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Time as a shared resource : the effects of depression and behavior verifiability on perceptions of temporal investment

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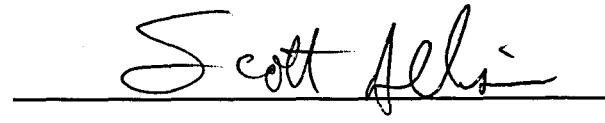
Abstract

People have a tendency to view themselves in a more favorable light than they do others, a phenomenon termed the egocentric bias (Messick, Bloom, Boldizar, & Samuelson, 1985). Past research has shown that people are more likely to display the bias in situations that are "nonverifiable", meaning that there is no way to accurately measure the dimension on which judgments are made (Allison, Messick, & Goethals, 1989). Two experiments tested the hypothesis that only nondepressed individuals in a nonverifiable situation would show the egocentric bias, whereas nondepressed subjects in the verifiable condition and depressed subjects in both conditions would not show the bias. In the first experiment, forty-seven introductory psychology students performed a timed task in the laboratory and then made estimations as to how much time they and a "partner" consumed to complete the task. Analyses revealed that nondepressed subjects in the verifiable and nonverifiable conditions demonstrated the egocentric bias, and that depressives in both conditions did not show the bias. In the second experiment, fifty apartment residents reported how much time they and their apartmentmates consumed weekly in performing household tasks. The results showed that the egocentric bias emerged in all conditions. These and other findings are discussed in conjunction with previous theoretical work on social and temporal judgments.

I certify that I have read this thesis and find that, in scope and quality, it satisfies the requirements for the degree of Master of Arts.



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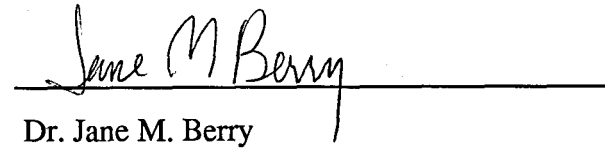

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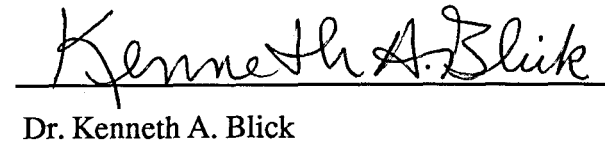

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Time as a Shared Resource: The Effects of Depression and Behavior Verifiability on Perceptions of Temporal Investment

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Time as a Shared Resource:
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Social psychologists have long been interested in the social norms that guide people's behavior when sharing resources (Allison, McQueen, & Schaerfl, 1992; Deutsch, 1975; Mannix, 1991; Rutte, Wilke and Messick, 1987). The goal of this research is to demonstrate the ways in which people may use, share, and possibly exploit environmental resources such as land, water, and air. These types of resources are all "material" resources that make it possible to measure, or at least make an estimation of, the actual quantity of the resource. Identifying the norms people use in sharing situations is important, particularly if the findings can be extended to a world in which people share limited quantities of natural resources in the context of a rapidly growing population. Although social psychologists have shown a preoccupation with how people share material resources, they have ignored the question of how people share more abstract resources such as energy, effort, ideas, or time. The central focus of the present research is on identifying the psychological processes governing the manner in which people collectively share the resource of time.

A time or temporal resource might be defined as any length of time one invests in attempting to complete some project or goal. A shared temporal resource is the time one invests in completing a joint project or goal. The time a married couple spends preparing dinner or painting a house could be considered a shared temporal resource. The eventual outcome of the effort--a successful dinner party or an attractive home--does not determine the temporal investment. The temporal investment may only be measured by determining the actual amount of time used in performing the activity. In a society where time has come to represent a valuable commodity (hence, the phrase "time is money"), the identification of time-sharing norms could help, for instance, in the honing of time management skills.

Moreover, an understanding of the psychological processes that characterize the use of time-sharing norms might facilitate the discovery of ways to enhance interpersonal cooperation in time-sharing situations.

In the present research, we will be examining whether the same psychological phenomena that arise when people share material resources also arise when people share temporal resources. Two studies will be performed: a controlled laboratory experiment and an exploratory field study. Briefly, the laboratory study will pair each subject with a "partner" (who ostensibly participated earlier in the day) to work on a joint project that must be completed within a set amount of time. The goal for the dyad is to take as little time as possible to complete the assigned task. In this situation, we predict that subjects will underestimate how much time they spent working on the task relative to their partners because of the social desirability of appearing "fast" and "efficient". The field study will examine the time estimations made by dwelling partners as to their temporal contributions to household chores. In this situation, the subjects are expected to report longer time periods of participation in these activities, again because of the socially desirability of appearing to work harder than their housemates. To gain an understanding of the variables involved in the sharing of temporal resources, we first need to review the material resource sharing literature in greater detail.

The Use of Heuristics When Sharing Resources

In any group or society, people often encounter situations in which they find themselves sharing some type of commodity or material with others. In these situations, there may be uncertainty or conflict about how to divide the resource appropriately. In such situations, people tend to fall back on certain social norms or "social decision heuristics" (Allison et al., 1992). At a general level, a heuristic is defined as a general decision making tool that people use to simplify complex tasks (Allison, 1987; Messick, 1991; Sherman & Corty, 1984; Tversky & Kahneman,

1974). Heuristics are employed when a person desires a quick solution to problems that are complex or unclear (Allison, 1987; Beach & Mitchell, 1978).

According to Allison and Messick (1990), social decision heuristics are simple rules of thumb that decision makers use to facilitate the allocation of resources among group members. Examples of social decision heuristics include "divide equally", "first come, first served", and "each according to his/her needs". Unlike social norms, social decision heuristics are cognitively simple rules of thumb that are often applied quickly and mindlessly (Messick, 1991). Previous research has shown that the most frequently used social decision heuristic is "divide equally" (Allison & Messick, 1990). Moreover, recent studies suggest that people will utilize use equal division as a social decision heuristic to the extent that environmental cues are present that make the heuristic salient, or to the extent that competing cues are absent (Samuelson & Allison, in press).

Langer (1989) has coined the term "mindlessness" to describe people's tendency to avoid thinking deeply or systematically in social situations. She claims that mindlessness is a state resulting from the overuse of schemas, scripts, and heuristics. Hence, Langer's notion of mindlessness is consistent with social decision heuristic theory. Both conceptualizations suggest that many people tend to approach problems from a narrow perspective and do not consider all possible solutions.

Deutch (1975) employed a theoretical approach to explain the applicability of social decision making norms and heuristics across various social situations. He postulated that in collective work situations, people have a specific collective goal in mind that they wish to achieve. The heuristic used is chosen in accordance with that goal, although both the goals and heuristics are usually not formally recognized in social situations. According to Deutch, when the goal is economic productivity, equity is the dominant heuristic; when the goal is maintenance of social/personal relations, equality is the dominant heuristic; and when the goal is personal

development and welfare, need is the dominant heuristic. From these theoretical considerations, the goal in the present field study would most closely fit "economic productivity", as the subjects are attempting to work cooperatively toward a goal that will ideally benefit both (the team with the lowest time wins), but could benefit one over the other depending upon how much work each invests in the project (the lowest individual time overall wins). In such a case, one might hypothesize that the participants would show an egocentric bias in their efforts to "outperform" the others and receive the prize. The division of the shared resource (time), therefore, would be fair but unequal.

Even equal division of resources can be a very difficult or impractical goal to achieve. For example, dividing equally becomes a problem when the actual amount of the available resource becomes uncertain. Uncertainty can be manifested in different ways. Allison et al. (1992) manipulated the partitionment of shared resources (partitioned versus nonpartitioned) to assess the applicability of the equality heuristic in uncertain situations. Partitioned resources are more discretely defined and comprise more or less equal shares, such as a stack of quarters. A nonpartitioned resource is arranged in a more "continuous" form and is therefore much more difficult to divide equally by the naked eye, as in the case of an open sack of flour. These researchers hypothesized that the equality heuristic would be used more prevalently in a partitioned resource condition than in a nonpartitioned resource condition because of the ease of division with a partitioned resource. In addition, they also suggested that as groups sharing nonpartitioned resources increase in size, the tendency to violate the equality heuristic heightens. This enhanced tendency to violate equality would occur because it is more difficult to estimate smaller equal divisions of a nonpartitioned resource than to estimate larger equal divisions of that same resource.

Allison et al. conducted three experiments in which groups of differing sizes (3 or 12-person groups) shared resources that were either partitioned (wooden

blocks) or nonpartitioned (sand). The 12-person nonpartitioned groups repeatedly violated the equality rule more than the other three groups. These findings are relevant to the present study in that "time" can assume both a partitioned and a nonpartitioned arrangement. Time can be defined by seconds, minutes, and hours, but if one does not have access to some type of timepiece to mark the divisions, time is essentially nonpartitioned.

A nonpartitioned resource is not the only way to create uncertainty in a resource sharing situation. Rutte et al. (1987) presented subjects with a situation in which they were sharing a resource that was either extremely abundant or extremely scarce. Each subject was told that she or he would be sharing resources in a 6-person group via computer. The objective for the group was to take as much money from the resource pool for oneself while making sure that the combined group withdrawal of money did not exceed the amount available. Half the subjects were told that the first group members to withdraw from the resource would know from the start how much money was available, whereas the other half were told that the first group members were ignorant of the total amount of money available. Each subject was told that he or she was selected to be the fifth player to withdraw from the resource pool.

The results of this scarcity versus abundance manipulation were quite provocative. In both conditions, when the subjects believed that the group had <u>not</u> known the size of the pool from the outset, they used an equality heuristic and took about half of the remaining resource (thereby leaving the final group member an equal share of the remaining money). But when the subject believed that the group knew from the start the size of the pool, a different set of rules were used. In the abundance condition, the previous players had all taken less than their equal share of the pool, and so subjects tended to make smaller that equal withdrawals as well. Likewise, in the scarcity condition, the previous players had all consumed more than their equal share, prompting subjects to respond by also withdrawing more

than their equal share of the remaining money. Interestingly, in these two situations, the subjects withdrew both over and under their equal shares in the same proportionate amounts as had the previous players. For instance, if the fourth player had withdrawn 25% over her or his amount of the remaining pool, the subject withdrew 25% over her or his amount of the remaining pool. It appears that in resource sharing settings, the decisions of initial participants serve to reduce uncertainty by establishing important norms (or heuristics) for appropriate conduct.

Mannix (1991) found similar results in her study of resource dilemmas in groups. These groups also played computer games with a common monetary resource that was either high- or low-discounting. In the high-discounting situation, the common monetary resource would decrease at a much quicker pace than the low-discounting fund after each individual withdrawal (i.e. subjects were penalized for taking the money out). She found that the members of the high-discounting groups became much more competitive, retaliated against other group members, and attempted to maximize individual funding at the cost of the entire group. Mannix (1991) suggests that "...discounting may not only affect the value of the dollars involved, but also the value of relationships" and that the stability of the pool directs the manner in which players will react to one another. The results of the Rutte et al. (1987) and Mannix (1991) studies highlight the fact that uncertainty often exists regarding how much of a shared resource is available when we begin some type of joint project. It seems reasonable that because time is considered to be as valuable a commodity as many material resources, the same self-serving violations of the equality rule would prevail when sharing temporal resources as when sharing material resources.

Creating new rules to replace the equality heuristic when sharing resources brings forth a new question: Are the new rules fair? Messick and Sentis (1979) examined the issues of fairness and preference in hypothetical work situations in which the subjects were able to express their opinions on the method (distribution)

of payment. One of the most interesting findings to surface was that subjects wanted equality when the outcome affected a partner in the work project but not when the outcome affected the self. In this study, the subjects reported preferring a larger outcome than what they judged to be fair. This phenomenon has been coined as an egocentric or a self-serving bias.

The egocentric bias is defined as the tendency of individuals to prefer an outcome or to make a judgment that is most beneficial to the self relative to others. The self-serving bias has been demonstrated to emerge in a number of different inferential contexts, such as attributions for performance (Miller & Ross, 1975), judgments about one's own morality (Messick, Bloom, Boldizar, & Samuelson, 1985), and estimations about the likelihood of contracting illnesses (Perloff & Fetzer, 1986). In the present research, we anticipate that people are likely to display an egocentric bias in their perceptions of sharing time. In order to describe the precise nature of this prediction, we first need to explore in greater theoretical detail the role of egocentric biases in a resource sharing context.

The Influence of Egocentric Biases on Sharing Heuristics

In 1979, Ross and Sicoly examined how people share the responsibility of completing joint or collective tasks. They hypothesized that people tend to credit themselves with more responsibility for having completed a group project than other group members are willing to attribute to them. The researchers proposed that this egocentric bias occurs because of the increased availability in memory of one's own contributions compared with other members' contributions. Five experiments were performed to test this hypothesis. Specifically, the researchers wanted (1) to determine how often egocentric biases occur in availability and attributions of responsibility in varied situations, and (2) to uncover the hypothesized relationship between a bias in availability and a bias in attributions of responsibility. Although the results from the five studies were somewhat inconclusive, the researchers did uncover a positive correlation between availability of one's own contributions in

memory and attributions of responsibility. Most importantly, Ross and Sicoly's data indicated that egocentric biases are prevalent in most social interactions.

Thompson and Kelley (1981) attempted to extend Ross and Sicoly's (1979) previous research, focusing on biases in close personal relationships. They performed three studies in which they examined the perceptions of individuals in partnerships ranging from dating to marriage. The objectives of the research were (1) to expand the number of activities judged by the subjects in order to determine the generality of the bias, and (2) to obtain more information about the type of information people use to assess their personal contributions to joint activities. The results indicated that the egocentric bias is prominent in a wide variety of activities in close relationships, including both positive and negative situations. People also reported having more information about the self in general, information which was subsequently used to make an assessment of personal contribution. In addition, people tended not to use recollections of specific contributions to make judgments, but instead tended to use dispositional information about the person to estimate relative contributions. Finally, feelings of satisfaction with the relationship affected attribution of responsibility. Generally, the more satisfied an individual was, the more likely she or he was to credit the partner with positive activities and the less likely she or he was to credit the partner with negative activities. This finding about satisfaction hearkens back to the statements made by Mannix (1991) regarding how the value of the resource affects the value of the interpersonal relationships. Mannix argued that defensive behavior on the part of one player could lead to defensiveness from all, and to a lowering of satisfaction levels among all participants in a relationship. From these considerations, we expect people who are dissatisfied with a relationship to be more likely to display an egocentric bias when sharing temporal resources than are people who are satisfied with their relationship.

With the seeming prevalence of the egocentric bias in our everyday activities, one must wonder if there is any way to control or limit the magnitude of

the bias. Allison, Messick and Goethals (1989) examined factors which both facilitate and hinder the manifestation of the egocentric bias. These investigators hypothesized that the verifiability of the behavior being judged is an important moderating variable in making judgments about oneself compared to others. An individual is not going to falsely claim to possess a particular desirable trait if others can easily discern the trait's (presence or absence). Additionally, people want to believe the self-serving claims that they make about themselves; as a result, their tendency to be egocentric in their claims is tempered by a desire to base their claims on verifiable reality. Further, to make their egocentric beliefs more believable (to themselves and to others), and at the same time to appear somewhat modest, people are willing to acknowledge weaknesses on some dimensions, but typically these dimensions are of little importance to the self.

The results supported these hypotheses, showing that people do not show egocentric self-evaluations on all dimensions. For example, Allison et al.'s (1989) subjects were most likely to show the bias in their perceptions of their own morality (a dimension of low verifiability) than they were to show the bias in the beliefs about their own intelligence (a dimension of high verifiability). Goethals, Messick, and Allison (1991) found that people believed they resist the temptation to perform negative behaviors more than others do, while they also tended to credit themselves more than they do others for performing good behaviors. In addition, they discovered that people demonstrating a strong egocentric bias would show lower levels of depression as measured by the Beck Depression Inventory (Beck, 1979).

In summary, the literature on judgments about sharing indicates that people prefer to use the equality rule in social interactions. However, in those instances when self-serving violations of equality cannot be detected, people will consume more than their equal share of a common resource (Allison et al., 1992). Additionally, the literature on judgments about the self compared to others reveals that people demonstrate egocentric biases in a variety of judgmental contexts (Ross

& Sicoly, 1979). However, once again, the strength of the bias appears to be mitigated by circumstances in which the bias can be detected by oneself or by others (Allison et al., 1989; Goethals et al., 1991). Although people do not hesitate to exaggerate their positive qualities relative to others when these qualities cannot be verified, people are quick to develop rather veridical views of positive qualities that can indeed be measured and verified.

Based on these considerations, we predict that people will be more likely to display an egocentric bias when sharing temporal resources in situations where the precise duration of time being shared cannot be verified as compared to situations where the duration of time is verifiable. We hypothesize further that depressed individuals will be unlikely to show an egocentric bias in their time perception, regardless of the verifiability of the time. In addition, because time perception is more memory based (and is thus prone to greater distortion) than is object perception, self-serving biases may be more exaggerated when sharing time than when sharing material resources. The rationale for this prediction is as follows: when individuals share a material resource and are asked to indicate how much they wish to consume for themselves, any self-serving bias that they show in their consumption of the resource is based on the present circumstances in which they find themselves. However, when individuals sharing a temporal resource are asked to judge the amount of time they spent performing shared duties, their judgments are based on present circumstances and their retrospective memory of their past activities. We predict that memory-based retrospective judgments about the self versus others may be especially prone to self-serving exaggerations as compared to nonmemory-based judgments. Below, we review the time perception literature with the goal of illustrating how egocentric biases might be particularly strong in temporal resource sharing settings.

The Perception of Time

Although most people probably do not consider the many ways in which we estimate the passage of time, time estimation allows us to become active participants in our social environments. People employ several different mechanisms in time measurement, including a personal sense of how quickly the present is changing and a more impersonal means of "watching" time move on a clock. Important also is time orientation. People need to be able to distinguish the past from the present, and the present from the future. While one might argue that these orientations necessarily must flow together--that the future becomes the past every passing moment of our lives--one must also recognize that a person who can not differentiate between the orientations will spend much of her or his life "out of sync" with the rest of society. Indeed, a faulty time measurement mechanism can become quite maladaptive in the general population, particularly in a society that anchors so many of its behaviors on the equally partitioned sections of the days, weeks, and months.

People use different methods to measure time. We subjectively observe the fluctuating flow of time as it passes through the present and recent past. We keep a sense of past time as we place memories in a chronological order in our minds, assisting us in determining the amount of time that has passed since their occurrences. We employ clocks and calenders to maintain a more objective sense of our temporal placement in the hour, day, week, month, or year. Finally, we orient ourselves firmly in the present--the current time--so that we may place the relative times of the past and future (Friedman, 1990). These methods are all used in conjunction with each other, making it difficult to separate the mechanisms and measure them. Researchers studying time perception, however, have devised numerous ways of assessing our time estimation abilities.

One method of time estimation involves the use of concurrent measures. These methods are the "production" and "reproduction" devices used by many

researchers (Melges & Fougerousse, 1966; Mezey & Cohen, 1961; Mezey & Knight, 1965; Tysk, 1983; 1984; 1985; and Wyrick & Wyrick, 1977). Production involves indicating when a specified time period has terminated without watching a clock or using any other type of measurement device. Reproduction requires the individual to listen to a sound--usually tapping--and reproduce it for the same length of time with the same time intervals between taps. Other concurrent measures include counting out loud, verbally estimating a time interval between sounds, and adjusting a metronome to a certain number of beats per minute or to replicate tapping sounds heard previously. These concurrent estimations are also objective because the participant is not expressing any feelings about the speed in which the time period is passing.

Retrospective measurements are another means with which to estimate time and are a commonly-used research tool (Dilling & Rabin, 1967; Loftus, Schooler, Boone and Kline, 1987; Mezey & Cohen, 1961; Tysk, 1985; Hawkins, French, Crawford, and Enzle, 1988). Retrospective measurements involve simply asking the participant to estimate the duration of a certain time period after termination of that period. Although retrospective measures of time perception involve subjects' best estimates, they are considered an objective measure as subjects are not being asked to tell how the time seemed to speed or drag during the activity.

Subjective estimations, then, are much more informal and phenomenologically-based. Questionnaires have been created, such as Wyrick and Wyrick's (1977) "Personal Time Passage Questionnaire", in which the subject is asked how the time passage feels. Sometimes these estimations will match the objective estimates, but occasionally a person will subjectively feel that time passed either much more quickly or slowly than normal. This mismatch with objective estimates is not unusual in the general population.

Under what conditions do objective and subjective estimates of time fail to correspond? And why do some individuals subjectively sense that time passes

more quickly or slowly than do other individuals? Individual differences may be the result of both pathological and non-pathological causes. Because individual differences do seem to emerge in many aspects of time perception, it is appropriate to examine them in more depth.

Individual Differences in Time Estimations

As previously mentioned, individual differences may be pathological or just regular fluctuations of mood or attentiveness. Loftus et al. (1987) performed several experimental investigations of non-pathological variables. These investigators explored the ways in which gender, stimulus complexity, and level of arousal affected the estimation of a time interval after the interval had terminated. Subjects watched a simulated bank robbery on videotape, engaged in some unrelated tasks afterward, and then were brought back 48 hours later to make their estimations and to recall as many of the events on the tape as possible. The investigators found that subjects overestimated the time duration of the bank robbery, with the amount of detail of the crime recalled being unrelated to the estimate of duration. A follow-up study included a high stress-low stress variable, resulting in the high-stress version of the videotape producing longer event (robbery) duration estimates. The authors concluded that there may be a latent variable--labeled internal arousal--working to produce longer estimations.

While non-pathological variables have been the focus of a few studies, pathological variables have been extensively explored. Depression is the most commonly studied of the pathological variables. There is some argument as to the role depression plays in time estimations; some studies have shown that depression may slow estimations of time (Dilling & Rabin, 1967), while other studies have shown that depression does not affect time estimations at all (Melges & Fougerousse, 1966; Mezey & Cohen, 1961). Differences in methodology--in addition to differences caused by depression--may account for this discrepancy in the literature. It is important to note that the following studies employed an

objective, chronometric means of obtaining time estimations. No subjective measures were included.

Dilling and Rabin (1967) observed schizophrenics, depressives, and normals on several time estimation devices (future time perspective and concurrent measurements), predicting that the depressives would differ significantly in their estimates from the schizophrenics, and that both pathological groups would significantly differ from the normals in their estimations. Specifically, the researchers hypothesized that the depressives and schizophrenics would be less accurate than the normals. Results indicated that the depressives displayed a "severely limited future time span" (p. 608) and that normals were moderately more accurate than the other two groups in making estimations. The depressives made longer times estimations than the normals, particularly for long time intervals.

Other studies have not supported the idea that depressives make longer times estimations. Melges and Fougerousse (1966) also studied schizophrenics, depressives, and normals. Working under the assumption that there is a time constancy inherent in logical thinking and that a possible relationship exists between time distortion and illogical thinking, they predicted more inaccurate estimations from the depressives and schizophrenics. They further predicted that the depressives would make longer time estimations than the schizophrenics. The results forced the researchers to question their original hypotheses. They found the predicted difference between schizophrenics and normals, but found no significant differences between the estimations of depressives and normals. Melges and Fougerousse suggested that perhaps depressives do not overestimate time relative to normals, but that schizophrenics overestimate relative to both of the other groups.

In an earlier study, Mezey and Cohen (1961) studied patients with affective disorders in which depression was the major feature. Using production, reproduction, and verbal estimations, they also found no significant differences between depressives and normals. The researchers concluded that "Time judgment

is not significantly impaired in depression" (p. 270).

As one can see, a review of the literature suggests that empirical findings are quite muddled with regard to the impact of depression on time estimation. Some of the discrepancy might be attributed to the sole use of objective measures to the exclusion of subjective measures. The difference between the two is important, for they examine different reasoning processes in humans which may be differentially affected by the current affective state of the individual. This possibility has been explored by several researchers in an attempt to resolve the conflict in previous findings. A review of the new findings follows.

Hypothesized Reasons for Individual Differences in Time Estimations

Objective vs. Subjective Measurements

Hawkins et al. (1988) conducted an experiment in which they attempted to explain why depression should induce overestimations of time durations. The authors assert that while numerous studies have hypothesized the difference between depressives and normals in making chronometric time estimations, only the Dilling and Rabin (1967) study has demonstrated any support for this difference. The authors reported, however, that many studies indicate that depressed subjects express a subjective slowing of time. It appears, then, that while depressives are able to perceive objective chronometric time with some degree of accuracy, they also feel that their own personal experiences with time passage are slower. Hawkins et al. (1988) suggest that the subjective slowing is due to the depressed person's realization that time has not slowed or stopped at all, but that her or his current experiences are making the time passage so unpleasant, boring, or even painful that she or he is impatient to have the time period completed.

These researchers conducted an experiment in which both depressed and normal subjects performed a sorting task for several minutes and then were tested for their objective (chronometric) and subjective (retrospective) time estimates. No

significant differences appeared between the groups for chronometric measurements, while subjective measurements did differ significantly in the predicted direction. The researchers concluded that subjective estimation differences were influenced mainly by the psychological state of the individual.

Mezey and Cohen's (1961) earlier study also provided support for the idea of qualitatively different objective and subjective perceptions. Subjects in this experiment provided chronometric and subjective measures, resulting in slowed subjective estimations for the depressives. The authors concluded that the depression slowed the subjective experience of time passing in these people.

In another study, Wyrick and Wyrick (1977) assessed the experience of time passing in severely depressed hospitalized patients and normal control subjects. These researchers developed the "Personal Time Passage Questionnaire" (Wyrick & Wyrick, 1977) to investigate subjective time passage in the participants. This questionnaire asks about the passage of time during the experiment, time passage in general, and how time seemingly passes for the rest of the population (excluding the individual). In each case, depressives reported time as passing more slowly during the experiment and in normal daily living than did the controls, and depressives and normals both believed that other people seem to experience time as passing normally.

Length of the Estimated Interval

Another suggested reason for the discrepancies in time estimations between depressives and normals is the length of chronometric time the subjects measure. Because researchers may use anywhere from 30 seconds to 30 minutes or more as the designated duration, it is often difficult to compare contrasting results between studies. It would appears that the length of the interval does seem to affect time estimations. Dilling and Rabin (1976), the only researchers who found differences in chronometric measurements between depressives, schizophrenics, and normals, admittedly found the significant differences when the interval was greater than 14

minutes. The median time interval of the greatest differences between the groups was 31 minutes.

Wyrick and Wyrick (1977) also found differences among estimations between "long" and "short" intervals. The subjects were asked to estimate intervals of 5, 10, 20, 80, 160, and 240 seconds as well as 15-minute and 30-minute intervals. They found that the depressives overestimated all intervals between 160 seconds and 30 minutes, and that the longer the interval, the greater the overestimation. While the authors could not explain the different mechanisms working during the short and long intervals, they do suggest that depressives will overestimate only long durations (although "long" has yet to be operationally defined).

Storage-Size Hypothesis

Rather than considering the variables involved in previous research (such as the long versus short intervals), Hogan (1978) developed a different theoretical approach to explain individual differences in time perception. He proposed the "storage size" hypothesis, suggesting that as storage size increases in memory, the experience of the duration will also increase. For instance, storage size may be increased by higher stimulus complexity, because the more detail being recorded about the experience, the longer the interval will seem. Although this logic appears sound, the Loftus et al. (1987) study failed to demonstrate that people who remembered more detail about the videotape overestimated the duration more than the others who remembered less. Higher stimulus complexity is not the only way to increase storage capacity, however, and thus Hogan's (1978) explanation should not necessarily be discounted.

Nature of the Situation

In a recent review of time perception literature, Friedman (1990) proposed several conditions under which subjective time may become distorted:

1. Absorbing tasks shorten the impression of time in passing.

2. A greater number of events lengthens impressions of a given duration.

3. An interval seems longer if one knows in advance that it is to be judged.

4. We experience an acceleration of the passage of time as we grow older.

5. An interval of time seems exaggerated if we are frustrated with waiting, anticipating a pleasant experience, perceiving ourselves to be in danger, or carefully watching for some event to occur.

6. An interval seems longer if we remember more of its contents or if it was made up of more distinct segments. It seems shorter if we think of it in a simpler way.

Most of these suggestions appear applicable to the general "normal" population. How many times, for example, have we felt that the clock was absolutely standing still when wishing for time to pass quickly? This phenomenon might explain in a common sense manner why depressives are prone to experiencing a slowed subjective time. Depressed persons, because of the characteristic apathy or disinterest associated with the disorder, are probably less likely to become "absorbed" in their tasks or to participate in a greater number of activities within a particular period of time than their non-depressed counterparts. They may spend time "waiting" to complete daily activities rather than simply performing them, and the waiting may be characterized by an unhappy longing for the unpleasantness of the activity to end. Psychologically, a process of this type would lengthen the subjective experience of time passing.

The purpose of the two studies was to assess the effects of depression and temporal verifiability on people's estimates of the duration of time they share with others. It was hypothesized that in the first laboratory experiment, normal subjects would be more likely to underestimate the time it took them to complete a shared task in the nonverifiable condition than they would in the verifiable condition. This finding is consistent with Allison et al.'s (1989) discovery that egocentric biases become less pronounced when the behaviors or actions can be publicly verified.

Subjects showing an inclination towards depression, however, should not have demonstrated an egocentric bias under any conditions, a hypothesis consistent with Goethals et al. (1991).

Hypotheses for the second field study followed the same logic. Normal subjects in the nonverifiable conditions (those tasks which apartment-mates rate as not being easily verified) should have displayed the egocentric by overestimating the time they invest in performing shared work activities (because of the social desirability of appearing "hardworking" or "sacrificing"). And again, depressed subjects should not have demonstrated the bias in the nonverifiable conditions, a prediction consistent with the Goethals et al. (1991) findings.

Experiment 1: The Laboratory Study

Method

Subjects. Forty-eight subjects were recruited from the Introductory Psychology class at a small, private, liberal arts university for which they received class credit. All participants were approximately 18-22 years of age and were treated in accordance with APA ethical guidelines (American Psychological Association, 1981).

Materials. The Beck Depression Inventory (1979) was administered to all Introductory Psychology students prior to the onset of the experimental manipulation to separate the depressives from the nondepressives. In addition, subjects completed a task that involves the transcription of several paragraphs of text from symbols to the standard alphabet (Appendix A). The task was designed to consume roughly 30 minutes of time. Upon task completion, a questionnaire requesting "self" and "partner" estimations was distributed (Appendix B).

Procedure. All students completed the Beck Depression Inventory during normal class time. Once the forms were scored, the students were placed in two groups--depressed and nondepressed[1]--so subjects for each condition could be recruited separately. An individual was considered depressed if she or he scored

"9" or above on the Beck Depression Inventory. Nondepressives scored below 9, but only those students with a "3" or below were recruited for the experiment.

Subjects were tested individually in the laboratory. After subjects signed a consent form, the experimenter explained that they were participating in a study of people's ability to work quickly under time pressure. Subjects were told that they were working on a joint project with a partner who had already completed her or his half of the shared task. The objective for subjects was to complete their portion of the project in as little time as possible, for the team with the lowest combined time total among all the teams participating in the study would be monetarily compensated $100 at the end of the term. This reward was included as a "sociocentric" incentive for team participation. Additionally, the member of the winning team with the lowest time of the two partners would be compensated an additional $50 (the egocentric incentive). Subjects wearing watches were asked to give them to the experimenter for the duration of the experiment. The experimenter explained that the confiscations were simply to assure that the watches would not be an unnecessary distraction.

One half of the subjects (n = 24) were randomly assigned to the verifiable condition. In this condition, the experimenter was present with the subjects as they completed their task, conspicuously timing the subjects with a ticking stopwatch as they worked. The other half of the subjects were randomly assigned to the nonverifiable condition. In this condition, subjects were initially timed by a conspicuously ticking stopwatch, but seven minutes after they began their tasks the experimenter indicated to the subject that the stopwatch was not working. The subject was instructed to continue working despite the mechanical failure of the stopwatch.

Once the subject completed the task, the experimenter gave the subject a range within which the combined subject-partner time totals fell (generated by doubling the subject's time of completion and then adding and subtracting 10

minutes). Using this time range, the subject was asked to estimate (a) how long it took him or her to complete the task; (b) how long the partner took to complete it; and (c) how long it would take the average University of Richmond student to complete it. In the verifiable condition, it was explained to subjects that the precise time was known by the experimenter, and that a central focus of the experiment was to examine the time estimations subjects made within the given range. In the nonverifiable condition, it was explained to subjects that the broken stopwatch precluded any precise measurement of the team's time to complete the task. As a result, the experimenter explained that she had made a reasonable guess about the range and that she would leave it to the subject to use the range to estimate how long each member of the team took to complete the task.

Additionally, the questionnaire included a subjective measure of time perception to determine how quickly or slowly time seemed to pass during the task. The subject also responded to questions about how interesting the task was and how satisfied she or he was with the "partnership". When subjects completed the questionnaire, they were debriefed and excused from the experiment.

Results and Discussion

Manipulation checks. The manipulation checks associated with verifiability were not successful. Subjects were asked to rate the experimenter on a number of dimensions, including how accurate and how competent they perceived her to be. Subjects made their responses on a 1-8 scale with lower numbers indicating greater accuracy and competence. Unfortunately, the results showed that accuracy ratings from subjects in the nonverifiable group did not differ significantly from those in the verifiable group, $F(1, 45) = 1.22$, $MSe = 1.87$, $p = .276$. Subjects in the verifiable condition had an accuracy rating of 1.17 and subjects in the nonverifiable condition had a mean rating of 1.57. Likewise, ratings on competency also did not differ significantly between the verifiable and nonverifiable conditions, $F(1,45) = .586$, $MSe = .205$, $p = .455$. Mean ratings for competency were .96 for the

verifiable condition and .83 for the nonverifiable condition.

Time estimations. Subjects' estimates of how long they and their partners took to complete the experimental task were found to be skewed for self ($t(46) = 2.47$, $p < .05$) and partner ($t(46) = 2.00$, $p < .06$), necessitating a log linear transformation of the data[2]. These transformed scores were analyzed using a 2 (depressed, nondepressed) by 2 (verifiable, nonverifiable) by 2 (self, partner) mixed-model analysis of variance, with repeated measures on the last factor. A significant interaction ($F(1, 43) = 4.66$, $MSe = .02$, $p=.037$) was found between level of depression and target (self, partner). This interaction indicates that depressives reported taking more time for task completion (M = 32.17 minutes) than they reported for their partners (M = 29.44 minutes), whereas nondepressives reported taking less time (M = 29.92 minutes) than they reported for their partners (M = 31.17 minutes). Figure 1 displays the nontransformed means (also reported above) associated with this effect.

Insert Figure 1 about here

Subjects' estimates of how long they and the average University of Richmond student would take to complete the task were also analyzed using a 2 (depressed, nondepressed) by 2 (verifiable, nonverifiable) by 2 (self, average University of Richmond student) mixed-model analysis of variance, with repeated measures on the last factor. No significant effects were found in this analysis.

Correlations. Correlations were computed to determine whether subjects' interest level or satisfaction was related to how quickly they subjectively perceived time to pass. The only significant correlation that emerged was between interest level and rate of time passage ($r = .564$, $p < .01$), indicating that those who found the task more interesting were also more likely to report that time passed more quickly during the experiment.

Experiment 2: The Field Study

As predicted, the egocentric bias emerged in nondepressed subjects but not in depressed subjects. Surprisingly, the verifiability of the situation did not seem to affect the appearance of the bias. The rationale for performing the second study was twofold. First, we wanted to know if the effects produced in the laboratory would also appear in a "real world" setting. Second, we hoped to show that the egocentric bias would emerge in a situation where overestimation was beneficial to the participant as opposed to the underestimation that benefited subjects in the first study.

Method

Subjects. Fifty subjects were recruited from the University of Richmond student apartments for which they were compensated $4.00 for one-half hour of participation. All participants had been cohabiting for a period of at least two months at the time of the study. All subjects were roughly 21 years of age.

Materials. The Beck Depression Inventory (1979) was employed in this study. In addition, a questionnaire was distributed containing a list of 18 commonly shared household tasks (Appendix C). The questionnaire first instructed subjects to indicate whether or not each task is performed in their apartment, and if so, whether the responsibility for completing the task is shared among the roommates. If the task was a shared one, the subject was asked to indicate how much time, on average, was invested by each apartment dweller in the completion of the task in a typical week.

The four roommates were identified by number rather than name to assure confidentiality (i.e. roommate 1, roommate 2, etc.). The subjects were asked several questions to indicate how verifiable each task was (i.e. "How obvious or noticeable is it when this task has been completed?", "How likely is it that other roommates are at home when this task is completed?", and "How easily could someone accurately time how long it would take to complete this task?").

Procedure. The subjects were recruited personally by the experimenter via door-to-door solicitations. Subjects had the option of completing the BDI and questionnaire at the time of the solicitation, or at a later date; however, all chose to complete the forms at the initial meeting. Subjects were first administered the Beck Depression Inventory, after which they received a questionnaire containing the primary dependent variables of interest. The participants from each apartment were not permitted to collaborate on their answers. They were paid upon completion of the two forms, which took about 20-30 minutes. After completing the study, the subjects were thoroughly debriefed.

Dependent measures. The questionnaire completed by the subjects requested information about the degree to which performing each household task was verifiable, an estimation of how much time the subject spent performing these tasks, and an estimation of how much time each of the other apartment residents spent performing these tasks. The Beck Depression Inventory scores were used to classify the subjects as either depressed or nondepressed.

Results and Discussion.

Subjects scoring 7 and above on the Beck Depression Inventory were classified the depressed group, and those scoring below 7 were classified as the nondepressed group. Of the 47 subjects, only 8 were considered depressed according to this criterion. The verifiability measure was determined by averaging each subject's scores across all tasks for each of the three verifiability questions. Because the mean scores for each question were highly correlated (Cronbach's alpha = .77), an average was computed to produce a composite measure of verifiability. A median split was then performed to divide the subjects into "verifiable" (N = 23) and "nonverifiable" (N = 24) conditions.

Subjects' time estimates were again found to be highly variable and significantly skewed for both self ($t(46) = 5.61$, $p < .05$) and for average roommate contributions ($t(46) = 6.08$, $p < .05$). As a result, these estimates were subjected

to a log linear transformation[3]. Subjects' transformed scores were analyzed using a 2 (depressed, nondepressed) by 2 (verifiable, nonverifiable) by 2 (self, average roommate) mixed-model analysis of variance. A significant main effect of target (self, average roommate) was found across all conditions (F (1, 43) = 5.44, MSe = .07, p = .024). In all cases, subjects reported having spent more time on household tasks (nontransformed M = 417.49 minutes) than they reported for their roommates (nontransformed M = 334.72 minutes).

Insert Table 1 about here

Table 1 displays the means across experimental conditions. Because the egocentric bias was predicted only for nondepressed subjects in the nonverifiable condition, the demonstration of the bias across all conditions was somewhat puzzling. This result may be explained by the unequal number of subjects across conditions. Another possibility is that a true verifiable condition did not exist. Even though some subjects reported that certain tasks were "easily timed" or "easily noticed when completed", the confidentiality guaranteed by the experimenters prevented the other roommates from seeing the reported estimations of the first roommate. Because the experimenters could not disconfirm the subjects' reports, subjects may have felt more comfortable in exaggerating their personal contributions.

General Discussion

The purpose of the present studies was to determine how depression and level of temporal verifiability affect the emergence of the egocentric bias in social judgments. Unfortunately, neither study was able to document the role of verifiability in moderating the egocentric bias. Because the manipulation checks associated with verifiability were unsuccessful, it is not surprising that the verifiability failed to yield any significant results in the analyses. However,

Experiment 1 did show that the depression variable affected the presence of the bias. In general, nondepressed individuals demonstrated the bias whereas depressed individuals did not. In fact, depressives' self scores showed a distortion or bias towards benefiting their partners at the expense of their own welfare. In the laboratory situation, this tendency to overestimate was detrimental to the achievement of the monetary prize, not only for themselves but for the "team".

At this juncture, the phenomenon of "depressive realism" (Alloy & Abramson, 1979) warrants mention. Research has shown that nondepressed individuals demonstrate a positive bias in their perception of life events and the amount of personal control they believe they possess in producing outcomes. Depressives, alternatively, display more negative views that are actually more realistic. The depressives in this research, however, were not displaying depressive realism as they were no more accurate in their time estimations than were the nondepressives.

Kendall, Hollon, Beck, Hammen, and Ingram (1987) have issued recommendations regarding the use and interpretation of research findings associated with the Beck Depression Inventory (1979). These investigators found that scores on this depression measure tend to shift over time, sometimes over periods of days or even hours. In general, the shift in scores reflects a movement toward less depressed categorizations. In light of this tendency, one might hypothesize that finding significant differences between depressed and nondepressed groups would be highly unlikely in the laboratory setting because subjects' depression scores were obtained two to three weeks before subjects were tested in the experimental situation. The fact that significant differences were found between the groups suggest that the BDI may be more reliable over time than previously believed.

Another recommendation made by Kendall et al. (1987) pertains to the use of people scoring zeros and ones on the Beck Depression Inventory. In research,

these people are often considered "normal" or "nondepressed"; however, Kendall et al. feel that this group often consists of "'Pollyannas,' professional daredevils, incipient hypomanics, and the kind of people who want to talk to you when you sit next to them on an airplane" (p. 294). Many of the individuals participating in the laboratory study scored zeros and ones on the Beck Depression Inventory, but this issue is one of interest, not of concern. Several people scored twos and threes on the inventory, which should have balanced any unusual effects exerted by scores from the more extreme members of the nondepressed group.

The results of Experiment 2 suggest that the effects of depression may be hidden in the population because the egocentric bias was demonstrated in every condition, even among depressives. The bias was also present in both the verifiable and the nonverifiable conditions. Of course, there is no way to be sure if the verifiability of the situation was salient to the subjects, as the confidentiality maintained by the experimenters may have negated any effects of the verifiability manipulation. Additionally, very few (8 of 47) participants were rated as depressed, meaning that this group was drastically underrepresented in both verifiability conditions. Because of these limitations, these results should be interpreted with caution.

However, the results of Experiment 2 do suggest a very interesting outcome: the egocentric bias is extremely prevalent in "real life" situations. The experiment did not involve the creation of a contrived or artificial situation, nor did it involve the recruitment of Introductory Psychology students. This is one of very few studies that has explored and uncovered the egocentric bias in a natural setting and with a preexisting population.

Another strength of the present research is that it has demonstrated the egocentric bias using a novel and largely unexplored dependent variable: time estimations. While past research has shown the bias in a variety of contexts and judgment situations, this is the only one known at present which has demonstrated

the egocentric bias in a temporal resource setting. This new finding, while quite promising, does pose the following question: Why is the bias shown so prominently in time estimations?

Previous research suggests that the nature of the time estimation lends itself to producing the bias. Simply, time estimations (such as the kind made in these two studies) are memory-based. The subjects in the present research did not actively attempt to estimate how much time was passing as they participated in their activities; they estimated how much time they had consumed after the activity was completed. This retrospective process stands in direct contrast to the typical process by which the egocentric bias has been documented in studies of non-temporal resource allocations. For example, when deciding how much of a physical or spatial resource to consume, people must make an on-line judgment that reflects their beliefs and perceptions about present circumstances. But when sharing a temporal resource, people must rely on their own memory of things past, memory that research has shown to be prone to numerous shortcomings and distortions. Upon making their estimation, different cognitive mechanisms--selective attention and the availability of information--began working to contribute to the bias. Selective attention involves the discriminating, as opposed to comprehensive, encoding of information into memory. Human beings can not possibly perceive and process all events and activities in the environment, so they actively work to incorporate selective bits of information into memory. Hogarth (1987) states that we anticipate what we will see in the environment, which helps to discriminate between what we will remember and what we throw away. Additionally, we tend to encode information that is congruent with previously held beliefs. This explains the egocentric bias in temporal estimations in that a person's need to look somewhat superior to others guides her or him to selectively attend to information that supports this belief system. The participants in the field study, for instance, truly believed that they were hardworking members of their living

situations and accordingly found support for this belief in making estimations of how much time they spent in keeping the apartments livable and clean.

Availability is another equally important mechanism working to increase the likelihood of the egocentric bias in time estimations. The availability heuristic (Tversky & Kahneman, 1973) occurs when people judge the frequency of an act by how easily they can recall from memory instances of the act occurring. One obvious pitfall to using this type of rule is that people generally do not have access to all information in a situation, and even if they did, they would not be likely to encode it (selective attention, for example, precludes the processing of certain incongruent types of information). This phenomenon is also evident in the estimations made by the apartment dwellers, for they could easily access instances of their own contributions to the household activities. Likewise, they were not as aware of the contributions of the other household members simply because they were unlikely to be present every time another person performed a task.

Finally, the manner in which memories are constructed encourage the process of both selective attention and the availability of information in contributing to the display of the egocentric bias. Hogarth (1987) reports that people reconstruct memories rather than holding accurate representations of the events in the mind. People access bits and pieces of the actual event in memory and then use "rules" (heuristics, for example) to make associations with other bits of memory to create a complete account of the event. It is thus quite easy to "remember" how much time one consumes in an activity by accessing a memory of actually performing the task and then associating that activity with other "bits" that support the belief of the self as more efficient than others (Study 1) or as more sacrificing of personal time for the common good than others (Study 2).

Conclusion

In sum, the memory-based aspect of making time estimations significantly contributes to the prominence of the egocentric bias in social sharing tasks.

Unfortunately, the present research was not able to provide information on the extent to which personal and environmental characteristics moderate the appearance of the bias. In both the laboratory and the field studies, the manipulation of the verifiability variable was not successful. Additionally, a sufficient number of depressed individuals could not be found to participate in the field study. Further research could correct for these problems by creating a more salient or more realistic verifiability situation in the laboratory, or by distributing questionnaires that either dispute or corroborate subject reports about the roommates' behavior in the field study. In addition, the number of depressed participants could be increased in the field study simply by screening potential participants prior to the distribution of the questionnaires, as we were able to do in the first study.

Finally, it would be interesting to know the extent to which subjects place importance on appearing superior to others. Some type of "need for superiority" measure could provide an indication of which individuals are more likely to display the egocentric bias in making temporal estimations. One might find that this is an additional moderating variable in the display the bias. The results of the present research support the exploration into any number of related areas in discovering the means by which we work to maintain positive self-images. Further research may not only provide additional empirical information about our tendencies to display egocentric biases, but also supply the framework for a more rigorous theoretical understanding of the intricacies which guide egocentric phenomena.

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Appendix A

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Appendix B

Social Security Number _____

1. Now that you know what your combined team time was, about how long do you think it took you to finish the task? Please estimate the number of minutes below. Give a specific number.

_____

2. About how long do you think it took your partner to finish the task? Please estimate the number of minutes below. Give a specific number.

_____

3. How long do you think it would take for the average University of Richmond student to complete the task you just completed?

_____

4. How did you feel that time was moving during this task? (Place an "X" on the line where appropriate.)

:_____:_____:_____:_____:_____:_____:_____:_____:_____:

More quickly than normal — Normally — More slowly than normal

5. How interesting was this task? Please rate the task on the scale below by placing an "X" on the line where appropriate.

:_____:_____:_____:_____:_____:_____:_____:_____:_____:

Very Interesting — Moderate — Very Dull

6. How satisfied are you with your "partnership"?

:_____:_____:_____:_____:_____:_____:_____:_____:_____:

Very satisfied — Neutral — Very Dissatisfied

7. Please rate your experimenter on the following adjectives by placing an "X" on the line where appropriate.

Friendly :_____:_____:_____:_____:_____:_____: Unfriendly

Likable :_____:_____:_____:_____:_____:_____: Unlikable

Competent :_____:_____:_____:_____:_____:_____: Incompetent

Accurate :_____:_____:_____:_____:_____:_____: Inaccurate

Appendix C

We would like some information about how people share their time in performing household tasks. In the following pages, we would like for you to consider your own living situation in making your responses. You will first be asked to indicate whether the listed household tasks are:

S = shared More than one person performs this task
NS = not shared Just one person usually performs the task
NP = not performed at all in your apartment

STEP ONE:
Go through the list now and place an "X" in either the "S", "NS" or "NP" column for each task to indicate whether it is shared, not shared, or not performed in your apartment. Then go to the next step.

Task	S	NS	NP	Self	R#1	R#2	R#3
Wash dishes							
Dry dishes							
Run dishwasher							
Prepare meals							
Vacuuming							
Dust furniture							
Clean stove/oven							
Clean refrigerator							
Mop floor							
Scrub shower							
Clean sinks							
Sweeping							
Pay bills							
Make ice cubes							
Recycling							
Clean microwave							
Take out garbage							
Clean toilets							

We would now like some information on how each of the four roommates in your apartment share time in performing the shared tasks. To avoid confusion, please refer to your apartmentmates as **"R#1, R#2, and R#3"**. You will indicate information about yourself in the **"Self"** column. We would like for you to indicate how much time each apartmentmate contributes to the shared tasks in a typical week.

STEP TWO:
Go back through your list now and next to the tasks you indicated as "shared", estimate the amount of time you and your roommates spend working on the task in a typical week.

Remember, your responses are completely confidential!

STEP THREE:
Now refer to the task list at the bottom of this page. For each task, answer each of the three questions:

Q#1 How obvious is it when someone completes this task?
Q#2 How likely is it that other roommates are at home when this task is being completed?
Q#3 How easily could someone accurately time the completion of this task?

Use this scale to indicate your estimations:

1 = Very (obvious, likely, easily timed)
2 = Somewhat (obvious, likely, easily timed)
3 = Not really (obvious, likely, easily timed)
4 = Not at all (obvious, likely, easily timed)

Now place the appropriate number as your response next to each task for each of the three questions.

Task	Q#1 (Obvious)	Q#2 (Likely)	Q#3 (Timed)
Wash dishes			
Dry dishes			
Run dishwasher			
Prepare meals			
Vacuuming			
Dust furniture			
Clean stove/oven			
Clean refrigerator			
Mop floor			
Scrub shower			
Clean sinks			
Sweeping			
Pay bills			
Make ice cubes			
Recycling			
Clean microwave			
Take out garbage			
Clean toilets			

Footnotes

[1]The Beck Depression Inventory (1979) was created to assess the severity of depression in an individual; it was not intended for use as a screening tool or as an instrument for diagnosis. Clinical depression can only be properly diagnosed with agreement across appropriate measurement methods, including clinical interviews. Kendall et al. (1987) recommend that unless additional assessment measures concur with the BDI on a diagnosis of depression, the term "dysphoric" should be used in place of "depression" to indicate "nonspecific negative affectivity" (p. 297). For clarity's sake, however, the term depression is used throughout this manuscript, a practice that is consistent with other studies employing the BDI (Hawkins et al., 1988; Tysk, 1984).

[2]The analyses of the nontransformed data revealed only a marginally significant interaction effect between depression and target, ($F(1,43)$, MSe = 91.57, p = .053).

[3]The analyses of the nontransformed data revealed a main effect approaching significance across all conditions, (F (1,43) = 3.21, MSe = 27275.04, p = .08).

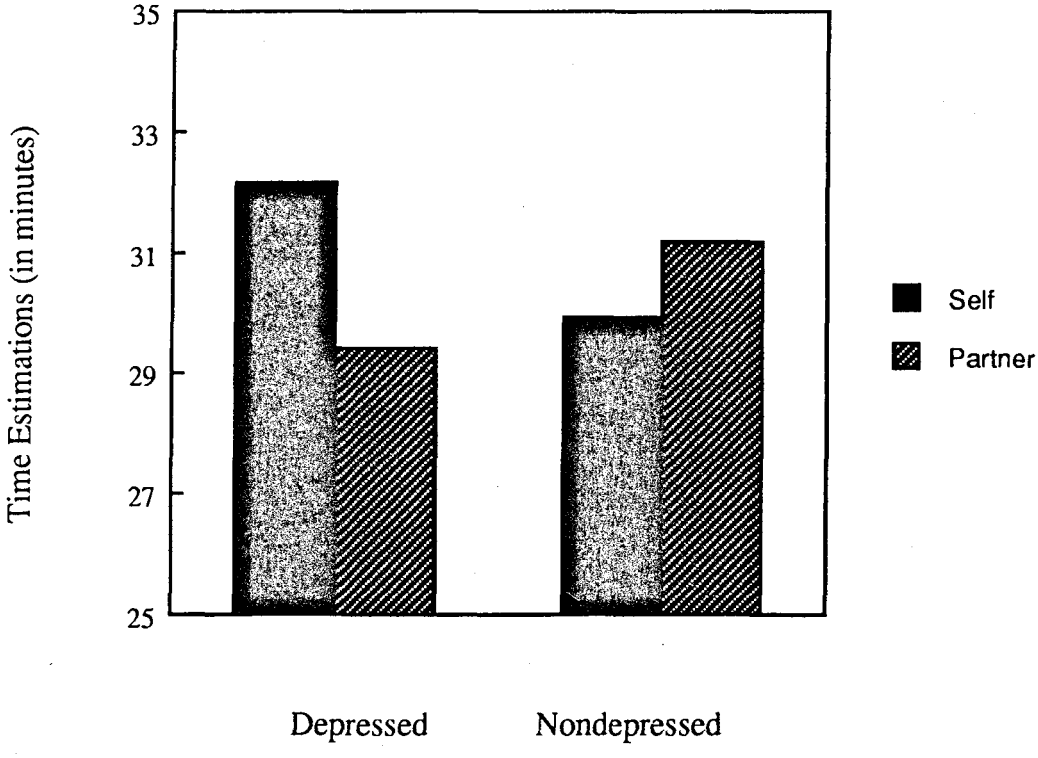
Table 1

Mean Time Estimations for Self and Roommate as a Functions of Depression and Verifiability

Condition		Target	
		Self	Roommate (avg.)
Depressed	Verifiable	170.00	113.33
	Nonverifiable	374.14	371.33
Nondepressed	Verifiable	396.77	318.52
	Nonverifiable	476.72	353.62

Figure Caption

Figure 1. Time estimations of self and partner according to level of depression.


Time Estimations (in minutes)
35
33
31
29
27
25
Depressed
Nondepressed
Self
Partner

Biography

The author is a midwestern-born resident of Chattanooga, Tennessee who graduated in 1991 from Wake Forest University in Winston-Salem, North Carolina. After graduation with an M.A. in General Psychology from the University of Richmond, Ms. Jones will attend the University of Alabama, Tuscaloosa, to pursue her Ph.D. degree in Adult Clinical Psychology.