

Helping on the Highway: The Effects of Dependency and Sex¹

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A series of three naturalistic field experiments are reported which investigated the norm of social responsibility by examining the effects of dependency and sex on helping. Experiment I examined the effect of physical disability on the likelihood of passing motorists helping with a flat tire. Females were helped significantly more than males, but the dependency manipulation was only minimally effective. In Experiment II the same disability cues were used in a hitchhiking context. Again females were helped significantly more than males, but surprisingly the dependency cues significantly reduced the number of ride offers. Experiment III used hitchhiking as the behavior of interest, but this time the dependency cues involved a disabled vehicle. This dependency manipulation significantly increased help offers. In addition, females were again helped significantly more than males. In all three experiments, almost all help offers were made by males. Other variables that appeared to influence helping rates were the perceived cost of helping, the attractiveness of the solicitors, and whether they were seen as responsible for their state of dependency. The present field results complemented previous laboratory work on the same variables.

The relationship between dependency and helping behavior has been the focus of several investigations during the last decade. For example, Berkowitz and his colleagues have consistently shown that persons with power will sacrifice some of their advantage in order to help a dependent person (Berkowitz & Daniels, 1963, 1964; Berkowitz, Klanderma, & Harris, 1964; Daniels & Berkowitz, 1963). They have viewed interpersonal dependency as a cue for the arousal of a postulated norm of social responsibility that dictates the aiding of dependent others without the expectation of reward. Although this norm varies

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somewhat across social classes (Berkowitz, 1968; Berkowitz & Friedman, 1967), it appears to be generally well established in our culture.

Several factors have been explored which interact with dependency and helping and therefore limit the generality of any simple statement about the relationship between these two variables. One of these factors is the cost to the helper of performing the helping act. A laboratory study by Schopler and Bateson (1965) showed that increased dependency elicited more help but only when the cost of helping was low. When the cost was high, increased dependency did not lead to more helping. This effect has also been observed in naturalistic settings (Schaps, 1972; Wagner & Wheeler, 1969).

Another such interactive factor is the sex of the subject. Schopler and Bateson (1965) found an interaction between sex and dependency in three separate experiments. In general females yielded more money to a partner who was in a state of high dependency, while males yielded more money when their partner was in a state of low dependency. According to Schopler (1967) the decreased yielding by the males was done to preserve their relative status advantage over their highly dependent partner.

A third factor that interacts with dependency to influence helping is the apparent locus of responsibility for the person's dependency. Studies by Schopler and Matthews (1965) and Horowitz (1968) demonstrated that internally caused dependency (a state of need caused by the person himself) tended to elicit less helping than externally caused dependency (a state of need outside the control of the person). Supposedly those seen as responsible for their own fate are less likely to arouse the social-responsibility norm.

The present study was a series of three naturalistic field experiments which investigated the effects of dependency on helping. Several different dependency manipulations and several helping behaviors of varying costs were used. The dependency cues included physically handicapped individuals and disabled automobiles, and the behaviors of interest included helping with a flat tire and picking up a hitchhiker along the highway. Prior to running the experiments, the flow of traffic on several highways near Champaign-Urbana, Illinois, was observed. In an attempt to increase generality, three different highways were used including both North-South and East-West routes. Survey analysis revealed that approximately 60% of the drivers were male. Each location was near a crossroad. Each highway had a good shoulder, was located in rural surroundings away from residences, and had a speed limit of 65 m.p.h.

EXPERIMENT I

In a frequently referenced modeling study, Bryan and Test (1967) demonstrated that exposure to a helping model increased the subsequent help offered to a woman with a flat tire. More subjects stopped along a highway to

help if they had previously seen someone else model the same behavior. Experiment I also studied offers to assist with a flat tire using a 2×2 factorial design with dependency and sex of the victim as variables. On the basis of the previously cited research, it was predicted that more passersby on a highway would offer to help a person in a condition of high (versus low) dependency. In addition, since females are typically seen in our culture as rather inexperienced in the operation of automobiles and thus more dependent in highway emergencies than males, it was further predicted that more subjects would stop to offer help to a female than to a male.

Method

Subjects. The subjects for this experiment were 400 male and female motorists on two highways one-half mile from Champaign-Urbana, Illinois. The drivers of taxicabs and schoolbuses were excluded in this and the following two studies.

Dependency variable. In the low dependency (*LD*) condition, a 1965 Chevrolet was parked approximately 7 feet from the highway with the trunk up and a spare tire propped against the left rear of the car. As vehicles passed, the male or female experimenter was in the process of jacking up the car. In the high dependency (*HD*) condition, the arrangement was exactly the same except that the person jacking up the car wore a white, 24-inch knee brace on his or her right leg and a white cloth sling on the left arm. In neither dependency condition did the "victim" look at the oncoming vehicles nor make gestures to solicit help.

Sex variable. The male victim was clean shaven, of average build, had medium-length hair, and wore casual clothes. The female was of average build and attractiveness, had dark shoulder-length hair, and wore a blouse and coulottes. Both were 20 years of age.

Procedure. Experiment I was conducted on 5 weekdays in the spring between the hours of 9:30 a.m. and 4:30 p.m. In this and the succeeding two experiments, the weather was consistently mild with temperatures ranging from 60° to 80°. With the victim positioned alongside the highway, 100 vehicles were counted approaching each of the four experimental conditions—half on each highway and half heading in each direction. The conditions were changed after 25 vehicles were counted. The choice of the various sessions (experimental condition, highway, direction) was made at random, but no experimental condition was repeated on the same highway during the same time period.

After drivers offered help, they were told that help was either not needed or on the way. Helpers were graciously thanked for their effort and concern before they left. Those who persisted and could not be pleasantly persuaded to leave were told the nature of the study. For the motorists that stopped, the victim recorded the sex and race of the driver, the number of people in the vehicle, and a

brief description of the vehicle. To eliminate effects due to modeling or traffic slowdowns caused by a helping subject, vehicles in view of the encounter or passing while a driver was pulling over, stopped, or leaving, were not counted.

Results

Table 1 shows the number of persons who stopped to help the female and male victims in the two dependency conditions. Although the dependency manipulation increased help offers, the difference was not significant, and thus the first hypothesis was not confirmed. Twenty-three persons offered help in the *LD* condition compared to 30 in the *HD* condition ($\chi^2 = 1.06$, $df = 1$, $p < .50$).

The second hypothesis was confirmed. Significantly more subjects stopped to help the female (49) than the male (4) ($\chi^2 = 44.03$, $df = 1$, $p < .001$). The Dependency by Sex of Victim interaction was not significant ($\chi^2 = 0.03$, $df = 1$, $p < .90$). Similarly, neither highway ($\chi^2 = 0.05$, $df = 1$, $p < .90$) nor direction on the highways ($\chi^2 = 1.06$, $df = 1$, $p < .50$) was a significant variable affecting help offers.

It is interesting to note that of the 53 persons that stopped, only two were female. This was true despite the fact that approximately 40% of the 400 passersby were female and that half the conditions involved a female in need. Perhaps female motorists are less likely to see giving assistance on the highway as a role-appropriate response (cf. Deaux, 1972). Drivers of all ages stopped to help, but more than half were estimated to be 35 or over. The typical helper was also alone (83%) and was driving either a camper trailer or a pickup truck (58%). Since these persons were also dressed appropriately for changing a tire, it is possible that the perceived cost of helping was not as great for them as for the motorists that passed by. However, conclusive interpretations cannot be made from these observations in this and the following two experiments since no data were collected on the vehicles that did not stop.

TABLE 1
NUMBER OF MOTORISTS IN EXPERIMENT I STOPPING TO
HELP IN EACH FLAT-TIRE CONDITION

Flat-tire victim	Dependency	
	Low (normal)	High (knee brace and arm sling)
Female	23 ^a	26 ^a
Male	0 ^b	4 ^b

Note.—Values with common subscripts do not differ significantly from one another. $N = 100$ in each cell.

The *LD* condition with a female victim in the present study is essentially the no-model control condition in the Bryan and Test (1967) study. Compared to the 2% helping rate in their no-model condition, the 23% helping rate in that condition in the present study is very high. This lends support to the argument that the rate of responding approached ceiling level in this study, and that this factor was responsible for the ineffectiveness of the dependency manipulation for the female. She may have been perceived as highly dependent even in the low-dependency condition. A questionnaire administered later to university students asking for dependency and cost ratings of the conditions used in these experiments supported this interpretation. Respondents rated the female in the *LD* condition as significantly more dependent than the male in that condition ($t = 3.81, df = 46, p < .002$).

In summary, a male, who is not generally perceived as needing assistance when he is changing a flat tire, was not helped at all unless he appeared physically disabled. In contrast, the female was helped by nearly one out of four passersby regardless of her disability.

EXPERIMENT II

In Experiment I the dependency variable was studied in connection with a relatively high cost helping behavior (changing a flat tire). In Experiment II the same dependency cues (physical disability) were used, but this time a different and possibly less costly helping behavior was chosen (picking up a hitchhiker). In a similar hitchhiking study, Bryan (1966) found that a dependent male with a cane and a bandaged leg hitchhiking within the city of Los Angeles received more rides than a low-dependent (normal) male. On the basis of Bryan's study and the trend in Experiment I, it was predicted that more rides would be offered to a hitchhiker along a highway in a condition of high dependency. In a related study conducted along a highway near Madison, Wisconsin, Clifford and Cleary (1971) found that a female hitchhiker received more ride offers than a male. While the difference in that study was nonsignificant, the strong sex effect found in Experiment I led us to predict that the female hitchhiker would be offered more rides than the male. The results of Experiment I also prompted us to predict that most of the offers would be from male motorists.

Method

The subjects for Experiment II were 400 male and female motorists on two highways one-half mile from Champaign-Urbana, Illinois. For the *LD* condition the male or female hitchhiker was dressed in the same manner as described in Experiment I. The *HD* condition again involved the knee brace and arm sling. In neither condition was a vehicle present. Three college students (two males and

one female) served as hitchhikers. They were of the same age and appearance as the "victims" in Experiment I.

Procedure

Experiment II was conducted on 5 weekdays in the late spring between the hours of 10 a.m. and 3:30 p.m. with the same mild weather conditions as in Experiment I. In each condition the hitchhiker was positioned near a crossroad approximately 3 feet from the highway with his or her right arm lifted and thumb extended. Each session lasted until 25 vehicles passed. In the male conditions the two male solicitors alternated after a fixed number had been run. The condition to be run was determined at random with the restriction that the same one was not repeated in the same time period on the same highway. Again, 100 cars were counted in each of the four conditions—half on each highway and half heading in each direction. After drivers stopped to offer a ride, they were asked how far they were going. Regardless of what the driver said, the solicitor stated that he or she was going farther and would wait for a ride going all the way. The helping subjects were thanked for their concern, and persistent subjects were told the nature of the study. Again, the number of passing and stopping vehicles as well as the previously mentioned information was recorded by the hitchhiker.

Results

Table 2 shows the number of persons who stopped and offered rides in each of the four experimental conditions. The data from the two male solicitors were almost identical ($\chi^2 = 0.35$, $df = 1$, $p < .60$) and were thus combined. Contrary to expectations, the number of rides offered in the *LD* condition (34) was

TABLE 2
NUMBER OF MOTORISTS IN EXPERIMENT II OFFERING
A RIDE IN EACH HITCHHIKING CONDITION

Hitchhiker	Dependency	
	Low (normal)	High (knee brace and arm sling)
Female	26 ^a	12 ^c
Male	8 ^{b,c}	4 ^b

Note.—Values with a common letter in their subscript do not differ significantly from one another. $N = 100$ in each cell.

significantly greater than the number of offers in the *HD* condition (16) ($\chi^2 = 7.40$, $df = 1$, $p < .01$). For both male and female hitchhikers, fewer rides were offered when they appeared in the sling and knee brace than when they were in the *LD* (normal) condition. The predicted sex effect was obtained with the female being offered significantly more rides (38) than the males (12) ($\chi^2 = 15.45$, $df = 1$, $p < .001$). Furthermore, as predicted, more males (49) offered rides than females (1) ($\chi^2 = 34.38$, $df = 1$, $p < .001$). All analyses involving the sex of the helper in this and the following experiment were based on the approximate sex ratio of the drivers on the highways (60% male, 40% female). The Dependency by Sex of Hitchhiker interaction was not significant ($\chi^2 = 2.29$, $df = 1$, $p < .25$). As in Experiment I, neither highway ($\chi^2 = 0.09$, $df = 1$, $p < .90$) nor direction ($\chi^2 = 0.00$, $df = 1$, *ns*) had a significant effect on help offers.

Of the 50 motorists that stopped, the typical helper was again alone (80%) but in this experiment only 22% were driving camper trailers or pickup trucks. In addition, most helpers were judged to be between the ages of 20 and 25, clearly younger than those who stopped to offer assistance in Experiment I.

The same dependency manipulation that had only a minor effect in Experiment I had a strong effect in the opposite direction in Experiment II. This variation in results is presumably due to the difference in the helping behaviors called for. Helping in Experiment I required changing the person's tire, while helping in Experiment II simply required giving the person a ride. Although the behavior in Experiment II involved less work, it is also true that offering a ride to another may expose the helper to more prolonged and intimate contact with the helper than does changing his or her tire. It is therefore possible that the stigma of being handicapped in the *HD* condition decreased the appeal of the solicitor to potential helpers (especially in the female condition). Furthermore, the paraphernalia worn in the *HD* condition may have made the female hitchhiker appear less physically attractive than she did in the *LD* condition. It has been previously demonstrated that physical attractiveness has a powerful effect on liking (Byrne, London, & Reeves, 1968), which in turn has been shown to affect the helping of another (Daniels & Berkowitz, 1963).

In addition, a person in a knee brace and an arm sling hitchhiking on the highway was no doubt a curious sight; passersby may have felt hitchhiking to be an inappropriate thing to do for a person in such a condition. As was previously mentioned, a person who is perceived as being responsible for his or her own plight (internal locus of control) is less likely to arouse the social responsibility norm and is thus no more likely to be helped than someone in less need. Since a flat tire (Experiment I) would be viewed as a more unavoidable state of dependency (external locus of control), such variations in perceived responsibility could also explain the differential effect of the dependency manipulation in the two studies.

EXPERIMENT III

Experiment III was conducted to examine more closely the complex relationship between dependency, sex, cost, and helping on the highway as well as to clarify some of the questions raised by the previous studies. In Experiment II several hypotheses were proposed to explain the unexpected effect of the leg brace and arm sling which were used as the dependency manipulation. One explanation introduced the possibility that the disability stigmatized the solicitors or reduced their attractiveness. Another was the possibility that, although the disabled solicitors were not seen as responsible for their handicaps, they might have been seen as responsible for placing themselves in such a state of dependency on the highway. Thus, in Experiment III an attempt was made to employ a dependency manipulation that would not affect the acceptability or physical attractiveness of the solicitor and one that would be perceived as under an external rather than an internal locus of control. The manipulation chosen involved a hitchhiker beside a car with a flat tire. More rides were expected to be offered to a hitchhiker in this *HD* condition than in a *LD* (no vehicle) condition.

In the early experimental sessions of Experiment III, however, a curious phenomenon emerged that prompted the addition of a second high-dependency condition (*HD2*). As indicated above, the initial high-dependency condition (referred to hereafter as *HD1*) involved a hitchhiker positioned alongside a car with a flat tire. In early experimental sessions this condition seemed to be influencing the number of motorists that stopped for the male but surprisingly not for the female. Furthermore, the female in the *HD1* condition was apparently being perceived as needing assistance with the flat tire, while the male was seen as merely needing a ride. This difference was evident from the fact that most motorists stopping to help the female got out of their car and made gestures to help fix the tire. This kind of response was not given by persons stopping for the male hitchhiker; for him they simply opened their door and offered a ride. Hence, the *HD1* condition was apparently influencing the motorists' perception of the female's request, which in turn may have increased the perceived cost of helping. Consequently the second high-dependency condition (*HD2*) was added.

In the *HD2* condition, the male or female hitchhiker again solicited rides alongside a car, but this time with the tire in the trunk and the trunk closed. Presumably a hitchhiker in this situation would be perceived as needing a ride rather than help with the car. The subsequent types of helping responses, discussed later, verify the success of this manipulation in achieving the desired effect.

Because the requests made by the male and female solicitors in *HD1* were perceived differently, it was anticipated that this condition would increase helping over the *LD* base rate, but only for the male solicitor. This differential

perception also prompted us to predict that the *HD2* condition would increase help offers over the *HDI* condition, but only for the female solicitor. As in the previous experiments, the female was predicted to attract more help offers than the male. Further, male motorists were predicted to offer most of the help.

Method

Subjects for Experiment III were 600 male and female motorists on three highways one-half mile from Champaign-Urbana, Illinois. Experiment III employed three dependency conditions. The *LD* condition was exactly the same as described in Experiment II—a casually dressed hitchhiker standing alongside the highway. In the *HDI* condition the hitchhiker stood at the left rear of a 1964 Buick positioned on the shoulder of the road with the trunk up and a spare tire propped next to the left rear side of the car. In the *HD2* condition the hitchhiker also solicited rides next to the auto but with the tire in the trunk and the trunk closed. A 23-year-old male and a 21-year-old female were the hitchhikers in this experiment. They were of the same general appearance as the solicitors in the previous experiments.

Procedure

This experiment was conducted on 8 weekdays in the early fall between the hours of 11:30 a.m. and 4 p.m. Each individual session lasted for the time it took for a fixed number of cars to pass, at which time the condition was changed. The particular condition was determined at random, but care was taken not to repeat similar conditions in the same time period on the same highway. Again a total of 100 vehicles was observed in each of the six experimental conditions—one-third on each highway and half heading in each direction. When drivers stopped, their offer of help was dealt with as in Experiments I and II. Also the same information about the passing and stopping vehicles was recorded by the solicitor as in the previous experiments.

Results

In the *HDI* condition of Experiment III, the fact that the female and male hitchhikers were perceived differently can be seen by the behavior of the helping motorists. In that condition (trunk up, spare tire visible) with the female solicitor, 65% of those stopping for her made gestures to help change the flat tire. Rather than merely reaching over and opening their door, these helpers all got out of their vehicle and asked such questions as "Need some help?" or "Need your tire changed?" This was not the case for the male solicitor in the *HDI* condition. For him only one of the stopping motorists (5%) offered to help change the tire—the rest merely waited for him to get in their car or truck.

TABLE 3
NUMBER OF MOTORISTS IN EXPERIMENT III OFFERING A RIDE
OR HELP IN EACH HITCHHIKING CONDITION

Solicitor	Dependency		
	Low (no car)	High 1 (trunk up, tire visible)	High 2 (trunk down, no tire)
Female	21 ^a	23 ^a	36 ^c
Male	6 ^b	21 ^a	22 ^a

Note.—Values with a common subscript do not differ significantly from one another. $N = 100$ in each cell.

However, in the *HD2* condition, both female and male solicitors were perceived as wanting a ride. This is evidenced by the percentage of helpers that remained in their vehicles waiting for the solicitor rather than offering assistance with the car (86% for both male and female).

The number of persons who stopped to offer a ride or help in each of the six experimental conditions is shown in Table 3. Separate analyses by sex confirmed the dependency predictions made for each cell.

As anticipated, for the female solicitor the number of help offers in the *HD1* condition (23) was not significantly greater than the number in the *LD* condition (21) ($\chi^2 = 0.11$, $df = 1$, $p < .75$). Also as expected, in the *HD2* condition she attracted significantly more help offers (36) than in the *HD1* condition (23) ($\chi^2 = 4.06$, $df = 1$, $p < .05$). Results for the male solicitor also confirmed the predictions. Males were helped significantly more often in the *HD1* condition (21) than in the *LD* condition (6) ($\chi^2 = 9.63$, $df = 1$, $p < .005$). Furthermore, the number of offers in the *HD2* condition (22) was not significantly greater than the number in the *HD1* condition (21) ($\chi^2 = 0.03$, $df = 1$, $p < .90$). Again the female was helped more often than the male (80 versus 49) ($\chi^2 = 9.49$, $df = 1$, $p < .005$), and most of the help was given by males (122 versus 7) ($\chi^2 = 81.85$, $df = 1$, $p < .001$). As in the previous two experiments, variations in highway ($\chi^2 = 0.41$, $df = 2$, $p < .90$) and direction ($\chi^2 = 0.09$, $df = 1$, $p < .80$) were not significant.

The typical helper in this experiment was again alone (80%). Only 30% drove camper trailers or pickup trucks, but interestingly a greater proportion of these stopped in the *HD* conditions which involved a disabled car (as in Experiment I). Again, it appeared that when the helping behavior was likely to involve greater cost the drivers of campers and trucks were more likely to respond. Of further interest is the age of the drivers who stopped in the various conditions. In situations that were seen as merely involving a ride, most of the helpers were

TABLE 4
NUMBER AND PERCENTAGE OF HELP OFFERS BY DEPENDENCY, SEX
OF SOLICITOR, AND SEX OF HELPER IN THE LD AND HD2 CONDITIONS
OF EXPERIMENT III

Low dependency (LD)				High dependency (HD2)			
Female solicitor		Male solicitor		Female solicitor		Male solicitor	
Female helpers	Male helpers	Female helpers	Male helpers	Female helpers	Male helpers	Female helpers	Male helpers
0(0%)	21(35%)	0(0%)	6(10%)	3(7.5%)	33(55%)	2(5%)	20(33%)

Note.—Percentages are based on *N*s of 60 per cell for male helpers and 40 for female helpers.

judged to be 30 years of age or younger (as in Experiment II). In the *HD1* condition involving a spare tire, drivers of all ages stopped for the male. However, most helpers of the female were judged to be over 35 years old (as in Experiment I). Thus, when helping involved physical effort, older male drivers were more likely to stop for the female than were younger males.

Since the *HD1* condition was complicated by differential perceptions of the requests made by the male and female hitchhikers, a second analysis was performed excluding that condition. Table 4 presents the data categorized on the basis of Dependency, Sex of Solicitor, and Sex of helper. The results of the multiple Chi-square analysis are presented in Table 5. As predicted, there was a significant main effect due to Dependency with more persons stopping when the

TABLE 5
MULTIPLE CHI-SQUARE ANALYSIS OF HELPING RESPONSES
IN EXPERIMENT III

Source	χ^2	<i>df</i>	<i>p</i>
Dependency (D)	14.36	1	.001
Sex of Solicitor (Sol)	12.56	1	.001
Sex of Helper (S)	52.35	1	.001
D × Sol	.01	1	.95
D × S	3.41	1	.08
Sol × S	6.99	1	.01
D × Sol × S	.12	1	.75
Total	89.80	7	

Note.—The data are shown in Table 4.

solicitor was in a state of high dependency. Also as predicted and as found in the previous experiments, there were highly significant main effects as a function of Sex of Solicitor and Sex of Helper. Females received more help than males, and invariably the help was given by males. The significant Sex of Solicitor by Sex of Helper interaction was due mainly to the fact that females made their few helping responses equally to the male (2) and female solicitors (3) (*ns*), while males helped the female (54) more than the male solicitor (26) ($\chi^2 = 14.70, df = 1, p < .001$). There was also a tendency for Dependency to interact with Sex of Helper ($p < .08$). While both males and females helped more under high dependency, the increase over the *LD* condition was significant for males (27 to 53) ($\chi^2 = 12.67, df = 1, p < .001$) but not for females (0 to 5) (χ^2 corrected = 3.30, $df = 1, p < .10$).

DISCUSSION

This study began as a straightforward test of the intuitively plausible hypothesis that dependency would increase a person's likelihood of being helped. The resulting three experiments show that manipulations of dependency may interact with the situation to influence such important mediating variables as the apparent nature and appropriateness of the request and the perceived cost of helping. For example, in Experiment I the situation involved a car with a flat tire, and dependency was manipulated by cues of physical disability. As it happened, the female with a flat tire was perceived as highly dependent even in the absence of a physical handicap, and consequently she was helped frequently regardless of her condition. In contrast, the male received help only when he was physically handicapped.

In Experiment II, the same dependency manipulation (knee brace and arm sling) was employed in a hitchhiking context. With this arrangement the dependency cues produced a surprising reverse effect, reducing the help given to a hitchhiker. One explanation was that hitchhiking on a highway may have been perceived as an inappropriate venture for a disabled person. Also, the fact that the reduction in helping was significant only for the female suggested an additional interpretation. The brace and sling apparently decreased her attractiveness. The flirtatious nature of the helping males toward the normal female suggests that, at best, their motives were mixed. Such behavior was not in evidence when she appeared disabled. Not only do these results show the complexity of dependency, but they also suggest that stopping to help the female in this situation may have had little to do with altruism.

Experiment III employed a combination of what appeared to be the effective components of the first two experiments. In this study the dependency manipulation involved a disabled car (as in Experiment I), and the helping behavior involved offering a ride (as in Experiment II). Even this arrangement,

however, had an unforeseen complication, and as a consequence a variation of the initial manipulation became the dependency condition of interest. The results of Experiment III confirmed the hypothesis that perceived dependency increases helping and again demonstrated the fact that the decision to help another person can be influenced by the most subtle of factors.

While hitchhiking might at first appear to be an unstable phenomenon for study, the results across all three experiments show a high degree of stability. In five of the seven conditions when the solicitor was a female, the number of helpers out of 100 motorists ranged from 21 to 26 regardless of the circumstances. This high base rate decreased only when she appeared physically disabled (12) and increased only when a high-dependency, low-cost situation was finally devised (36). Also, when the solicitor was a male the number of helpers, while significantly lower, was similarly stable. The helping rate remained between 0 and 8 per 100, increasing only when high-dependency, low-cost conditions were used. Furthermore, in none of the experiments did the highway or direction manipulation influence the number of help offers.

In a well-controlled laboratory experiment, Gruder and Cook (1971) investigated the effects of the same types of variables employed in this study. The results of that experiment contrast with the results shown in Table 5. Using a relatively low-cost helping response, they found no main effects due to Dependency, Sex of Solicitor, or Sex of Helper, nor did they find a Sex of Solicitor by Sex of Helper interaction. They did find a dependency effect in the form of a Dependency by Sex of Solicitor interaction. Dependency increased the amount of help received by a female but decreased the help received by a male.

The presence of a Sex of Solicitor main effect in all three experiments reported here was previously attributed to the added sexual motivation operating when the female served as Solicitor. Gruder and Cook intentionally minimized this factor by eliminating actual contact between solicitors and helpers. The sexual factor could also explain the emergence of the Sex of Solicitor by Sex of Helper interaction in Experiment III. That interaction showed that males were more responsive to females, but that females responded equally to males and females.

A Sex of Helper effect was also obtained in Experiment III but not in Gruder and Cook's study. In our experiment female motorists may have perceived the hitchhikers as in a state of need but not as dependent on *them* for help. Unlike the helping response used by Gruder and Cook (stapling questionnaires), helping on the highway may have been seen by females in Experiment III as behavior falling outside their role or as too costly or risky. Greater help by males has also been observed in other naturalistic field experiments—in a subway (Piliavin, Rodin, & Piliavin, 1969), in a grocery store (Wispe & Freshley, 1971), and on the highway (Bryan & Test, 1967).

An interesting comparison also can be made across studies with respect to the Dependency by Sex of Helper interaction. This interaction has appeared in several laboratory studies (Berkowitz, 1970; Schopler, 1967; Schopler & Bateson, 1965), but it was not significant in either Gruder and Cook's study or Experiment III. Furthermore, while a trend ($p < .08$) was present in Experiment III, the fact that males tended to be more responsive to dependency than females makes the effect opposite to that of previous studies. This inconsistency is explained by Schopler and Bateson's (1965) laboratory data. They found an interaction among Dependency, Sex of Helper, and Cost. Under high-cost conditions, Dependency had no effect for females but tended to increase helping by males. Exactly the same pattern of helping was evidenced in Experiment III. If one can assume that helping on the highway is a relatively high-cost behavior for females but not for males, the results of the present experiment are consistent with the findings of laboratory investigations of the same issue.

The most important comparisons across all studies of this issue concern dependency and cost manipulations. To understand fully the influence of these variables on helping, one must be able to compare the manipulations across studies. The difficulty of that task lies in the diversity of the strategies that have been used. For example, what is the relative dependency of the following persons: an experimenter with a shortage of time (Gruder & Cook, 1971), a girl with a broken hand (Test & Bryan, 1969), a woman with a broken shoe heel (Schaps, 1972), a supervisor with a chance to win a prize (Berkowitz & Daniels, 1963), and a hitchhiker with a disabled car (Experiment III)? Moreover, to make valid comparisons across studies, one would also have to be able to equate cost manipulations. For example, is the high-cost condition used by Schopler and Bateson (1965)—foregoing the possibility of winning \$1—comparable to the high-cost condition in the Wagner and Wheeler (1969) study—being asked to make a donation of \$20? Dependency and cost appear to be complex variables always embedded in a variety of situational factors. The consistency of research findings to date is apparently due to the fact that the levels of these variables are high or low depending on the circumstances of each unique situation. To make meaningful comparisons across studies or predictions based on previous research may require a theoretical framework within which to fit the various manipulations.

REFERENCES

- Berkowitz, L. Responsibility, reciprocity, and social distance in help-giving: An experimental investigation of English social class differences. *Journal of Experimental Social Psychology*, 1968, 4, 46-63.
- Berkowitz, L. The self, selfishness, and altruism. In J. Macaulay and L. Berkowitz (Eds.), *Altruism and helping behavior*. New York: Academic Press, 1970, pp. 143-151.
- Berkowitz, L., & Daniels, L. Responsibility and dependency. *Journal of Abnormal and Social Psychology*, 1963, 66, 429-436.

- Berkowitz, L., & Daniels, L. Affecting the salience of the social responsibility norm: Effects of past help on the response to dependency relationships. *Journal of Abnormal and Social Psychology*, 1964, 68, 275-281.
- Berkowitz, L., & Friedman, P. Some social class differences in helping behavior. *Journal of Personality and Social Psychology*, 1967, 5, 217-225.
- Berkowitz, L., Klanderma, S., & Harris, R. Effects of experimenter awareness and sex of subject and experimenter on reactions to dependency relationships. *Sociometry*, 1964, 27, 327-337.
- Bryan, J. Helping and hitchhiking. Unpublished manuscript, Princeton, N.J.: Educational Testing Service, 1966.
- Bryan, J., & Test, M. Models and helping: Naturalistic studies in aiding behavior. *Journal of Personality and Social Psychology*, 1967, 6, 400-407.
- Byrne, D., London, O., & Reeves, K. The effects of physical attractiveness, sex, and attitude similarity on interpersonal attraction. *Journal of Personality*, 1968, 36, 259-271.
- Clifford, M., & Cleary, P. The odds in hitchhiking. Unpublished manuscript, University of Wisconsin, 1971.
- Daniels, L., & Berkowitz, L. Liking and response to dependency relationships. *Human Relations*, 1963, 16, 141-148.
- Deaux, K. Sex and helping: Expectations and attributions. Paper presented at American Psychological Association, Honolulu, September, 1972.
- Gruder, C., & Cook, T. Sex, dependency, and helping. *Journal of Personality and Social Psychology*, 1971, 19, 290-294.
- Horowitz, I. Effect of choice and locus of dependence on helping behavior. *Journal of Personality and Social Psychology*, 1968, 8, 373-376.
- Piliavin, I., Rodin, J., & Piliavin, J. Good samaritanism: An underground phenomenon? *Journal of Personality and Social Psychology*, 1969, 13, 289-299.
- Schaps, E. Cost, dependency, and helping. *Journal of Personality and Social Psychology*, 1972, 21, 74-78.
- Schopler, J. An investigation of sex differences on the influence of dependence. *Sociometry*, 1967, 30, 50-63.
- Schopler, J., & Bateson, N. The power of dependence. *Journal of Personality and Social Psychology*, 1965, 2, 247-254.
- Schopler, J., & Matthews, M. The influence of the perceived causal locus of partner's dependence on the use of interpersonal power. *Journal of Personality and Social Psychology*, 1965, 2, 609-612.
- Test, M., & Bryan, J. The effects of dependency, models, and reciprocity upon subsequent helping behavior. *Journal of Social Psychology*, 1969, 78, 205-212.
- Wagner, C., & Wheeler, L. Model, need and cost effects in helping behavior. *Journal of Personality and Social Psychology*, 1969, 12, 111-116.
- Wispe, L., & Freshley, H. Race, sex, and sympathetic helping behavior: The broken bag caper. *Journal of Personality and Social Psychology*, 1971, 17, 59-65.