and nonlinguistic behavior were manipulated in an incomplete factorial design. After hearing the speech, all subjects were asked to determine the essayist's true attitude toward abortion.

Procedure Subjects.

Subjects were 19 male and 45 female students at the University of Texas at Austin who participated to fulfill a course requirement.

Instructions.

Subjects were invited to participate in a project on television journalism and newscasters' opinions. Subjects were seated in a room with a videocamera and a loudspeaker and were told that another male subject (the essayist) had been in an adjoining room for 15 min composing an essay. Subjects were told that soon they would hear the essayist read his essay over the loudspeaker system and that their primary task was to determine the essayist's true attitude toward the topic about which he was speaking (abortion). It was stressed that the essayist had had no choice with regard to the particular position he would defend but had been assigned to defend a position (pro- or anti-abortion) by the experimenter.

Cognitive load.

Subjects were told that the videocamera was connected to a television monitor in the essayist's room and that the essayist would be able to see the subject while the essayist read his speech. In the no-load condition the presence of the camera was explained by the fact that "in our past research we have found that readers do a better job when they have an audience, and thus we are allowing the essayist to watch you while he reads his speech." In the extra-load condition the camera was said to be present because "while listening to the essayist's speech there is something else we want you to do at the same time: We want you to try to make the essayist laugh. We want you to make faces, look silly, roll your eyes, scrunch up your nose–anything except making noise that will cause the essayist to smile or laugh while he reads his speech aloud." This request was justified by telling subjects that, "one of the things that the University of Texas Television Journalism Project is designed to investigate is how newscasters learn to tune out distractions, and thus we are asking you to provide such a distraction to the essayist by trying to make him crack up." In fact, there was no essayist in the adjoining room, and the speeches that subjects heard were the same prerecorded pro- and anti-abortion speeches used in Experiment 2. [4]

Dependent Measure

After listening to the speech and (in the extra-load conditions) making silly faces at the essayist, subjects were asked to rate the essayist's true attitude on a 13-point scale anchored at the endpoints with the phrases *very much against legalized abortion* and *very much in favor of legalized abortion* . At the end of the experiment, subjects were extensively probed for suspicion and fully debriefed.

Results and Discussion

There were no effects of sex on the dependent measure. A 2 (linguistic behavior: pro- or anti-abortion) × 2 (cognitive load: none or extra) ANOVA on subjects' ratings of the essayist's true attitude toward abortion revealed only the expected Cognitive Load × Linguistic Behavior interaction, $F(1, 52)$ [5] $= 4.35$, $p < .04$. As Table 4 shows, the pattern of results from Experiment 2 was replicated: No-load subjects attributed language-congruent attitudes to the essayist, whereas extra-load subjects (who had tried to make the essayist laugh during his presentation) attributed language-incongruent attitudes to the essayist–a complete reversal of the correspondence bias effect.

General Discussion

The foregoing experiments suggest that perceivers who engage in concurrent cognitive tasks may more readily rely on nonlinguistic than linguistic cues, and as a result, may be relatively immune to the duplicitous aspects of linguistic behavior. Those subjects who performed moderately demanding cognitive tasks during person perception displayed a decreased tendency toward correspondence bias (Experiment 1) or showed a clear reversal of this robust attributional effect (Experiments 2 and 3). The data are consistent with our contention that peripheral tasks deplete the general processing resources available to the person perceiver, thus disabling the less automatic aspects of person perception (linguistic processing) while leaving the more automatic aspects (nonlinguistic processing) intact. Nonetheless, the data do not show precisely how or where peripheral tasks impair the processing of linguistic behavior, issues to which we now turn.

Where Linguistic Processing is Impaired

We have postulated that linguistic processing comprises three gross conceptual stages: the encoding of words, the extraction of higher order meaning from the encoded words, and the inference of disposition from the higher order meanings. Which of these steps was impaired by the peripheral tasks in which our extra-load subjects engaged? The memory data in Experiment 1, the persuasion data in Experiment 2, and the fact that nonlinguistic behavior only modified linguistic behavior in Experiments 2 and 3 all strongly suggest that extra-load subjects heard the targets' words and that the preliminary encoding of linguistic information was not impaired. But were extra-load subjects able to transform these small linguistic units into larger ideas (i.e., extract higher order meaning)? We cannot be sure. The fact that extra-load subjects in Experiment 2 were persuaded by the arguments they heard and were confident of the attributions they made suggests that they did extract meaning from the words. Nonetheless, we cannot yet determine whether the second or third conceptual stage of linguistic processing was impaired by cognitive load.

How Linguistic Processing is Impaired

We have argued that ongoing cognitive activity interferes with linguistic processing by usurping a common resource (capacity interference) rather than impairing the ability to hear language (structural interference). However, as one pursues the distinction between capacity and structural interference, the distinction breaks down in very short order (Navon, 1983 , 1984 ; cf. Wickens, 1980). To understand which of these theoretical constructs best explains our results, we must distinguish between *sensory structure* (those structures that are required for the initial sensing of information) and *cognitive structure* (those structures that are required for the subsequent processing of information).

It is very unlikely that sensory-structural interference played a role in the foregoing experiments. In Experiment 1 the peripheral task (letter detection) involved the visual channel, whereas the primary task (social perception) involved both visual and auditory channels. If anything, the (visual) peripheral task should have physically interfered with the sensing of nonlinguistic behavior (which had visual components) more than linguistic behavior (which had only auditory components). In Experiment 2, the peripheral task (numeral detection) involved only the visual channel and the primary task (social perception) involved only the auditory channel, and thus no sensory interference should have resulted. Finally, in Experiment 3 the peripheral task (making faces) was expressive rather than receptive, and thus did not require the use of a sensory channel. In terms of sensory structures then, there is no reason to believe that the effects demonstrated in the present studies are due to mere structural interference.

In terms of cognitive structures, however, one might make a rather interesting case for a structural-interference interpretation of our results. Clinical evidence suggests that linguistic and nonlinguistic behaviors are processed by different neurological units. Although unable to recognize spoken words, receptive aphasics (who suffer left cerebral hemisphere damage) are able to identify tone-of-voice cues with such skill that their interaction partners may remain unaware of the victim's disorder (e.g., Danly & Shapiro, 1982 ; Sacks, 1985 , pp. 77—80). Certain varieties of tonal agnosiacs, on the other hand, whose malady is characterized by right cerebral hemisphere damage, are able to process language quite efficiently but are unable to extract any information from tone-of-voice cues (e.g., Hecaen & Albert, 1978 , pp. 265—276; Heilman, Scholes, & Watson, 1975 ; cf. Blumstein & Cooper, 1974).

This evidence suggests that peripheral tasks that involve predominantly left-hemisphere functioning (such as the detection of alphanumeric characters) may more strongly impair the processing of linguistic than nonlinguistic behavior, providing a cognitive-structural interpretation of our results. However, two points are worth noting. First, it is unlikely that cognitive-structural interference can entirely account for the effects demonstrated in our studies because these effects obtain even when the peripheral task (making faces) is not clearly left-hemisphere oriented. Second, if cognitive-structural interference does mediate our effects, the results are still broadly applicable. Many of the ongoing cognitive activities in which the active person-perceiver is engaged involve inner speech ("I wonder what she thinks of me? When is my next appointment?") and may thus interfere primarily with left-hemisphere processing, producing the sorts of effects documented in the present studies. Thus, although we favor the capacity-interference interpretation, either explanation suggests that the present results are applicable to a wide variety of ecologically meaningful circumstances.

Underprocessing and Overprocessing

The modern approach to decision making generally implicates *underprocessing* (the failure to notice, use, or remember relevant information) as the cause of inferential error. People respond mindlessly to the surface features of problems, relying on simple heuristics rather than puzzling through a wealth of details and, as a result, are prone to a predictable set of errors (e.g., Kahneman, Slovic, & Tversky, 1982 ; Langer, 1978). The prescribed remedy for such erroneous inference making often involves training cognitive misers to think more critically and respond less automatically to their environments (e.g., Cialdini, 1985 ; Nisbett, Krantz, Jepson, & Fong, 1982).

Although underprocessing is clearly responsible for a multitude of inferential sins, the opposite extreme can be equally debilitating. As Easterbrook (1959) suggested almost three decades ago, performance can sometimes be enhanced by restricting the range of cues to which performers attend; in other words, information loss can have positive consequences. Indeed, many errors of social judgment that are commonly thought of as products of underprocessing (e.g., correspondence bias, perseverence, the vividness effect, etc.) are just as easily construed as products of *overprocessing:* the processing and application of superfluous or nondiagnostic information. Each of these errors can be thought of as an instance in which people are led astray by information that is in fact quite useless, whether it is the constrained speech of an essayist (Jones & Harris, 1967), the arbitrary outcome of a suicide-note discrimination task (Ross, Lepper, & Hubbard, 1975 ; Wegner, Coulton, & Wenzlaff, 1985), or a vivid account of a friend's dysfunctional Volvo (Nisbett & Ross, 1980). In these cases perceivers are, in effect, seduced by information that they would be better off not having.

The present studies suggest that under some circumstances (viz., when nonlinguistic behavior is more diagnostic than linguistic behavior) cognitively busy perceivers may be relatively immune to correspondence bias, an error of overprocessing. For example, when someone lies to us we often have the feeling that the person is not what he or she claims to be. Such intuitions may reflect information gleaned from the person's tone of voice, gestures, or facial expressions. When cognitive load is very low, these intuitions may be overpowered by the cogency of the liar's words, but during interaction (when cognitive load is high) these intuitions may serve as the primary basis for our ultimate judgments, simply because our ability to draw dispositional inferences from the linguistic lie is disabled.

The upshot is that we may draw fairly accurate inferences about the most important liars in our lives: those with whom we interact. In some cases, seeing less means knowing more. Social interaction is a demanding activity and active person perceivers must cope with an abundance of environmental stimuli as well as a multitude of self-generated distractions. To deal with the booming, buzzing confusion of real social life, active perceivers may fail to process a good bit of information, and in so doing, may avoid many of the inferential traps in which passive perceivers seem so easily and inextricably snared.

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1

We had also hoped in this experiment to use the Cheek and Buss (1981) self-report Extraversion Scale as an other-report instrument. Unfortunately, the critical factor structure of the instrument (i.e., separate shyness and sociability factors) was not obtained when used in this way, casting doubt on the appropriateness of our adaptation. As such, these data will not be discussed.

2

For the present purposes it matters little whether subjects identified even numbers by performing mental arithmetic (i.e., division by 2) or by matching the last digit of the target number to a memory set (0, 2, 4, 6, 8).

3

One might claim that extra-load subjects did indeed show correspondence bias because they drew inferences that corresponded to the target's nonlinguistic behavior. It is important to remember that only the target's linguistic behavior was ostensibly constrained, and thus correspondent inferences from nonlinguistic behavior are not biased.

4

Because the essayist's speech was taped, the essayist did not respond to subjects' attempts to make him laugh. Subjects may believe that a person who cannot be distracted is particularly committed to what he or she is doing (e.g., the stoic guard at Buckingham Palace). It is worth noting that this belief should work against the hypothesis.

5

Unbeknownst to us, another experiment that used a similar deception was being run concurrently with ours, and thus several subjects did not believe that the essayist was actually in the adjoining room. Fortunately, at the end of the experiment all subjects completed an extensive questionnaire that probed for suspicion, then sealed those reports in envelopes that were to be opened at the end of the semester. On the basis of the experimenter's written comments and the subjects' written reports, 8 suspicious subjects were deleted from the data set. Although the deletion of these subjects changes the level of significance of the reported statistical effects, it does not change the pattern of the findings.

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Table 1
Perceptions of Applicant's Personality on Trait-Scale Measures: Experiment 1

Linguistic behavior	Cognitive load: None	Medium	High
	Sociability scale		
Extraverted	10.4	9.4	8.6
Introverted	3.1	5.5	5.0
Difference	7.3*	3.9	3.6
	Extraversion scale		
Extraverted	9.8	8.5	7.1
Introverted	2.9	4.3	4.3
Difference	6.9*	4.2	2.8
	Outgoingness scale		
Extraverted	9.4	8.2	7.0
Introverted	2.8	3.8	4.0
Difference	6.6*	4.5*	3.0

Note. Higher numbers indicate greater perceived sociability, extraversion, and outgoingness.
* $p < .05$ by t test corrected for multiple comparisons.

Table 2
Perceptions of Applicant's Personality on Trait-Count Measures: Experiment 1

Linguistic behavior	Cognitive load: None	Medium	High
	No. of introverted traits ascribed		
Extraverted	1.9	3.0	3.5
Introverted	8.4	6.4	6.1
Difference	−6.5*	−3.4	−2.6
	No. of extraverted traits ascribed		
Extraverted	3.8	3.6	2.8
Introverted	0.4	1.3	0.9
Difference	3.4*	2.3	1.7

* $p < .05$ by t test corrected for multiple comparisons.

Table 3
Perception of Essayist's Attitude Toward Abortion: Experiment 2

Cognitive load	Linguistic behavior: Pro-abortion	Anti-abortion	Difference
None	7.20	6.07	+1.13
Extra	5.70	7.30	−1.60

Note. Higher numbers indicate more pro-abortion attitudes.

Table 4
Perception of Essayist's Attitude Toward Abortion: Experiment 3

Cognitive load	Linguistic behavior: Pro-abortion	Anti-abortion	Difference
None	7.73	6.31	+1.42
Extra	5.92	7.64	−1.72

Note. Higher numbers indicate more pro-abortion attitudes.