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PERSONNEL.

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SHOPLIFTING CONTROL THROUGH FEEDBACK  
TO SALES PERSONNEL

BY

John L. Black

A Dissertation Submitted to  
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The University of North Carolina at Greensboro  
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Shoplifting, a behavior engaged in by a large percentage of the population, has major economic and social costs. The purpose of these two experiments was to determine if shoplifting could be controlled by altering the behavior of store personnel. In Experiment 1 it was attempted to alter the behavior of store personnel by providing them with daily feedback on shoplifting losses. The measurement procedure consisted of taking daily inventory counts on 30 types of target merchandise and monitoring the sales and shoplifting losses on each of these 30 target items. A withdrawal design was used. Shoplifting frequency declined with the first introduction of feedback, and increased when feedback was withdrawn. The frequency of shoplifting again declined when feedback was reintroduced, but there was a continued decline in shoplifting frequency rather than an increase when feedback was again withdrawn. Shoplifting frequency continued to decline through two additional baseline conditions until it reached zero frequency. Although feedback reduced the frequency of shoplifting, the value of shoplifted merchandise was not influenced. Experiment 2 was an implementation study conducted to determine if the store personnel could carry out the data collection and feedback procedures used in Experiment 1. The store personnel reliably engaged in these data-collecting behaviors for 34 days, but these behaviors

were not maintained. Although shoplifting had declined to zero frequency by the end of Experiment 1, shoplifting did not remain at zero frequency in Experiment 2. The program appears to be of social value. The cost of the program was minimal, the procedures did not interfere with the store personnel performing their jobs, and the store personnel training time was minimal.

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CHAPTER I  
INTRODUCTION

The history of crime indicates that shoplifting is a form of theft which has been practiced for several hundred years. Cameron (1964) described shoplifting activities practiced by two- and three-member teams, with the descriptions taken from English sources written in 1597 and 1726. Cameron also reported references to similar practices in America in 1876 and 1886. These historical descriptions of shoplifting characterized the theft as usually performed by a three-member team which stole silk, silver, and cloth. The shoplifting problem has recently increased annually in number of participants and cost ("New Weapons Against Shoplifting," 1972). The economic cost of shoplifting has been estimated at 5 billion dollars per year ("Losses Hit \$5 Billion Annually," 1975). In addition to the measurable economic costs, there are difficult-to-measure social costs. Over 50% of all shoplifters apprehended are 13 to 19 years of age ("Losses Hit \$5 Billion Annually," 1975). The consequence for many of these young people may be a criminal record which could have a detrimental effect on future employment. Given that shoplifting has major costs both economically and socially, it is important to determine ways of decreasing this behavior, as well as the factors causing

and maintaining shoplifting. In an attempt to determine this information, the available data on shoplifting is reviewed.

### Who Shoplifts?

There are three sources of data on the frequency of, and participants in shoplifting. Observational studies and surveys are the first source and provide the most representative measure of shopper behavior. The second source is the shoplifting apprehension records of stores and security agencies, which provide an index of who gets caught shoplifting. Crime statistics are the third source, indicating who is apprehended and then prosecuted for shoplifting.

Only one natural environment observational study has been done (Astor, 1971). This three-month study was performed by a private security agency with the data being collected in New York, Boston, and Philadelphia. The investigators studied 1647 shoppers who were selected at random and observed during the entire time they were shopping. It was found that on the average one in fifteen shoppers shoplifted merchandise valued at an average of \$5.26. The data indicated that race and age had little to do with the frequency of shoplifting. It was found that 7.4% of the female customers shoplifted compared with 5.0% of the male customers, while 7.3% of the non-whites shoplifted compared with 6.3% of the whites.

These observational data on shoplifting can be compared with survey data. El-Dirghami (1974) surveyed a stratified random sample of both high school and college students in a small, midwestern community. The response rate of the 200 college student sample was 54% while the 178 high school student sample responded at a 65% rate. The students were classified as nonshoplifters, those who had never engaged in the behavior; triers, those who had shoplifted on one occasion; and repeaters, those who had shoplifted more than once. Among college students it was found that 60% were nonshoplifters, 17% were triers, and 23% were repeaters. Among high school students it was found that 49% were nonshoplifters, 22% were triers, and 28% were repeaters. These data indicate that shoplifting is a behavior practiced by a higher percentage of the population than the observational study found. It should be noted that since positive responding to the questionnaire was self-incriminating, the percentage may be even higher.

The possible problem of distortion of survey responses produced by questions requiring self-incrimination has been overcome by recent improvements in design (Warner, 1965). Two shoplifting surveys (Geurts, Andrus, & Reinmuth, 1975; Reinmuth & Geurts, 1975) have used the randomized response model. This model controls for the problem of no response or lying in answering questions that are possibly incriminating or embarrassing. The randomized response model

accomplishes this by presenting questions in pairs with the subject instructed to answer one of the two questions. One question is of a sensitive nature while the other is non-sensitive. The question to be answered is determined by a randomizing procedure performed by the subject, e.g., flipping a coin. Thus, the subject believes that only he or she is aware as to which question the answer applies. The experimenter, however, can determine algebraically the overall percentage of subjects answering a particular question affirmatively. This can be done because the experimenter knows the following information:

- (a) The proportion of subjects who answered a specific question affirmatively. This is found by tabulating the results of the questionnaire.
- (b) The probabilities of answering the sensitive question  $P(S)$ , and the nonsensitive question,  $P(NS)$ , are known. In both cases, it is .5.
- (c) The experimenter also knows that the total number of "yes" answers is composed of "yes" answers to both the sensitive and nonsensitive questions. Statistically this can be represented as  $P(Y) = P(YS)P(S) + P(YNS)P(NS)$ .

$P(Y)$  represents the total proportion of "yes" answers. This includes "yes" answers to both the sensitive and nonsensitive questions.

$P(YS)$  represents the proportion of "yes" answers given to the sensitive question. Note that this is the



percentage the experimenter wishes to find; it is the percentage of subjects who admitted shoplifting.

$P(S)$  is the probability of answering the sensitive question, which was determined by the randomizing procedure.  $P(NS)$  is the probability of answering the nonsensitive question. The probability of answering either the sensitive or nonsensitive question is .5.

$P(YNS)$  is the proportion of subjects giving a "yes" answer to the nonsensitive question.

Given that the probability distribution of the randomizing procedure is known, the experimenter then knows  $P(S)$  and  $P(NS)$ .  $P(Y)$  is known from tabulating the results of the questionnaire. The two unknowns are  $P(YS)$  and  $P(YNS)$ . A method of solving for the two unknowns is to simultaneously draw a second sample from the same population. When this is done there are two unknowns and two equations, which can be solved simultaneously. In using this method, the randomizing procedure for the second sample must have a different probability distribution from that of the first sample.

Geurts, Andrus, and Reinmuth (1975) used the randomized response model to survey the shoplifting behavior of young adults aged 14-28 in Honolulu, Hawaii. The investigators found 28.2% of the subjects reported they had shoplifted during the previous year, which is comparable to the percentage of students found by El-Dirghami (1974) to be repeated shoplifters. A second survey using the randomized research

design surveyed 342 shoppers selected at random at a large shopping center in Honolulu (Reinmuth & Geurts, 1975). The subjects were asked whether they had shoplifted at that shopping center during the previous 12 months, and, if so, how frequently. All but three subjects completed the questionnaire with 20% indicating they had shoplifted at that shopping center. Those subjects admitting to having shoplifted reported having done so an average of 7.9 times during the previous year. To summarize the observational and survey data, the single observational study found that one in fifteen shoppers (6.6%) shoplifted. The survey data indicate even a higher percentage of the population has shoplifted, with 20%-28% of the respondents reporting they had shoplifted. These survey percentages are conservative estimates, as they exclude the subjects in the survey by El-Dirghami (1974) who reported having shoplifted only once.

The second source of data on shoplifting frequency and participants is the apprehension records of stores and security agencies. Robin (1963) analyzed the apprehension data of three large department stores in the Philadelphia area for 1958. It was found that 1584 shoplifters were apprehended, with 40% being male and 58% under age 18. These data, especially the large percentage of juveniles apprehended, may indicate more about the apprehension policy of the stores than the characteristics of shoplifters. Given that all three stores were emphatic in their instructions to security

personnel on the importance of avoiding false arrest, the large number of juveniles apprehended may have occurred because they would be less likely to bring suit for false arrest. A second reason for skepticism in regard to apprehension data comes from the previously described observational study in the natural environment (Astor, 1971). A total of 1647 shoppers were observed; 109 shoplifted, but of the 109 only one was apprehended. All three stores in which the study was conducted had large detective staffs.

The third source of data on shoplifting frequency and participants is crime statistics. However, these data are not representative of shoplifting behavior because only a few of the small number of shoplifters that are apprehended are actually prosecuted. Hindelang (1974) found that only 26% of apprehended shoplifters were referred to the police, while Cohen and Stark (1974) found 46% of the apprehended cases were referred to the police.

In summary, the observational and survey data indicate that shoplifting is a behavior engaged in by a large percentage of the population. The apprehension and prosecution data indicate that very few shoplifters are apprehended, and of those who are, less than one half are referred to the police. The next shoplifting data source to be reviewed will be the reaction of customers who observe shoplifting.

### Bystanders' Reaction to Shoplifting

The data in this area have come from field experiments involving contrived observation. In the typical experiment there are three confederates involved in the following procedure: the first confederate serves as a shoplifter who moves into a position close to and easily observed by the subject, who is a shopper in the store. The shoplifter-confederate then blatantly shoplifts. Following the theft the shoplifter-confederate then leaves the area and a second confederate posing as a store employee moves near the subject so as to be available for the subject to report the incident. If the subject fails to report the incident within a specified period of time, the second confederate leaves the area and a third confederate posing as a second store employee appears and asks the subject if any shoplifting was observed, or if the subject could confirm the shoplifting act. Follow-up interviews are conducted with the subjects in order to tabulate their characteristics. The dependent measure has been spontaneous reporting or confirmation of the incident. Independent variables which have been investigated include appearance, race, and sex of the shoplifter; and sex, age, childhood residence, attitudes, and social distance of the observer-subject. Also, situational variables such as cost of the item stolen and size of the store have been investigated. The bystander reaction to shoplifting data will be presented in three subsections: characteristics of the shoplifter, characteristics of the observer, and situations.

### Characteristics of the Shoplifter

A characteristic of the shoplifter which has been investigated several times is appearance. In these studies the shoplifter's appearance was varied by having the confederate dress in a "hippie" or "straight" style. Gelfand, Hartmann, Walder and Page (1973) found the appearance of the shoplifter to have no significant effect on reporting rates, although the subjects rated the hippie appearance less favorably in follow-up interviews. In this particular experiment only 28% of the subjects actually saw the shoplifting incident, and of those who saw the theft, 28% reported it. Steffensmeier and his associates (1973; 1975) have also investigated the effect of the hippie as opposed to straight appearance on shoplifting reporting. Rather than presenting the rate of reporting, the data are in the form of the subjects' willingness to report. The subjects were classified as to whether they reported the theft spontaneously, confirmed the theft on the first prompt, confirmed the theft on the second prompt, or neither reported nor confirmed the theft. Steffensmeier and Terry (1973) found appearance to have a highly significant effect ( $p < .001$ ), with the hippie shoplifter reported more often. In a later study, Steffensmeier (1975) again found appearance to have a highly significant effect on reporting, with hippies reported more often.

The influence of additional shoplifter characteristics which have been investigated are sex, race, and age. None

of the experiments including sex of the shoplifter as an independent variable have found a significant sex difference (Bickman, 1976; Dertke, Penner, & Ulrich, 1974; Steffensmeier, 1975; Steffensmeier & Steffensmeier, 1975; Steffensmeier & Terry, 1973). In addition to manipulating the sex of the shoplifter, Dertke et al. (1974) also investigated the effect of the race of the shoplifter on the subject reporting of shoplifting. The data were collected in a college bookstore with the dependent measures being spontaneous reporting and confirmation of the theft when prompted by a confederate posing as a store employee. Black shoplifters were spontaneously reported more often than white shoplifters, but the difference was not significant. Black male shoplifters were reported significantly more often than white male shoplifters. Thefts by blacks were confirmed significantly more often than thefts by whites. In the only experiment in which the age of the shoplifter was manipulated, there was no effect on reporting rate (Bickman, 1975).

#### Characteristics of the Observer

Characteristics of shoppers observing a shoplifting act which have been investigated include sex, attitude, age, social distance, marital status, educational level, childhood residence, place of residence, income, religion, degree of religious commitment, and occupation. The data on the effect of sex of observer on reporting levels are inconclusive, with

three studies reporting negative results and two studies reporting positive results. Steffensmeier and Terry (1973), Bickman (1976), and Bickman and Rosenbaum (1977) found no significant effect of sex on reporting. Bickman and Green (1977) found a significant sex difference, with females more likely to intervene than males. Intervention was defined as either reporting the incident or telling the confederate shoplifter to put the merchandise back. Dertke et al. (1974) found no significant sex difference in confirming shoplifting incidents, but did find a significant sex difference in the spontaneous reporting of shoplifting. In this experiment the observers were white males and females, while both black males and females and white males and females posed as shoplifters. It was found that females spontaneously reported significantly more often than males, but this was due to the female observers reporting black shoplifters significantly more often than male observers. The reporting rates of the male and female observers did not differ significantly for white shoplifters. Thus, the effect of the sex of observer on observer reporting rates is not clear at this time.

Like the sex variable, there is no clear-cut support for an effect of attitude of the observer toward the shoplifter on reporting rates. Bickman and Green (1975) conducted a field experiment in which a confederate first interacted with the subjects in a rude, neutral, or friendly manner and then shoplifted. Although attitude toward the shoplifter was successfully manipulated, reporting rates were not affected. In a similar study, Bickman (1976) had the sales clerk

interact with a shopper in a pleasant, unpleasant, or neutral manner. Again, attitude was successfully manipulated but reporting rate was not influenced. Attitude toward store personnel also had no effect in a laboratory study conducted by Bickman (1976).

Instead of manipulating attitude as was done in previous studies, Steffensmeier and Steffensmeier (1975) measured the social distance between subjects and a confederate, who was dressed in either a hippie or straight fashion. Social distance was measured by means of a six-item scale on which the subjects rated their willingness to interact with a hippie. Subjects high on social distance toward a hippie shoplifter had a high reporting rate (74%), while the subjects low on social distance had a low reporting rate (24%).

The age of observers has been investigated in five experiments. Neither Gelfand et al. (1973) nor Bickman and Green (1975) found significantly higher reporting rates for different age groups. However, Bickman and Rosenbaum (1977) found significantly ( $p < .001$ ) more subjects over age thirty-one reported than subjects younger than this age. Bickman and Green (1977) conducted two experiments in which the age of those observing the shoplifting incident was measured by self-report. In the first experiment, subjects 28 years of age and older were more likely to report than younger subjects ( $p < .10$ ). In the second experiment it was found that subjects 48 years old and older were significantly more likely to report than younger subjects.



Five experiments have been conducted in which the relationship between the childhood residence of the observer and reporting rate was investigated. These data are inconclusive, with three experiments producing negative results and two presenting positive results. Negative results were found in experiments by Bickman (1976), Bickman and Rosenbaum (1977), and in the first of two experiments conducted by Bickman and Green (1977). Two studies have found that subjects from small towns and rural areas reported significantly more incidents than subjects from urban areas. Gelfand et al. (1973) defined subjects as coming from small towns if the population was less than 100,000, while the second experiment conducted by Bickman and Green (1977) did not provide a definition for the size of childhood residence. The results presented by Gelfand et al. (1973) were interpreted in a social learning framework, proposing that city-reared subjects had been taught to leave emergencies to specialized authorities, while those raised in rural areas are taught to be "good neighbors" and offer assistance in emergency situations.

Other observer characteristics investigated include income, religion, degree of religious commitment, occupation, and place of residence. There was no significant relationship found between these demographic variables and reporting rate.

These data on the relationship of observer characteristics and reporting rate should be interpreted with caution

owing to three methodological problems. First, the definition of age of observer has varied with the experiment (Bickman & Green, 1977; Bickman & Rosenbaum, 1977). Second, the definition of childhood residence was not stated (Bickman & Green, 1977). Third, there was substantial overlap of some observer characteristics, e.g., educational status and age, that makes interpretation difficult (Bickman & Rosenbaum, 1977).

#### Characteristics of the Situation

The last area investigated which may influence shoppers reactions to shoplifting is the situation. Situational variables investigated include a mass media campaign, signs, social encouragement, cueing subjects, size of the victim store, and characteristics of the stolen item. The procedures used in the mass media campaign, signs, social encouragement, and cueing of subjects were designed to encourage bystander intervention.

In an experiment designed to increase bystander intervention in a college bookstore, Bickman (1975) conducted a media campaign in which information on how to intervene in a shoplifting incident was disseminated. This information was conveyed by means of advertisements in the student newspaper, handbills distributed as students left the store, and posters placed in the store. The effect of the campaign on both attitudes and intervention were assessed before and during

the media campaign. The campaign produced a significant increase in the percentage of students who were aware of the consequences of apprehension and who stated intentions of intervening if they observed an incident. However, when shoplifting was staged in the store before and during the campaign, there was no significant difference in the rate of intervention. This was true whether the shoplifter-confederate was a female student or a middle-aged, nonstudent female.

A second attempt to increase bystander intervention involved the use of signs (Bickman & Green, 1977). Signs encouraging the reporting of shoplifting incidents to the store manager were placed in four supermarkets. As in the mass media study (Bickman, 1975), attitudes and responses to staged shoplifting incidents were assessed both before and during placement of the signs in the stores. Following placement of the signs there was a significant increase in the percentage of customers who agreed that the store needed the assistance of customers in combatting shoplifting, but there was no significant effect on behavioral intervention in staged shoplifting incidents. As a result of the intervention rate being so low (6%), a second experiment was conducted in which the staged shoplifting took place in the checkout line, where the signs were conspicuously placed. In this second experiment a 2 x 2 factorial design was used in which the signs (present or absent) were crossed with definition of the situation. The definition condition

consisted of either a confederate shoplifter defining the situation by pointing out to the subject that a shoplifting incident was taking place, or no definition of the situation. Defining the situation resulted in significantly more reporting ( $p < .05$ ) than when there was no definition. There was no effect for the signs, nor was there an interaction effect. Although the statements on signs encouraging shoppers to report shoplifting incidents had no effect on reporting (Bickman & Green, 1977), when the encouragement was made by a confederate bystander the result was an increase in reporting (Bickman & Rosenbaum, 1977). The confederate bystander first defined the situation as a shoplifting incident, then encouraged or discouraged reporting. Encouragement and discouragement of reporting were operationally defined in the following manner:

Discourage reporting--"Say, look at her. She's shoplifting. She put that in her purse. But it's the store's problem. They have security people here."

Encourage reporting--"Say, look at her. She's shoplifting. She put that in her purse. We saw it. We should report it. It's our responsibility."  
(Bickman & Rosenbaum, 1977, p. 579)

Subjects encouraged to report did so significantly more often than subjects discouraged to report, with the latter not differing from control subjects. The encouragement effect was not influenced by whether the confederate continued to observe the subject, or whether the confederate left the area. There was, however, a surveillance effect on subjects discouraged to report. The discouraging comments were more

effective when the confederate left the area. The encouragement-discouragement effect was replicated in a second experiment conducted in a laboratory in which the shoplifting incident was viewed on videotape, although the subjects were told they were observing a live broadcast on closed circuit television.

A situational variable similar to encouragement of reporting is the cueing of subjects to report shoplifting. In this laboratory experiment, Bickman (1976) had subjects observe supermarket shoppers on videotape and take observational data on the shoppers' reaction to a sales display of film. The video presentation was supposedly a live telecast rather than a videotape. A 2 x 2 factorial design was used in which cueing was crossed with attitude manipulation. Prior to taking the observational data, one group of subjects was casually cued to attend to and report shoplifting, while a second group was not. In order to view the tape, the subjects were required to call the supermarket and ask that the camera be turned on. At this time the subjects' attitude was manipulated by having the secretary answering the phone speak in a pleasant or unpleasant manner. Shoplifting was reported by 81% of the cued subjects but only 28% of the noncued subjects. This difference was highly significant ( $p < .001$ ), but there was no attitude effect or interaction effect.

The final two situational variables which have been investigated are the size of the victim store and characteristics of the stolen item. Terry and Steffensmeier (1973)

varied the size of the victim store, with size measured in number of employees and net weekly sales. They hypothesized that observers would show greater disapproval of shoplifting from a small, personal organization than from a large, impersonal organization. The correlation between store size and reporting levels was, however, low and not in the predicted direction. Just as the size of the victim store has no effect on reporting rate, neither do characteristics of the stolen item. Neither the cost of the stolen item (Bickman, 1976; Bickman & Green, 1975) nor the type of item stolen (Bickman, 1976) was significantly related to reporting rates.

In summary, the factors which have increased the rate of reporting shoplifting incidents are cueing subjects, defining the situation as a shoplifting incident, and defining the situation combined with encouraging the subject to report. These results should be interpreted cautiously for the following reasons. In the study in which subjects were cued to report (Bickman & Green, 1977), the setting was a laboratory and reporting was done over the phone. The effect of encouragement on reporting was strong, but encouragement may only influence the behavior of subjects who are in agreement with information given. It should be noted that in the Bickman and Rosenbaum (1977) experiments significantly more students than nonstudents reported, and significantly more subjects 31 years of age or older reported than students younger than 31.

### Reaction of Store Personnel to Shoplifting

The general policy of merchants in regard to actual shoplifting acts is to react with extreme caution in order to avoid the possibility of a lawsuit arising from false arrest (Cameron, 1964; Curtis, 1971; Robin, 1963). This policy is reflected in the data gathered in an observational study of shoplifting (Astor, 1971). In this study only one of the 109 shoppers observed shoplifting was apprehended, and this research was done in large department stores with a full-time security staff. The only experiment reporting a high apprehension rate, 60%, was one in which subjects tried to blatantly carry large, unwrapped items from the store without presenting the sales receipt (Mace, 1972). The subject was considered to be apprehended if the sales receipt was requested.

In addition to a cautious apprehension policy, merchants are also cautious in prosecution. The data indicate prosecution results only in cases where expensive items are taken. Robin (1963) examined the shoplifting records of three large department stores for a one-year period. In the 67% of the cases where disposition was known, only 19% were prosecuted. Two additional studies have found that when prosecution does occur, the decision to prosecute is determined mainly by the value of the merchandise stolen, not characteristics of the shoplifter (Cohen & Stark, 1974; Hindelang, 1974). Cohen and Stark (1974) examined the security records of a large

department store during 1969. Of the 371 shoplifters apprehended, 74% of those shoplifting more than \$30 worth of merchandise were prosecuted, whereas only 38% of those stealing merchandise valued at less than \$30 were prosecuted. In a similar study investigating disposition of shoplifting cases in grocery and drug stores, Hindelang (1974) also found the decision to prosecute was determined by the value of the merchandise stolen. Cases involving theft of merchandise valued at greater than \$1.90 were prosecuted in 40% of the cases. In contrast, only 13% of those apprehended shoplifting merchandise valued at less than \$1.90 were prosecuted. The only shoplifter characteristic which influenced disposition was employment, with the unemployed more likely to be prosecuted than the employed (Cohen & Stark, 1974). In summary, apprehension for shoplifting is done with caution in order to avoid the possibility of false arrest. Where apprehension does occur, prosecution is more likely to occur when merchandise of value has been taken.

#### Shoplifting: A Social Trap

The purpose of this section is to systematize the information presented in previous sections in a manner so as to hypothesize factors which cause and maintain shoplifting. One way of conceptualizing shoplifting is as a social trap. Platt (1973) used this term to describe situations where individuals, organizations, or societies become involved in relationships or are committed to move in a direction which leads



to detrimental results. The three main types of traps are one-person traps, missing hero traps, and collective traps.

In the case of one-person traps, there are four subtypes. First, there can be a reversal of reinforcers after a time delay; e.g., overeating results in obesity or smoking results in lung cancer. The second subtype is the countertrap, where the individual fails to engage in a behavior which has short-term aversive consequences but long-term positive consequences, e.g., saving money. The third subtype is the case of sliding reinforcers, where there is a decline in reinforcement with repetition of a behavior, e.g., addiction or satiation. The fourth subtype of one-person trap is ignorance of the unexpected, e.g., the fish swimming into a net or a soldier walking into an ambush.

The second main type of trap is the missing hero trap. In this case, group profit is blocked because it would require personal inconvenience or sacrifice. An example of the missing hero trap is what Platt called the mattress problem. In this example, a mattress has fallen from the top of a car into the northbound lane of a two lane road. The result is that the blocked cars in the northbound lane wait until traffic is clear in the southbound lane and then go around the mattress, which produces a traffic jam. No one moves the mattress because those far back in the traffic jam do not know what the problem is and cannot help, those near the mattress have waited in line a long time and are interested only in

getting around the obstacle as quickly as possible, and those who have passed the obstacle have no incentive to move it.

The third type of social trap is the collective trap. In this case, positive consequences for the individual result in negative consequences for the group. An example is Hardin's (1968) article "The Tragedy of the Commons." The commons refers to public grasslands in old New England where privately owned cows could graze freely. As individual owners attempted to make greater personal profits by grazing more cows on the limited land area, the land became overgrazed and eventually destroyed. The end result was a loss for all owners, or a collective loss.

The factors causing and maintaining shoplifting can be viewed in the context of a social trap, but the type of trap operating depends upon the specific personnel involved. The four individuals involved in shoplifting are the shoplifter, the shopper who happens to observe the theft, the salesperson, and the store manager. The shoplifter can be seen as caught in a one-person trap involving a reversal of reinforcers after a time delay. The short-term consequence is saving money or monetary gain through reselling the stolen items while the long-term consequence is a criminal record, which would have a detrimental effect on the shoplifter's future employment and credit. The customer who observes the shoplifting act is caught in a missing hero trap where group profit is blocked because personal intervention would be costly to the

individual. The group profit would be a reduction in retail prices as a result of a reduction in the merchants' losses to shoplifting, while the personal negative consequence would be reporting the shoplifter to store personnel and "becoming involved," e.g., having to testify in court. Gelfand et al. (1973) point out that there are no Good Samaritan laws which would compel the observing customer to aid the victim store. The missing hero trap is supported by interview data collected by Gelfand et al. (1973). They found that 41% of the shoppers interviewed indicated they would hesitate to report shoplifting due to the possibility of having to testify in court or the possibility of a countersuit brought by the accused shoplifter. The data from the staged shoplifting experiments support this interpretation since the reporting rates were low; e.g., Dertke et al. (1974) found the reporting rate to be 6.7% while Gelfand et al. (1973) found it to be 28%.

The missing hero trap is also operating in the case of sales personnel. The group profits, which would be increased profits for the store and reduced prices to the consumer, are blocked by the potential adverse consequences to the sales clerk. For example, if the apprehension led to a false arrest, the employee could lose his job, be demoted, or be sued by the accused shoplifter. If the apprehension were correct, the employee would then have to testify in court, which could result in the loss of sales commissions or in

the aversion of being cross-examined. Also, the employee is usually neither trained nor reinforced for apprehending shoplifters; i.e., heroic behaviors are neither taught nor reinforced.

The store manager is susceptible to two types of traps. In the first case, there is a reversal of reinforcers after a time delay. This reversal is the result of limiting overhead expenses by maintaining a minimal sales staff, security staff, and shoplifting prevention programs. The short-term consequence is a reduction in overhead costs while the long-term consequence is an increase in shoplifting and a decrease in profits. The second type of trap operates as a result of ignorance of the unexpected. Platt presented an example of this type of trap as one in which a fish swimming into a trap does not know there is no escape. An analogy to this is the physical environment of most retail stores. The usual retail environment is designed to allow maximum inspection of merchandise and self-service by customers with minimal assistance from sales personnel. The ready availability of merchandise facilitates sales and increases volume but also facilitates shoplifting, which reduces profits. Thus, a large department store with an enormous volume may make very little profit.

#### Attempts to Break the Shoplifting Trap

Procedures designed to prevent shoplifting can be placed into two main categories: attempts to change the

physical environment and attempts to change people. Changes in the physical environment have frequently involved the use of technology. One procedure is the use of electronic detection devices to prevent the shoplifting of clothing. In this procedure, the merchandise is tagged with an electronic device which, if not deactivated or removed by sales personnel, will operate a buzzer when the merchandise passes through a magnetic field at the store exit (Deutsch, 1970). Closed circuit television is another technological method for detecting shoplifting. This procedure has also incorporated the use of paging radios, which allow floor detectives to be directed unobtrusively to the scene of the theft ("Watch Out for That Thief," 1970). Detectives have also used false columns with one-way mirrors for observation ("New Weapons Against Shoplifting," 1972). Another alteration of the physical environment is the packaging of merchandise. A safe packaging method was needed because a frequently used shoplifting technique is the concealment of merchandise in a shopping bag containing previously purchased items. This shoplifting technique has been combatted by use of a packaging machine known as the foiler, which mechanically seals the purchased item in a plastic bag ("The Foiler: Anti-Shoplifting Bag," 1972). Another environmental manipulation is the exclusion of certain populations from the store. A New York City department store has adopted the policy of excluding all shoppers under 15 years of age, unless accompanied by an adult ("Korvette's Puts Teens on a Leash," 1976).

Although the previously described environmental manipulations may prevent or reduce shoplifting, their effectiveness has not been experimentally demonstrated due to the lack of an adequate data collection methodology. This problem has been overcome by the development of a simple, reliable, and inexpensive data collection procedure by McNees and his associates (McNees, Egli, Marshall, Schnelle, & Risley, 1976; McNees, Note 1; McNees, Note 2). The procedure involved daily data collection performed as follows: The experimenter randomly selected items from each specific type of merchandise sold in the department and placed identification tags on these items. Each morning before the store opened an inventory of the target items was taken. During the day, if a target item was sold the cashier removed the identification tag. The following day, the next day's inventory count was added to the number of items sold, as indicated by the number of tags removed. This total was then subtracted from the previous day's inventory to determine the number of items missing. The tagging and daily inventory counts allowed the experimenters to get a daily measure of shoplifting losses. As a check on the reliability of this procedure, personnel not associated with the experiment "bought" target merchandise and observed whether or not the cashier correctly removed the tag.

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The random tagging of items resulted in the identification of high-loss items, which were used as the target items in the two experiments conducted by McNees et al. (1976). The experiments were conducted in a female clothing department of a department store, with a top and a two-piece top combination the target items. In the first experiment, which ran 45 days, an ABA design was used to evaluate the effectiveness of anti-shoplifting signs. The signs measured 30 by 47 cm and contained information in 2.5 cm high lettering. The information on the signs pointed out that shoplifting is stealing, a crime, not uplifting, and contributes to inflation. The signs decreased, but did not eliminate shoplifting. The signs did not have a detrimental effect on sales. In the second experiment, a multiple baseline design across target items was used to evaluate the effectiveness of publicly identifying frequently shoplifted items. This identification was accomplished by attaching red stars to racks containing target merchandise. Signs (17.5 by 27.5 cm), stating that the items marked with red stars were frequently shoplifted, were placed in the department. In addition to the two target items used in the first experiment, a third item was tagged to determine if the public identification procedure would cause a shift in shoplifted items, rather than an overall decline. The identification procedure produced a dramatic decrease in the theft of marked items with no increase in the theft of the nonmarked item. Sales were not systematically affected.

McNees (Note 1) also investigated the anti-shoplifting procedure of limiting access to merchandise. While this procedure will undoubtedly reduce shoplifting, the effect on sales is unknown. This experiment used two stereo tapes as the target merchandise, with the tapes being either freely available or locked in cases. The procedure drastically reduced shoplifting, while the sales were influenced adversely for one type of stereo tape but not the other. The limited access procedure used by McNees required a salesperson to deliver the merchandise to the shopper, an additional step in the chain of behaviors in purchasing the item. Couture and Wheeler (Note 3) refined the restricted access procedure by controlling traffic flow rather than locking items in cases. The shoppers' movement was controlled by placing ropes such that after picking up the target item their movement was directed to the cashier, where they then paid for the item. The procedure was evaluated using an A-B design, with two target items being accessible to shoppers and two items being restricted. The data were analyzed using two Mann-Whitney U tests. In baseline the freely accessible and restricted items did not differ in the frequency of items missing, but in the experimental phase the restricted items were missing significantly less frequently.

The second main approach to shoplifting prevention has been attempts to change people. Advertising campaigns conducted by merchants have been a frequently used procedure.



These campaigns have been conducted on a city-wide level in Philadelphia ("Reducing Stock Shortages," 1974) and Houston ("Fight Teenage Shoplifting," 1972), and on a statewide level in Nevada ("Losses Hit \$5 Billion Annually," 1975). These campaigns have attempted to educate shoppers as to the legal penalties for shoplifting and as to the cost increase of merchandise passed on to the consumer. A major emphasis of these programs has been presentations in schools.

Another approach to shoplifting prevention which attempts to change people has been the treatment of the individual shoplifter (Guidry, 1975; Kellam, 1969; Kraft, 1970). All three of these reports were case studies in which shoplifting was treated as a behavior problem of the individual rather than as a social and economic problem. All data presented were based on the verbal report of the clients, and in two of the three cases the clients had problems much more severe than shoplifting, e.g., depression and threatened suicide. In the first case study, Kellam (1969) used aversion to a film to treat a female with a history of 10 shoplifting offenses. First, a film was made in which a subject shoplifted. During the shoplifting sequence, a disapproving face appeared for 1/3 second. On 1/3 of these presentations, shock was paired with the disapproving face. Treatment lasted five weeks with a total of 40 film showings. While shoplifting was reported to have been eliminated, the client also developed a generalized fear of shops. At

3-month follow-up, the client reported no shoplifting and being able to shop, but avoided it if possible.

In a second case study, Kraft (1970) treated a depressed, middle-aged female shoplifter with overcorrection. The client was instructed to anonymously mail the correct payment to the merchant following each shoplifting incident. She was also instructed to return to the same store and not steal anything. The client met with the therapist on three subsequent occasions four to six weeks apart. She reported one shoplifting incident at each of the first two meetings, but no shoplifting was reported at the third meeting or at one-year follow-up.

Guidry (1975) treated a male who had shoplifted for the previous 10-year period. Covert punishment was used in which an imagined stealing sequence was followed by an imagined adverse consequence, being observed or apprehended. For homework, the subject was instructed to go to stores and imagine being observed while walking around. The client was also instructed to imagine specific adverse consequences of shoplifting each time he got into or out of his car. The client met with the therapist once a week for three weeks followed by monthly contacts for three months. Shoplifting frequency dropped to zero during treatment and remained near zero during a 10-month follow-up.

### Statement of the Problem

Review of the literature has shown that shoplifting is a behavior engaged in by a large percentage of the population and a behavior with major economic and social costs. Legal consequences for shoplifting have a minimal effect on reducing shoplifting because very few shoplifters are apprehended, and of those who are, only a small percentage are prosecuted. Attempts to prevent shoplifting have involved educational publicity campaigns or changes in the physical environment which increase the chance of apprehension. A major resource of the retail store which has not been used in shoplifting prevention is the sales staff. It is hypothesized that providing daily feedback on shoplifting losses to the sales staff would result in an increase in their shopper observing and a consequent decrease in shoplifting. Since feedback was the independent variable, this literature is reviewed in the next section.

### Feedback

Prior to reviewing the feedback literature relevant to the present study, it is necessary to present a rationale for the selection of feedback as the independent variable. The first reason for the use of feedback is in terms of practicality. Given that the experimental setting is a retail store with the store personnel serving as volunteer subjects, the intervention can not be obtrusive in the sense that it disrupts the standard store procedures, requires

an investment in time and/or money on the part of the store manager or store personnel, or drastically alters the prescribed duties of the store personnel. In effect, if the intervention is to be accepted, it must be a reinforcer for the manager and store personnel rather than a prescription to supply funds or to make major changes in job requirements. Support for this approach is provided by Winett (1976), who described repeated rejection of behavioral approaches to energy conservation when agencies were approached with an inflexible program requiring them to provide funds and to change their policy on price rates. The feedback procedure was not obtrusive, did not cost the store manager anything, and required no major changes in store personnel behavior; i.e., training time, data collection, and additional duties were minimal.

A second and methodological reason for using feedback is that a single experimental setting was used. A single setting eliminated the use of group designs, and in the selected setting a multiple baseline design was not appropriate. The single setting restriction suggests the use of a withdrawal design, but if such a design is used it is necessary that the independent variable be removable. This requirement eliminated staff training as an independent variable. While incentives are removable, their use is not appropriate due to a lack of a source of funds, potential philosophical conflicts with management, and potential conflicts over wage and hour laws.

A third reason for using feedback as the independent variable follows from the decision to attempt to control shoplifting by altering the behavior of store personnel rather than altering the physical environment of the store. If shoplifting is to be controlled by the behavior of store personnel, several goals must be accomplished: the shoplifting problem must be assessed and this information provided to the staff, the store personnel must have the necessary shoplifting preventive behaviors in their repertoire, and they must be informed as to the adequacy of their performance. Feedback would insure that the staff is informed of the shoplifting problem and the adequacy of their performance, and special behavioral skills on the part of the store personnel are not needed in this particular situation (see Appendix F). Given that there is a rationale for the use of feedback as the independent variable, the next step is to review the aspects of the feedback literature relevant to shoplifting prevention. The portions of the literature most relevant to the intervention are the visual vigilance literature and the applied behavior analysis literature.

#### Vigilance Tasks

The required task in vigilance studies has been the detection of signals, e.g., spots of light on a radar screen. The level of vigilance has been inferred from the signal detecting performance, with a high detection rate indicating a high level of vigilance and a low detection rate indicating

a low level of vigilance. The subject's response on a vigilance task falls into one of three categories. First, there is the correct detection of a signal, which is often referred to as a hit. Second, there is the failure to detect a signal, or a miss. Third, there is the reporting of a signal which was not present, or a false alarm. The dependent measures used in vigilance studies have been correct detections, false positives, and reaction time.

Historically, the impetus for vigilance research has been industrial inspection tasks, and research on the optimal watch time for lookouts and radar operators in World War II. A description of the radar operator's task indicates the relevance of the vigilance literature for the present study. Mackworth (1950) described the radar operator as involved in a prolonged task which often consists of "waiting for nothing to happen." The task is performed in isolation, except for intermittent phone contact, with no efficiency check. The signal is difficult to detect, and appears only briefly with the criterion reaction time being quite short. Finally, false alarms are not uncommon. The radar operator's task is comparable to the salesperson's task of observing and waiting on shoppers. The salesperson's job is of long duration, boring, and with nothing happening much of the time. Like the radar operator, the salesperson works in isolation, except for intermittent contact with other store personnel. While the radar operator has only one

signal to detect, i.e., a spot on a radar screen, the salesperson has multiple vigilance tasks including watching for customers in need of assistance, for potential shoplifters, and for merchandise which has been misplaced by customers. Like the spot on a radar screen, the signal indicating a potential shoplifting event is a difficult signal to detect, appears only briefly, and there is only a short time to engage in the appropriate response. Like the radar operator, the salesperson receives no performance feedback. Unlike the typical vigilance task, false alarms are quite rare in the observing of shoplifters. This is because a false alarm, which would be the case of the salesperson incorrectly accusing a shopper of shoplifting, is severely punished in the form of adverse publicity and a possible lawsuit. Given that the radar operator and salesperson are involved in similar tasks, the results of vigilance studies may be able to predict the performance of sales personnel and to suggest factors which can influence their behavior.

The main result of the vigilance studies has been to find a decrement in performance as a result of time on task. The decline in performance starts concurrently with the task and the major portion of the performance decrement occurs during the first 30 minutes of the task (Mackworth, 1950). In an attempt to prevent or at least to delay this decline in performance, the effect of feedback on vigilance has been studied. Aspects of feedback which have been investigated

include the type, frequency, validity, and mode of feedback, as well as maintenance of effects produced by feedback. The results of each of these areas of investigation will be presented separately.

#### Type of Feedback

Four types of feedback have been given. These types are no feedback, feedback on correct detections only, feedback on misses only, and feedback on both correct detections and misses. Wiener (1963) conducted a study in which one group received no feedback, a second group received information on correct detections and false alarms, i.e., positive responses only, and a third group received feedback on hits, misses, and false alarms. The performance of the latter two groups was superior to the no feedback control group with only the control group showing a decrement in performance over time. The group receiving feedback on positive responses only had more correct detections than the controls but also had more false alarms. It should be noted that there is a confound of type of feedback with frequency of feedback in this study. If a subject receives feedback on positive responses only a decrease in responding will also result in a decrease in frequency of feedback. If a subject receives feedback on both correct detections and misses, a decrease in responding will not result in a decrease in frequency of feedback because the subject would be informed of all misses. This difference in frequency of feedback due to type of feedback is applicable to



the salesperson's task. The salesperson receives feedback only on positive responses, i.e., correct apprehensions of shoplifters, and false alarms, which would be the case of incorrectly accusing a customer of shoplifting. As both types of positive responding have potentially adverse consequences for the sales personnel, the behavior rarely occurs and therefore, they rarely receive feedback on the adequacy of their performance in detecting the signal, i.e., shoplifting. If the sales personnel received feedback on misses, which would be successful shoplifting attempts, a low rate of responding would result in a high rate of feedback. This latter concept was employed in the present study by providing sales staff with feedback on the quantity and value of shoplifted items.

#### Frequency of Feedback

A study by Johnson and Payne (1966) investigated the effect of frequency of feedback on performance. The problem of confounding type and frequency of feedback was circumvented by giving feedback not on the subject's performance, i.e., hit, miss, or false alarm, but on whether a signal had been presented. There were five groups with feedback presented on 0%, 25%, 50%, 75%, or 100% of the signals. The 25% group performed significantly better than the 0% group, and the 50% group was significantly better than the 25% group, but there were no significant differences among the 50%, 75%, and 100% feedback groups. The decrement in performance with time on task occurred regardless of the frequency of feedback.

A study by Antonelli and Karas (1967) also investigated frequency of feedback. Feedback was presented 0%, 20%, 30%, 50%, and 100% of the time. The data contradict Johnson and Payne (1966) in that a significant difference was found between groups receiving 50% and 100% feedback; however, these results are suspect because post-hoc analyses were performed by multiple t-tests. In contrast, Johnson and Payne (1966) used Tukey's procedure for post-hoc tests.

### Validity of Feedback

In addition to investigating the effect of frequency of feedback, Antonelli and Karas (1967) also compared the effects of true, false, and no feedback. Although there was a significant feedback effect, there was no difference between groups receiving true and false feedback. In another study, Weidenfeller, Baker, and Ware (1962) compared true and false feedback groups with a no-feedback control group and an irrelevant stimulation control group. There was no significant difference between the true and false feedback groups. The two feedback groups showed no decrement in performance over time, while the two control groups did. The lack of difference between true and false feedback in these two studies is contradicted by Mackworth (1964). This latter study found that the true feedback group showed the best signal-detecting performance and least decrement with time on task, while the false feedback group showed a performance intermediate between the true feedback group and the

no-feedback control group. Both true and false feedback groups were superior to the control group in detecting the signal, but the true feedback group showed no decrement in performance whereas the false feedback group showed a decrement comparable to the control group.

### Mode of Feedback

Research on the mode of feedback presentation has produced contradictory results. Hardesty, Trumbo, and Bevan (1963) compared verbally presented feedback with feedback presented by flashing lights. The verbal feedback group was superior to the visual feedback and no feedback groups, which did not differ. These results are contradicted by Wiener (1963) who found mechanically presented feedback to be superior to no feedback.

### Maintenance of Feedback Effects

Research on maintenance of feedback effects has found a positive transfer in performance from feedback to no feedback conditions (Hardesty et al., 1963; Mackworth, 1964; Wiener, 1967).

In summary, the vigilance literature indicates feedback is most effective when it is presented frequently, and when it provides the most information, i.e., information on hits, misses and false alarms. There is at least some support for feedback being more effective when it is presented verbally rather than mechanically and when it is true rather than false.

### Applied Behavior Analysis

Examination of the applied behavior analysis literature indicates that feedback has been used to alter many behaviors, including posture (O'Brien & Azrin, 1970), ward attendant behaviors (Panyan, Boozer, & Morris, 1970), classroom teacher behaviors (Cossairt, Hall, & Hopkins, 1973; Harris, Bushell, Sherman, & Kane, 1975), classroom behaviors of students (Drabman & Lahey, 1974; Van Houten, Hill, & Parsons, 1975; Van Houten, Morrison, Jarvis, & McDonald, 1974), and energy conservation (Hayes & Cone, 1977; Kohlenberg, Phillips, & Proctor, 1976; Palmer, Lloyd, & Lloyd, 1977; Seaver & Patterson, 1976; Winett & Nietzel, 1975). This literature review concentrates on energy conservation since this is the area of applied behavior analysis most relevant to the proposed study. The goals of interventions in energy conservation and shoplifting reduction are the same--a decrease in energy usage and shoplifting losses which will result in money saved. In both cases, the failure to change behavior results in adverse consequences which are distant in time. The resulting high energy bill appears monthly and the inventory losses are found yearly when inventory is taken. These adverse long-term consequences are very likely due to comparable behaviors on the part of energy consumers and sales personnel. The most convenient thing for the energy consumer to do is not to attend to the level of energy consumption, and the most convenient thing for store personnel to do is

not to attend to potential shoplifting. A final similarity between energy conservation studies and the present study is the type of feedback. Subjects in energy conservation studies have received daily feedback on the cost of energy used for the previous day (Hayes & Cone, 1977; Palmer, Lloyd, & Lloyd, 1977), and in the present study the subjects received daily feedback on the number of items and the monetary value of merchandise shoplifted the previous day.

The following review of energy conservation research describes five recent experiments. The subjects in these experiments have been households. In two of the experiments the subjects volunteered in response to advertisements (Kohlenberg et al., 1976; Winnett & Nietzel, 1975) and in two other experiments the subjects were randomly selected, their energy consumption was monitored, and then they were asked to participate (Hayes & Cone, 1977; Seaver & Patterson, 1976). In the fifth study, subjects were selected from those residents having outside gas, water, and electric meters (Palmer et al., 1977).

The study by Kohlenberg et al. (1976) attempted to alter the pattern of electricity consumption in three private residences. The target behavior was the peak use of electricity, which is the use of electricity during high demand periods, e.g., 8-11 A.M. and 5-9 P.M. A withdrawal design was used in which the conditions were baseline, information, feedback, return-to-baseline, and incentive plus feedback.

The information condition provided the subjects with wattage ratings of household appliances and the relationship of peaking and the environment. Feedback was provided by means of a light which was activated when electricity consumption exceeded a specified level. The incentives offered were monetary payments for reductions in peaking. The information condition had no effect on peaking, but both feedback and feedback plus incentives reduced peak use. The results of the study are difficult to interpret because information preceded feedback, and because prior to the incentive plus feedback condition subjects were debriefed on the previous conditions.

A second experiment attempted to reduce the levels of electricity and natural gas consumption in households (Winett & Nietzel, 1975). This experiment is less related to the proposed study because the feedback was in the form of self-monitoring of weekly energy consumption. This was done on data sheets provided by the experimenters. There were also methodological problems, e.g., the use of volunteer subjects, a high correlation between energy use and temperature change, and dissimilarity between the baseline and return-to-baseline conditions.

An improved experimental design was used by Seaver and Patterson (1976), who sought to reduce the consumption of home heating oil. Households were randomly selected and assigned to a control group, a feedback group, or a feedback

plus commendation group. The feedback was mailed to the subjects along with the bill following delivery. The feedback consisted of a slip which listed average daily oil consumption for the delivery period, average daily oil consumption for the same period during the previous year, the percent increase or decrease in average daily oil consumption from the previous year period, and the savings or loss in dollars. The average daily consumption was calculated taking temperature fluctuations into account. The feedback plus commendation group received feedback in the same manner and a decal if consumption was below normal. In this experiment, feedback alone was ineffective in reducing consumption, but the feedback plus commendation group did use significantly less oil than the other two groups.

A fourth experiment investigated the effects of type of feedback on electrical energy consumption (Palmer et al., 1977). Two households received daily feedback on the cost of the electricity consumed the previous day, and the estimated monthly bill if consumption continued at that rate. The other two households received daily feedback on the number of kilowatt hours consumed. The monetary feedback was effective in reducing consumption, but design problems made the data from the households receiving feedback on kilowatts consumed difficult to interpret.

The final study to be reviewed also attempted to reduce electricity consumption (Hayes & Cone, 1977). The subjects

were four households in an apartment building. The same design was used with each of the four households. Baseline data were collected both overtly and covertly in order to assess the reactive effects of monitoring. The three experimental conditions were information on methods of reducing electricity consumption, incentives for reducing consumption, and feedback on the cost of electricity consumed. The incentives were paid weekly and the cost feedback was provided daily. It was found that both the overt baseline and information conditions had short-lived reactive effects. The daily monetary cost feedback produced stable but moderate reductions in consumption, with incentives producing even greater reductions.

To summarize the energy conservation literature, it has been found that feedback is effective in reducing both the level of electricity consumption (Hayes & Cone, 1977; Palmer et al., 1977) and peaking in electricity consumption (Kohlenberg et al., 1976). The effectiveness of daily monetary cost feedback was supported (Hayes & Cone, 1977; Palmer et al., 1977), but intermittent monetary cost feedback was not effective (Seaver & Patterson, 1976).

To summarize the feedback data relevant to the present study, the vigilance literature indicates that feedback is most effective when it is presented frequently, and when it provides the most information, i.e., information on hits, misses, and false alarms. The research on energy conservation



indicates that feedback is most effective when presented daily and when the feedback is on the cost of the energy consumed. Based on these findings, the feedback in this study was frequent, informative, and provided feedback on the cost of merchandise shoplifted. The feedback was frequent in that it was presented daily. It provided as much information as possible in that there was feedback on the number of items shoplifted for each type of merchandise, the total value of items shoplifted for each type of merchandise, the total number of items shoplifted for all types of merchandise, and the total value of merchandise missing for the day. It was predicted that the daily, informative feedback would affect the behavior of the store personnel as it did the subjects in the vigilance tasks and energy conservation studies.

#### Rationale for Study

Shoplifting is a problem with major social and economic costs. It is a problem that has received emphasis both in law and in rehabilitation, but as Azrin and Weslowski (1974) have pointed out, the experimental evaluation of theft reduction procedures has been difficult due to the problem of detecting theft. The problem of response detection can be dealt with by using a behavior product measurement procedure; e.g., McNeas et al. (1976) used a merchandise inventory procedure to study retail theft which was also used in the present study. This present procedure is described below. Merchandise

in a university bookstore was selected as target items and marked with removable identification tags. Inventory data on these items were taken by the experimenter both before the store opened and after it closed each day. The sale of target merchandise was measured by having the cashiers remove the identification tags at the time of sale. The number of items shoplifted was calculated by subtracting the sales from the inventory. These daily data were collected during two phases of the same experiment. The first phase ran 32 days and consisted of a baseline, a feedback condition, and a second baseline condition. Following a two-week interruption during which collection of reliable data was not possible, the experiment was continued. This second phase lasted 56 days and consisted of a baseline condition, a feedback condition, and three additional baseline conditions. These latter baseline conditions varied in the frequency of experimenter contact with the subjects. During the feedback conditions the experimenter provided the sales personnel with daily information on the number and value of shoplifted merchandise.

Theft control research has also been restricted by the need to study the behavior in the natural environment. When research has been conducted in the natural environment the preventive procedures have been those which are easily implemented, such as alterations of the physical environment (McNees et al., 1976; Couture & Wheeler, Note 3). A more

difficult procedure than a one-time implementation is to alter the behavior of relevant personnel in the natural environment. This view is analogous to the approach in the energy conservation research. For example, Hayes and Cone (1977) and Palmer et al. (1977) produced decreases in electricity consumption by providing daily feedback to consumers on the value of electricity used. Those researchers did not view energy conservation as solely a physical environment problem, e.g., inadequate insulation or an inefficient furnace. Rather, they saw energy conservation as a behavior problem of the people in a position to prevent the waste of energy. The approach of the present study is similar in that retail theft is not seen as solely a physical environment problem, but as a behavior problem of those in a position to prevent it. It was hypothesized that providing feedback to sales personnel would result in a lower rate of shoplifting losses in the feedback conditions than in the baseline conditions. This hypothesis is based on the finding in the visual vigilance literature that frequent feedback produces better performance (Johnson & Payne, 1966) and the finding in the energy conservation literature that daily monetary feedback produced decreases in energy consumption (Hayes & Cone, 1977; Palmer et al., 1977). The reasons for the hypothesized decreases in shoplifting losses were not investigated in this study. It was proposed that changes in the behavior of store personnel would result in a reduction in

shoplifting losses, but specific measures of store personnel behavior were not taken.

The present study and others (McNees et al., 1976; Couture & Wheeler, Note 3) used a data collection procedure which used experimenters not associated with the retail store as data collectors. Although this data collection procedure appears to be simple, reliable, and inexpensive, it has not been demonstrated that retail personnel could carry out the procedures. In an attempt to determine the applicability of this procedure, the first experiment was followed by an implementation study which was designed to assess how reliably the store personnel followed the data collection procedures used in Experiment 1. The implementation study (Experiment 2) started approximately 10 weeks after the termination of the main study, and ran 34 days.

## CHAPTER II

## METHOD

Pilot Data

A pilot study was conducted to identify problems in taking inventory, collecting data on sales of target items, identifying appropriate target items, and compiling data. Pilot data were collected over 26 sales days in a university bookstore. Twenty target items were selected, with 10 of the items being books and the other 10 nonbook items. A list of the target items and their prices is presented in Table 1. (Table 1 and all subsequent tables may be found in Appendix A). Data were collected before the store opened and just prior to closing on each of the 26 days for a total of 52 inventory counts.

Reliability was taken on two aspects of the data collection procedure. First, interobserver agreement was taken on 16 of the 52 twice-daily inventory counts, with the checks made on each of the 20 target items. Interobserver agreement was calculated using the following formula:

$$\% \text{ interobserver agreement} = \frac{\text{number of types of target merchandise in agreement}}{\text{number of types of target merchandise}}$$

The experimenter and the checker disagreed on 4 of the 16 checks, and on the 4 checks on which they disagreed, the disagreements were on the count of only 1 of the 20 types of

target merchandise. The type of merchandise on which the counts were in disagreement differed on each of the four occasions. The overall interobserver agreement was 98%.

Also evaluated was the consistency of cashier behavior in removing identification tags from the target merchandise. This was done using a participant-observer procedure in which the experimenter posed as a shopper in the store. When the experimenter observed a customer picking up target merchandise, he then positioned himself where he could observe the cashier and the customer at the cash register. This was done on twelve occasions and on each of them the cashier removed the tag. It was found, however, that the participant-observer procedure aroused suspicion on at least one occasion. Consequently, a less obtrusive method of evaluating tag removal by the cashiers was used in the present study. The problems that were identified in the pilot study are enumerated below and were corrected in the present study.

One problem was that the amount of time available for taking inventory in the morning or in the afternoon was limited to 20 to 30 minutes. This was because the experimenter could not enter the store in the morning before it opened unless a store employee was there with a key. The employees did not report any earlier because that was the length of time necessary to prepare for opening the store. This was also the approximate time required to terminate operations after the store had closed in the evening. Since these times could not be altered without changing the working

hours of store personnel, the target merchandise was limited to 30 items in order that the inventory count could be completed within the allowed time limit.

As has been previously mentioned, a second problem was the need for an unobtrusive procedure to check the consistency of cashier behavior in removing identification tags from the target merchandise. A less obtrusive procedure developed by McNees et al. (1976) was used, in which a reliability checker posed as a shopper to witness tag removal.

A third problem was the selection of target items. It was found that the bookstore did a great deal of business during a few days, e.g., the beginning of the semester. This finding made it necessary to avoid excessive representation of items such as textbooks, which were in heavy demand over a short period of time and low demand the remainder of the time. It would have been inappropriate to exclude textbooks completely because among shoplifted items they are the item most easily converted to cash. This is because they can be resold to bookstores for approximately 50% of the list price. A total of 10 books were included as target items, 7 of which were textbooks.

The pilot study not only served to improve data collection problems, but also pointed out that there was a shoplifting problem in the bookstore. During the 26 sales days, for the 20 target items overall, a total of 89 specific items were found missing and these items were valued at \$502.01.

At least one item was missing on 22 of the 26 sales days, and the number of items missing per day ranged from 0 to 17. The number of items missing and sold for each of the 20 types of merchandise is included in Table 1. The corresponding values are also included.

### Experiment 1

#### Setting

The experiment was conducted in a university bookstore. In addition to academic supplies and textbooks, the bookstore carried many nonschool related items. With the exception of some low-demand, high-priced merchandise, such as jewelry and calculators, the merchandise was displayed openly. The store had one entrance open to the public. The only anti-shoplifting procedure used was the requirement that shoppers leave books and containers outside of the sales area.

#### Subjects

The subjects were the store personnel who frequently observed and interacted with shoppers, e.g., cashiers, sales personnel, and stock personnel. A total of nine subjects participated in the study, with six female and three male subjects. Of the nine subjects, two were part-time employees. One male subject was involved in the first 17 days of the study, and then left and was replaced by a female.



### Target Merchandise

Daily data were recorded on 30 types of target merchandise sold in the store. The merchandise selected were those items which could be easily shoplifted by concealment on the person, by being worn on the person, or by concealment in a handbag. Table 2 contains a list of the target merchandise. This list provides a description of the item, the price, and the letter or number code which was placed on the identification tags. Two prices are listed for items #14 and #19. This was because the prices of these items differed according to color or size.

### Data Collection Procedures

Prior to the start of data collection, each targeted item was marked with a removable, coded identification tag. All books had a slip placed in them listing the price and the identification code. In the case of hardback books, the slips were placed over the stamped price in order that the cashiers would see the identification slip where they normally looked for the price. A sample book slip is located in Appendix B. All target items which were not books were identified with removable, adhesive tags marked with the appropriate identification code. In order to facilitate the cashier's recognition and removal of the adhesive tags, the tags were placed adjacent to the marked price, or if possible, both the price and the identification code were marked on the adhesive tag. To facilitate recognition of the target items

which were not books, the experimenter showed each cashier these items and where the tags were placed. In addition, a list containing a description, the price, and the code for each item was placed at each cash register.

The daily data collection procedure was carried out in a series of steps. To facilitate description of the data collection procedure, a sample daily data sheet is located in Appendix C. The first step in data collection was to determine the beginning inventory for each target item, which was done each morning before the store opened. The next step was to determine the number of items sold during the day. This was accomplished by means of the identification tags. The cashiers were instructed to remove the identification tag when an item was purchased and to place it in a designated box provided by the experimenter. If the tag was missing from the item or if the cashier forgot to remove the tag, the cashier was instructed to record what had happened on the error sheet, which was located in the tag box. A copy of the error sheet is included in Appendix D. At the end of the sales day, the experimenter collected all removed tags so as to determine the number of target items sold. Also at the end of the sales day, the experimenter counted the remaining target items to determine the closing inventory. To maximize the accuracy of the data collection procedure, the experimenter contacted each staff member at the beginning of each sales day. He asked them if they had

found any target merchandise that had been moved to another area of the store, if they had found any detached identification tags, or if they had received any target merchandise which had been returned for a refund.

After the beginning inventory, closing inventory, number of items sold, and number of items recorded on the error sheet had been determined, the overage or shortage for each target item was calculated. This calculation was made using the following formula:

$$\begin{array}{rcl} \text{beginning inventory} - (\# \text{ sold} + \# \text{ on error sheet}) & = & \text{shortage} \\ & + \text{closing inventory} & \text{or} \\ & & \text{overage} \end{array}$$

An overage would have been due to previously purchased merchandise having been returned by the customer, or merchandise which had been moved to another area of the store by a shopper having been returned to the proper display area by store personnel. Since the store personnel were instructed to set aside returned merchandise for the experimenter to tag and restock, overages were interpreted as misplaced merchandise. For example, if for item B there had been a shortage of one item for the previous day, and now there was an overage of one item, the previous day's shortage figure would be adjusted to zero. This procedure for controlling returned merchandise was based on the assumption that store personnel would recognize target items when they were returned, and would follow the outlined procedure. A second procedure was used to account for the returned merchandise if store personnel restocked the

merchandise without informing the experimenter. This was done as follows: Whenever there was an overage the experimenter checked with the bookkeeping personnel to determine if any quantity of that target item had been returned. The bookkeeping personnel were able to provide the information because they were required to make a dated receipt with a description of any returned merchandise.

Bookkeeping personnel also provided daily data on the total daily sales in dollars, the number of business transactions, and the number of sales personnel on duty. These data were used to statistically control fluctuations in business activity which could not be controlled experimentally.

At the end of the experiment, a postexperimental questionnaire was administered to both the subjects and the store manager. The questionnaire for the subjects is located in Appendix E and the questionnaire for the store manager is located in Appendix F.

### Reliability

Reliability was taken on three aspects of the data collection procedures. Data were collected by the experimenter and six reliability checkers, four of whom were graduate students and two of whom were undergraduates. Three of the reliability checkers assisted in making inventory counts, and three reliability checkers assisted in assessing the consistency of tag removal by the cashiers. Reliability was taken on the following data collection procedures:

1. Identification of target items--Each day before the store opened the experimenter made the beginning inventory count. Concurrent with taking the beginning inventory, the experimenter inspected the target items to insure that they were identified with the proper tag. Obviously, if the identification tags were frequently missing and unaccounted for, the measurement system would have been invalid. In some cases, it was impossible to inspect the tag on each item. For example, at times there were over 200 copies of a book that had been selected as a target item. In these cases the experimenter checked for the tag on all of the items that were most accessible. The nonbook items, which were identified with adhesive tags, were always inspected for proper identification. In an effort to account for all missing tags, the following daily procedure was followed: First, at the beginning of the sales day the experimenter asked the janitor if any tags were found in sweeping the floor. Second, the experimenter inspected the areas around the target items for missing tags. Third, all sales personnel were instructed to set aside all target merchandise that had been returned or found moved to another area of the store. The experimenter then retagged the returned merchandise, and restocked the returned and misplaced items. The consistency in correctly identifying the items was calculated as follows:

$$\% \text{ items correctly identified} = \frac{\text{number of items correctly tagged}}{\text{number of items correctly tagged} + \text{number of items missing tag}}$$

The consistency of the identification of target items with tags was assessed daily during each of the eight conditions. The percentage of items correctly identified ranged from 99.2% to 100%. The percentage of target items correctly tagged during each of the eight conditions were as follows: Baseline 1--99.9%, Feedback 1--99.6%, Baseline 2--99.2%, Baseline 3--100%, Feedback 2--99.8%, Baseline 4--99.9%, Baseline 5--100%, and Baseline 6--100%. For the study overall, 99.8% of the target items were correctly identified with tags.

2. Inventory count--The inventory counts were taken twice daily, before the store opened and at closing. The checks on the identification of target items were made when the beginning inventory count was taken, while the checks on the inventory count were made at the time the closing inventory was taken. Interobserver agreement was taken on at least 80% of the inventory counts in each of the conditions. For the study overall, interobserver agreement was taken on 91% of the inventory counts. When the interobserver agreement was taken, it was taken on all 30 types of target merchandise. Inventory counts were made independently; the experimenter and the reliability checker never counted the same target merchandise at the same time. Interobserver agreement was calculated based on the first inventory count using the following formula:

$$\% \text{ interobserver agreement} = \frac{\text{number of types of target merchandise in agreement}}{\text{number of types of target merchandise}}$$

If the observers disagreed on their first inventory counts, the inventory on the disputed target merchandise was repeated until there was agreement; these latter data are included in the results section.

Inventory counts were made by the experimenter and by three of the six reliability checkers. The first reliability checker, a female undergraduate, assisted during the Baseline 1 and Feedback 1 conditions. The second reliability checker, a male graduate student, assisted during the Baseline 2 condition. The third reliability checker, a female undergraduate, assisted during the Baseline 2, Feedback 2, Baseline 4, Baseline 5, and Baseline 6 conditions.

The percentage of interobserver agreement for each of the eight conditions were as follows: Baseline 1--98.3%, Feedback 1--98.6%, Baseline 2--96.6%, Baseline 3--97.0%, Feedback 2--98.7%, Baseline 4--98.5%, Baseline 5--99.2%, and Baseline 6--99.1%. For the study overall, the independent observers agreed on 98.3% of the counts.

3. Tag removal by the cashiers--In order to verify that the cashiers consistently removed the identification tags when target merchandise was purchased, a checking procedure developed by McNees et al. (1976) was used. Three male graduate students, whom the subjects did not connect

with the experiment, bought target items at least twice during each of the experimental conditions. A total of 30 checks on the consistency of tag removal were made during the study. Consistency of the cashiers' tag removal was calculated using the following formula:

$$\text{consistency in tag removal} = \frac{\text{number of tags removed}}{\text{number of items purchased}}$$

Of the 30 checks made, the tag was correctly removed by the cashier on 29 of the checks for a rate of 96%. The single failure to remove the tag occurred during the Baseline 1 condition.

### Experimental Design

A single case experimental design, i.e., a withdrawal design, was used (Hersen & Barlow, 1976). The design was as follows:

A - B - A - A - B - A - A' - A

The letter A represents baseline conditions, during which no experimental manipulation was performed. The A' condition was a baseline condition in which the experimenter-subject contact was reduced. The letter B represents conditions in which the experimental manipulation was feedback.

### Conditions

Baseline 1. Inventory data on the 30 types of target merchandise were collected twice daily, before the store opened and just prior to closing, over a three-week period which included 15 shopping days. Interobserver agreement



was taken for 12 of the 15 days. The experimenter informed the staff that he would be in the store regularly collecting daily inventory data on certain items, with the importance of daily inventory data the rationale for his presence. The experimenter explained that inventory data are usually available on a yearly basis, and therefore, the best information usually available to the store manager is the number of items sold, the number of items in stock, and the number of items missing for the one-year period. In contrast, a daily data collection procedure would pinpoint which types of merchandise are selling, how many items are being sold, which days are high in sales for specific types of merchandise, and what quantity of a specific type of merchandise is being lost to theft. The cashiers were asked to assist in collecting these daily data by removing the identification tags from the target merchandise at the time of purchase. At this time the experimenter showed the cashiers samples of tagged merchandise, indicated that the identification tags are located next to the price tag, and modeled removing the tag and placing it in the tag box located on a shelf under the cash register. If the staff members asked for information, they were told that all of the information has not yet been compiled and that it may be misleading to examine the data at present. If they asked, they were told that the data would be made available to them after three weeks of data collection. Daily data regarding the number and value of shoplifted

items were tabulated as described previously under "Data Collection Procedures."

Feedback 1. This condition lasted a total of 12 full shopping days. Data collection on target merchandise were taken every day as described previously under "Data Collection Procedures." Interobserver agreement was taken on each of the 12 days. Prior to intervention, the store personnel received feedback on the baseline data which included the following information: total number of items shoplifted, value of the shoplifted items, total number of items shoplifted for each type of merchandise, and the number of items sold for each type of merchandise. For convenience, the data were presented to the store personnel in three group meetings, with one-third of the personnel attending each meeting. In these meetings the store personnel were given both written information and a verbal presentation. In addition to feedback on the baseline data, the store personnel were told that in the future daily feedback on shoplifting losses would be provided, and the rationale for the use of daily feedback was given. A description of the feedback procedure, the staff instructions, and the rationale for the giving of daily feedback are included in Appendix G. The daily feedback to the staff were presented in two ways, on a chart and by personal contact. First, the data were posted with a grease pencil on a plastic covered chart (79 x 111.5 cm) which was located in an area accessible to the staff but not

the public. The feedback chart was placed adjacent to the time book in which the store employees signed in and out each day. A smaller copy of the chart is included in Appendix H. The feedback included daily data, cumulative and daily average data for the feedback condition, and cumulative and daily average data for the baseline condition.

The daily data, which were presented in the second and third columns from the left of the chart, consisted of the number and value of missing items for each of the 30 types of target merchandise. The data in both columns were summed to provide an index of the frequency and value of items missing for the day. The fourth and fifth columns of the chart contained cumulative data for the feedback condition. The data were the total number of items found missing and the total value for each type of target merchandise. Like the daily data, the data in these two columns were summed to find the total number of items missing and the total value of merchandise missing in the feedback condition. In addition to summing the data, the mean number and mean value of items missing per day in the feedback condition were calculated. The sixth and seventh columns of the chart contained the cumulative data from the baseline condition. The baseline data are presented for comparative purposes in order that the staff could see if losses were occurring more or less frequently in the feedback condition than in baseline. The sixth column contained the total number of items missing

during baseline for each of the 30 types of target merchandise. Column seven contained the total value of the items missing during baseline for each type of target merchandise. The data in both columns were summed and the daily average losses were calculated. In addition to posting the data, the experimenter contacted the staff members daily and asked them if they had found any target merchandise that had been moved to another area of the store, if they had found any detached identification tags, or if they had received any target merchandise which had been returned for a refund. He then informed them as to what items were missing from the previous days in terms of type of merchandise, quantity and value. The oral feedback was on only the previous day's data.

Baseline 2. This condition lasted one week for a total of 5 full shopping days. Data collection on target merchandise were taken every day as described previously under "Data Collection Procedures." As in the baseline and feedback conditions, interobserver agreement was taken on the closing inventory counts. Checks were made on four of the five closing inventory counts. The staff were told that feedback had been discontinued for evaluation purposes. As in the baseline and feedback conditions, the experimenter contacted the staff daily to determine if target merchandise had been found in another area of the store, or if identification tags had been found detached from the target merchandise. During this condition no feedback, written or oral, was given.

Baseline 3. Following the Baseline 2 condition was a two-week period during which representative and reliable data could not be collected. This two-week period covered the week preceding and the first week of academic classes. At this time the store was extremely busy, which drastically altered the setting. These alterations included extremely high sales days, increased hours of operation, the hiring of uniformed policemen to patrol the premises, and the hiring of part-time personnel. Although the data could not be used, data collection continued as usual during this period. Also, feedback was posted during this period, but the problem of the data being unreliable was explained to the subjects. Following this two-week interruption, the Baseline 3 condition was implemented and lasted for two weeks for a total of 10 shopping days. Baseline 3 was a replication of Baseline 1 except for the duration of the conditions. Baseline 1 lasted 15 days while Baseline 3 lasted 10 days. Data on target merchandise were taken daily as described previously under "Data Collection Procedures." On each of the 10 days data were taken on the identification of target items, as was interobserver agreement on the inventory counts. The consistency of tag removal by cashiers was checked on four occasions during Baseline 3.

Feedback 2. This condition followed the Baseline 3 condition and lasted two weeks covering 10 full shopping days. The Feedback 2 condition was a replication of Feedback 1

except for the duration of the conditions. Feedback 1 ran 12 days while Feedback 2 ran 10 days. Data on target merchandise were taken daily as described previously under "Data Collection Procedures." Data on the identification of target items were taken on each of the 10 days, while assessment of interobserver agreement on inventory counts was made on 8 of the 10 days. Checks on the consistency of tag removal by cashiers were made on four occasions.

At the start of this condition, for convenience the store personnel were divided into two groups and meetings were held with each. These meetings followed the same format used at the start of Feedback 1, with the subjects receiving a summary of the Baseline 3 data, a description of how to read the data posted on the feedback chart, and notice that they would be receiving daily feedback in the future. The feedback chart used was the same as was used in Feedback 1 and was placed in the same location.

Baseline 4. This condition lasted four weeks for a total of 20 shopping days. Data on target merchandise were taken daily as described previously under "Data Collection Procedures." On each of the 20 days data were taken on the identification of target items, while assessment of interobserver agreement on inventory counts was made on 18 of the 20 days. Checks on the consistency of tag removal by cashiers were made on eight occasions. As in Baseline 2, the subjects were told upon request that feedback had been discontinued

for evaluation purposes. As in previous conditions, the experimenter contacted the subjects daily to determine if target merchandise had been returned, found in another area of the store, or if identification tags had been found detached from target merchandise. During Baseline 4 no feedback, written or oral, was given.

Baseline 5. Upon the removal of feedback in Baseline 4 there was no increase in the frequency of shoplifting. This unexpected result led to a change in the withdrawal procedure in an attempt to determine if the experimenter's behavior was influencing the subjects. During the Baseline 5 condition, the experimenter stopped contacting the subjects individually each day and inquiring about returned target merchandise, misplaced target merchandise, or detached identification tags. The Baseline 5 condition lasted eight full shopping days. Data on target merchandise were collected daily as described previously under "Data Collection Procedures," except for the elimination of experimenter-subject contact as described above. On each of the eight days data were collected on the identification or target items, as was interobserver agreement on the inventory counts. The consistency of tag removal by cashiers was assessed three times.

Baseline 6. This condition was identical in procedure to the Baseline 4 condition and lasted a total of eight full days. Data on target merchandise were collected daily as described previously under "Data Collection Procedures." On

each of the eight days data were taken on the identification of target items. Interobserver agreement on the inventory counts was also assessed on each of the eight days. The consistency of tag removal by cashiers was assessed twice.

#### Dependent Variables

The total number of items missing daily was calculated for each of the 30 types of target merchandise. These data were then summed to provide the total number of items missing for the specific sales day. The total number of items missing for a particular day were then added to the number of items previously found missing in that particular experimental condition. This procedure produced a calculation of the cumulative number of items missing during a condition for each particular day of that condition. It was assumed that the number of items shoplifted covaried with the level of business. The number of business transactions was used as the index of business level. The total number of business transactions were treated in the same manner as the total number of items missing. The number of business transactions for a specific day were added to the cumulative number of transactions up through the previous day of that specific experimental condition. Each day, the cumulative number of items missing to date for that specific condition were divided by the cumulative number of transactions to date for that specific condition. The resulting percentage was used in the data analysis. A computational representation of this procedure is as follows:



$$\sum_{i=1}^n \frac{a}{b}$$

where  $a$  represents the number of items shoplifted for a day,  $b$  represents the number of business transactions for a day, and  $n$  represents the number of days for the specific experimental condition. The value of the items missing was treated in the same manner as the data on the number of items missing.

## Experiment 2

### Setting

The experiment was conducted in the same setting as Experiment 1, and began approximately 10 weeks after the completion of Experiment 1. The study ran 34 sales days.

### Subjects

Six full-time employees of the bookstore served as subjects (1 male, 5 females). Five of the subjects had served as subjects in Experiment 1. The sixth subject was a bookkeeper, who had been employed by the bookstore during Experiment 1, but had not served as a subject due to her job not requiring interaction with shoppers.

### Tasks and Training

The subjects were trained to perform five of the data collection tasks used in Experiment 1. These five tasks were taking inventory counts and comparing counts for reliability, removing identification tags at the time of purchase,

tagging new and returned merchandise with identification tags, compiling the data, and posting the data on the feedback chart. Of the six subjects, four of them performed inventory counts. One of these four subjects involved in taking inventory counts also served as a cashier and removed identification tags at the time of purchase. One subject served solely as a cashier, and one subject coordinated data collection. This subject filled out data sheets, compiled the results, and posted the results on the feedback chart.

The experimenter trained the subjects individually. Each subject received an explanation of his task, and the appropriate response was modeled. In addition, during the first week of the experiment the experimenter was in the store daily to assist the subjects with any problems that developed.

#### Target Merchandise

Thirteen types of target merchandise were selected, with three of the thirteen items having been used in Experiment 1. The types of target merchandise used in Experiment 2 were predominantly new items, which had been selected by the subjects. The use of active subject participation, which was based on the work of Fairweather, Sanders, and Tornatzky (1974), was done to facilitate implementation of the new program by giving the subjects "ownership" of the program. The target merchandise, including price and identification code, is included in Table 3.

### Subject Data Collection Procedures

Prior to the start of data collection, the experimenter marked each type of target merchandise with removable, coded identification tags, as was done in Experiment 1. The experimenter then instructed the subjects and provided them with the tags and marking equipment for tagging replaced or returned target merchandise in the future. The inventory counts were scheduled to be taken each morning before the store opened. Two of the subjects independently took inventory counts on items 1-8 in Table 3, while two other subjects independently counted items 9-13 in Table 3. The subjects then compared their inventory counts for accuracy, and recounted any items on which there was disagreement. These four subjects then turned in their inventory counts to the subject in charge of coordinating data collection. The inventory data were then compiled along with the sales data from the previous day. The frequency and value of items sold and missing were tabulated and posted on the same feedback chart used in Experiment 1.

### Experimenter Data Collection Procedures

The experimenter visited the bookstore and took data on the subjects' data-collecting behavior. The experimenter's source of data was the written records, e.g., the data sheets and feedback chart, rather than actual observations of the subjects' data-collecting behavior. To minimize observer reactivity, following the initial week of the study the

experimenter visited the bookstore at random. The data collection was done in a series of steps. First, the inventory data sheets were inspected to determine if these data had been collected. Second, a check was made to determine if the inventory data sheets were in duplicate, which would imply that reliability had been taken. Third, the master data sheet in the bookkeeper's office was inspected to determine if the inventory and sales data had been compiled, and the shoplifting losses calculated. Fourth, the feedback chart was checked to determine if the data had been posted. As in the first experiment, the identification of target items was assessed by the experimenter. The consistency of tag removal by cashiers was assessed by a female undergraduate student.

## CHAPTER III

## RESULTS

Experiment 1Frequency Data on Number of Targeted Items

The cumulative numbers of items shoplifted for each of the eight conditions are presented in Figure 1. (Figure 1 and all subsequent figures may be found in Appendix I.) During the 15 days of the Baseline 1 condition a total of 15 target items were found to be missing, with a mean of 1.0 items missing per day. Baseline 1 was followed by the Feedback 1 condition, which ran 12 days. During Feedback 1 the mean number of items missing declined to .75 items per day, with a total of 9 items missing for the condition. Following the removal of feedback during the Baseline 2 condition the mean number of items missing per day increased to 1.4, and a total of 7 items were found to be missing during this 5-day condition. Following a 10-day period during which data could not be collected, a third baseline condition was implemented, which lasted 10 days. During Baseline 3 a total of 13 items were found missing, with a mean of 1.3 items missing per day. The Baseline 3 condition was followed by the Feedback 2 condition which lasted 10 days. The mean number of items missing per day declined to .7 in the Feedback 2 condition, with a total of 7 items missing.

The Feedback 2 condition was followed by the Baseline 4 condition, which lasted 20 days. The removal of feedback in the Baseline 4 condition did not result in an increase in shoplifting losses as it had in Baseline 2. In fact, the mean number of items missing per day continued to decline. A total of 6 items were found to be missing with a mean of .3 items missing per day. The mean number of items missing per day continued to decline during the Baseline 5 condition. During this 8-day period 1 item was found to be missing, for a mean of .13 items missing per day. The loss rate declined further during the Baseline 6 condition. During this 8-day period no items were found to be missing.

In order to insure that the data in Figure 1 are not inaccurate due to fluctuations in the business level, the cumulative frequency data were adjusted by dividing these data by the cumulative number of transactions, as was described previously under "Dependent Variables." The resulting ratio data are presented in Figure 2. The experimental effect in the Baseline 1--Feedback 1--Baseline 2 sequence appears to be even stronger in Figure 2 than in Figure 1. In Figure 1, there appears to be a decline in shoplifting losses from Baseline 3 to Feedback 2. In Figure 2, where the data are adjusted for business level, there appears to be no difference between the two conditions. The continual decline in shoplifting losses in Baselines 4, 5, and 6 is apparent in Figure 2 as in Figure 1.

### Value Data

The value of the target merchandise shoplifted was tabulated when the frequency data were compiled. The cumulative value of shoplifted merchandise for each of the eight conditions is presented in Figure 3. There appears to be no experimental effect of feedback on the value of merchandise missing. The value data in Baselines 5 and 6, however, are obviously much less than in the other six conditions. There was only one item missing in Baseline 5 and none in Baseline 6, therefore the value of missing merchandise would likely be quite small. These cumulative value data were adjusted to control for variations in the level of business in the same manner that the cumulative frequency data were adjusted. These adjusted data are presented in Figure 4. Again, there appears to be no experimental effect of feedback on the value of missing items.

### Statistical Analysis

In addition to visually analyzing the shoplifting frequency data, the data were also statistically analyzed. Jones, Vaught, and Weinrott (1977) have suggested supplementing visual analysis with statistical analysis because the visual analysis may be distorted when the data are serially dependent, as is often the case in single case designs. In the present study, a time-series analysis was the appropriate statistical analysis because it accounts for serial dependency. The term

"serial" indicates the data are characterized by being in a temporal order. The term "dependent" refers to the nonindependence of error components; i.e., the correlation between the error components of pairs of scores is not zero. In effect, if the data in a series are dependent and a score is known, it is possible to make a prediction about other scores in the series. A time series analysis statistically controls the dependency in the data, and tests for changes in the series; i.e., it tests for differences in level and slope. The term level refers to the central tendency in dependent time-series data. A change in level refers to a change or discontinuity in the data at the point at which a treatment was introduced. A change in level is illustrated by Figures 5c and 5g. The term slope refers to the presence or absence of a linear trend or drift in the data within a condition. A zero slope would be represented by a horizontal line (Figure 5a). In order to evaluate changes in level and slope, it is necessary to take into account whether or not there was a zero or nonzero slope during baseline, or the preceding condition. Thus, three issues are of interest in a time-series analysis: zero or nonzero slope during baseline, change in level, and change in slope. The possible outcomes of a time-series analysis are represented in Figure 5. As can be seen in Figure 5, there can be a zero or nonzero slope prior to intervention. The treatment can have no effect (Figures 5a and 5e), it can cause a change in slope without influencing



level (Figures 5b and 5f), it can cause a change in level without influencing slope (Figures 5c and 5g), and it can cause a change in both level and slope (Figures 5d and 5h).

The time-series analysis tests for the possible changes illustrated in Figure 5 by statistically comparing the data from adjacent conditions for differences in level and slope. Before this can be done the data are transformed into serially independent, or uncorrelated data using a regression analysis. The regression procedure accomplishes this by the use of dummy variables, which take into account the serial dependency in the scores. In effect, the time-series analysis is a special case of regression analysis, the two procedures differing in the function of the dummy variables. In standard regression analysis the dummy variables represent the group membership of the data, whereas in time-series analysis the dummy variables control the serial dependency.

Although a time-series analysis was preferred, due to the unavailability of a computer program, a regression analysis was performed (Barr, Goodnight, Sall, & Helwig, 1976). As stated previously, the time-series and regression procedures differ in the function of the dummy variables. In addition, they differ in the steps of the analysis. In a time-series analysis it is possible to test for a significant difference in level while taking into account a significant difference in slope, or vice versa. In regression analysis, however, a test for difference in slope is performed first,

and a test for level is performed only if there is no difference in slope. A change in either level or slope would indicate the two conditions differ. Tests for differences in level should not be done if the slopes differ significantly because to do so it would be necessary to arbitrarily decide on a point in each condition for comparison. If the mean were chosen, then the result would be a t-test.

With regard to the regression analysis for Experiment 1, the X variable was time and the Y variable was the ratio of cumulative number of items missing to cumulative number of transactions. The data were compared for differences in slope using an SAS computer program (Barr, Goodnight, Sall, & Helwig, 1976), and the formulas for comparisons of level were from Kleinbaum and Kupper (1978). The analysis consisted of comparing the data from two consecutive conditions at a time, e.g., Baseline 1 vs. Feedback 1, Feedback 1 vs. Baseline 2, Baseline 3 vs. Feedback 2, etc.

In order to compare the adjusted frequency data in Figure 2 for differences in slope and level, a line of best fit had to be calculated for each of the eight conditions. The comparisons were made on these straight lines, which are presented in Figure 6. The first step in the analysis was to compare the experimental conditions for differences in slope. (The results of all comparisons of slope and level are presented in Table 4.) A highly significant difference was found between the slopes of Baseline 1 and Feedback 1

( $p < .001$ ), but the difference between Feedback 1 and Baseline 2 was not significant. The slopes of Baseline 3 and Feedback 2 did not differ significantly, but the slopes of Feedback 2 and Baseline 4 did differ significantly ( $p < .0025$ ). As can be seen in Figure 2, the shoplifting losses continued to decline following Baseline 4. The slopes of Baseline 4 and Baseline 5 were almost significantly different ( $p < .06$ ), while the slopes of Baseline 5 and Baseline 6 did differ significantly ( $p < .01$ ).

Those conditions which did not differ in slope were then tested for differences in level. Although the slopes of Feedback 1 and Baseline 2 did not differ significantly, the difference in levels was highly significant ( $p < .001$ ). The slopes of Baseline 3 and Feedback 2 did not differ, but the difference in levels did reach statistical significance ( $p < .05$ ). The difference in levels for Baseline 4 and Baseline 5 was even greater ( $p < .001$ ) than the difference in slope ( $p < .06$ ).

These results can be restated in the context of the internal validity of the experiment. In order to demonstrate an experimental effect in a withdrawal design, there must be a change in the dependent variable when the independent variable is introduced and when it is withdrawn. In the Baseline 1--Feedback 1--Baseline 2 sequence, the introduction of feedback following Baseline 1 resulted in a reduction of shoplifting, as indicated by the highly significant

difference in the slopes. The withdrawal of feedback in Baseline 2 following Feedback 1 resulted in an increase in shoplifting losses, as indicated by the significant difference in levels between these two conditions. Following Baseline 3 feedback was reintroduced in the Feedback 2 condition. With the reintroduction of feedback there was a decline in shoplifting losses, as indicated by the significant difference in levels. The experimental effect, however, was not demonstrated when feedback was withdrawn in the Baseline 4 condition following Feedback 2. Rather than an increase in shoplifting as was expected, shoplifting losses continued to decline, as was indicated by the significant difference between the slopes of the two conditions. Shoplifting losses continued to decrease through the remaining two conditions of the experiment. Shoplifting losses were less in Baseline 5 than in Baseline 4, as indicated by the highly significant difference in levels. Shoplifting losses were even lower in Baseline 6, during which no target items were missing. The slopes of Baseline 5 and Baseline 6 differed significantly.

#### Check on Experimental Manipulation

In addition to the behavior product data, the effect of the implementation of daily feedback on the subjects' behavior was assessed by means of a post-experimental questionnaire (Appendix E). Of the nine subjects, eight completed the questionnaire. The frequency with which the subjects actively

sought feedback was assessed by the question, "Approximately how often did you look at the chart listing shoplifting information?" Of the eight subjects, four reported they checked the chart daily, two subjects reported they checked it every other day, and two subjects reported they checked the chart once a week or less. The subjects were asked their opinion of the effectiveness of the feedback intervention in the question, "How much do you think the daily information on shoplifting losses helped in preventing shoplifting?" The subjects rated the effectiveness of the feedback on a 1 to 4 scale, with a rating of 1 indicating the feedback had no effect, and a rating of 4 indicating the feedback helped a great deal. One subject rated the feedback as being of no help (rating of 1), two subjects gave a rating of 2, and four subjects gave the feedback a rating of 3 on the 4-point scale. The motivational effect of the feedback was assessed by the question, "How much did the daily information on shoplifting losses motivate you to prevent shoplifting?" Again, the subjects rated the effect on a 4-point scale, with a rating of 1 indicating no effect and a rating of 4 indicating a great deal of a motivational effect. Five subjects gave the highest rating of 4, two subjects rated the motivational effect at 3, and one subject indicated the feedback had no motivational effect. The subjects were also asked whether their motivation to prevent shoplifting declined during the baseline conditions when feedback was withdrawn. The subjects

responded on a 4-point rating scale, with a rating of 1 indicating motivation was not effected, and a rating of 4 indicating the subjects' motivation decreased a great deal. The withdrawal of feedback had almost no effect on reported motivation. Six subjects rated the effect at 1, which was no effect, and two subjects gave a rating of 2, or a slight effect.

The effect of the intervention on specific subject behaviors was assessed by means of a checklist in the post-experimental questionnaire (Appendix E). The checklist consisted of a list of behaviors which retail personnel may engage in to prevent shoplifting, and a list of 43 suspicious shopper behaviors which may indicate that the shopper was going to shoplift. The subjects were to indicate if they engaged in these shoplifting-detering behaviors, or if they watched for these suspicious customer behaviors. If the subjects indicated that they engaged in any of these behaviors, they then indicated whether they engaged in these behaviors before or after they began receiving feedback on shoplifting losses. Three of the subjects reported following the introduction of feedback they began engaging in shoplifting deterring behaviors that they had not engaged in previously. One subject reported moving into a location where shoppers could easily be observed, reported rearranging the merchandise display, and reported developing a teamwork procedure with the other store personnel which facilitated

observing potential shoplifters. A second subject also reported developing a teamwork procedure to facilitate observation. This second subject also reported attempting to prevent shoplifting by moving about more frequently in the store. The third subject reported attempting to prevent shoplifting by placing a shoplifting warning sign in clear view. In response to the list of 43 suspicious shopper behaviors, all eight subjects indicated that they watched for at least some of the suspicious behaviors. Four of the subjects indicated that following the implementation of feedback they began checking for suspicious behaviors that they had not checked for previously. Of these, two subjects reported checking for 11 suspicious behaviors that they had not looked for previously, one subject reported looking for 17 behaviors following the intervention, and one subject reported looking for 26 suspicious behaviors.

### Experiment 2

As in Experiment 1, the accuracy of the identification of target merchandise was assessed by the experimenter. The experimenter made the check on four occasions, and counted a total of 1615 target items. All except one of the target items were correctly tagged for an accuracy percentage of 99.9%. As in Experiment 1, the consistency of tag removal by the cashiers was assessed by a person the store personnel would not associate with the experiment. On two occasions

tag removal by the cashiers was assessed, and on both checks the cashier correctly removed the identification tag.

The consistency of data collection by the subjects was evaluated by calculating the percentage of times the subjects performed the specific data collection task. The first task in data collection was taking the daily inventory counts. These counts were taken by two groups. Two subjects (Group 1) took inventory on target items 1-8, while two other subjects (Group 2) took inventory counts on target items 9-13. At least one of the subjects in Group 1 made an inventory count on each of the 34 days (100%), while at least one of the subjects in Group 2 made an inventory count on 32 of the 34 days (94%). These percentages indicate how frequently the inventory data were collected, but not the reliability of the data. In order for the inventory counts to be reliable, the data had to be collected by both subjects in each group, and the subjects would have to compare these duplicate counts. It could not be evaluated whether they actually made these comparisons for reliability, but only if the prerequisite, duplicate counts were made. The subjects in Group 1 simultaneously collected data on 32 of 34 days (94%), while the subjects in Group 2 simultaneously collected inventory data on 19 of the 34 days (56%). The accuracy of the subjects' inventory counts was assessed on four occasions. The subjects' inventory counts and the experimenter's inventory count were in 100% agreement on each of these



occasions. The data coordinator compiled the data for each of the 34 days of the study (100%). The posting of data on the feedback chart, unlike the inventory counts, was not permanent, written data. This was because the data were posted with a grease pencil on a plastic-covered chart, allowing the figures to be changed daily. Therefore, this behavior could only be assessed on the day it was supposed to be posted. The experimenter assessed this behavior on 24 of the 34 days of the experiment, and it was found that the data were posted on 20 of these 24 days (83%).

Although the main data of interest in Experiment 2 were the consistency of data collection by the store personnel, data on shoplifting losses were also collected. During this 34-day experiment, 15 items were found to be missing with a total value of \$53.08. It is difficult to compare these data from Experiment 2 with those from Experiment 1 because the number of target items differed in the two experiments (30 target items in Experiment 1 vs. 13 target items in Experiment 2), and only three of the items were common to both experiments. The mean number of items missing per day in Experiment 2 was .44 items. It was not possible to compute a ratio of cumulative number of items missing to cumulative number of transactions, as the transaction data were not available. The mean number of items missing for the eight conditions of Experiment 1 were as follows: Baseline 1--1.0, Feedback 1--.75, Baseline 2--1.4,

Baseline 3--1.3, Feedback 2--.7, Baseline 4--.3, Baseline 5--.12, and Baseline 6--0. The high value of the items missing in Experiment 2 was due to loss of three back packs, worth a total of \$38.85.

### Social Validation

Experiment 1 attempted to control shoplifting by providing the store personnel with daily feedback on shoplifting losses. Experiment 2 was conducted to determine if the store personnel could reliably carry out the data collection procedures used in Experiment 1. The significance of the results of these experiments will be influenced by the answers to the following questions:

(1) How satisfied were the store personnel with the program?

(2) Were aspects of the program inconvenient in that they interfered with the store personnel doing their jobs?

(3) What were the costs of the program?

(4) How much of store personnel time was required in Experiment 2?

(5) What were the training requirements for the store personnel?

(6) Could the program provide data other than shoplifting data which would be beneficial?

The satisfaction of the store personnel with the program was assessed by means of the postexperimental questionnaires, which were administered after Experiment 1. (The questionnaire

given to the subjects is located in Appendix E, and the questionnaire given to the manager is located in Appendix F.) On question I-A, the subjects rated how much they enjoyed participating in the program. Their ratings were on a 1 to 4 scale, with a rating of 1 indicating no enjoyment and a rating of 4 indicating a great deal of enjoyment. The manager was asked to make the same rating on question #1. The manager and three of the subjects gave a rating of 4, two subjects gave a rating of 2, and one subject gave a rating of 1. Another subject reported the program was neither enjoyable nor unenjoyable, but part of her job. None of the subjects reported being suspicious about aspects of the program (question I-D).

The possibility of the program inconveniencing the store personnel and interfering with their job was assessed by questions I-B and I-C on the subjects' questionnaire, and by questions 4, 5, and 6 on the manager's questionnaire. The manager reported that the program did not interfere with his job or that of his employees. Seven of the subjects also reported that the program did not interfere with their job. One subject, who served as a cashier, reported that having to remove the identification tags at the time of purchase slowed down the processing of customers' purchases.

The costs of the program were minimal. The removable adhesive tags used for identifying target merchandise cost \$1.90 for a package of 1000. The slips used for identifying

books as target merchandise had to be printed and cost \$23.36. During Experiment 1, eight data sheets were used each week in taking the inventory counts, which cost \$.40 for photocopying. In Experiment 2, six data sheets were used each week. The feedback chart, which was used in both experiments, was constructed using a poster board, which cost \$1.45, and a plastic cover, which cost \$2.00. The data were posted using a grease pencil costing \$.45.

A substantial amount of time was initially needed to operationalize the program. Target merchandise had to be selected, the individual items had to be tagged, and the data sheets had to be prepared. The amount of time the store personnel spent in collecting and compiling the data in Experiment 2 was minimal. It was observed that approximately 5 minutes were required to take the daily inventory counts, while the bookkeeper reported that it required approximately 15 minutes to compile the data and post it on the feedback chart.

The time required to train the store personnel was minimal in both experiments. In Experiment 1 the cashiers were trained to identify the target merchandise and to remove the identification tags, which required less than 10 minutes. The other store personnel were trained to read the feedback chart in group meetings which preceded the implementation of feedback. These meetings lasted about 20 minutes. In Experiment 2, four subjects had to be trained to collect

inventory data and to place identification tags on replacement merchandise. This required less than 10 minutes for each subject. One subject was trained to compile the data and post it on the feedback chart, which took less than 15 minutes.

In addition to providing data on shoplifting losses, the program also provided data which could be used for other purposes. For example, in the pilot study and in Experiment 1, the inventory counts were used to reorder merchandise when the inventory was low. In Experiment 2, item 10 was a new item which the store had not carried before. It was selected as a target item because store personnel wanted to know if it would sell rapidly enough to justify the space required for displaying the merchandise.

## CHAPTER IV

## DISCUSSION

Overview of Discussion

The purpose of Experiment 1 was to determine if shoplifting could be controlled by indirectly altering the behavior of sales personnel. It was hypothesized that the frequency of shoplifting would be lower in conditions in which the subjects, that is, the sales personnel, received feedback on shoplifting losses than in conditions in which there was no feedback. This hypothesis was based on the assumption that feedback would alter the subjects' behavior to deter shoplifting. The predicted change in the subjects' behavior was not observed directly, but was inferred from changes in shoplifting losses. The data from the Baseline 1--Feedback 1--Baseline 2 sequence supported the hypothesis, but it was only partially supported in the Baseline 3--Feedback 2--Baseline 4 sequence. There was a decline in shoplifting frequency with intervention in Feedback 2, but no increase in shoplifting frequency at withdrawal. It was found, in fact, that from Baseline 3 onward the rate of shoplifting continually declined until it reached zero frequency in Baseline 6. Experiment 2 was conducted to determine if the data collection and feedback procedures performed by external personnel in Experiment 1 could be performed by

the store personnel. The store personnel did consistently collect and tabulate data and post it on the feedback chart. These data-collecting behaviors, however, were not maintained. The frequency of shoplifting, which dropped to zero frequency in Baseline 6 of Experiment 1, was much higher in Experiment 2. In the following discussion, the results of Experiments 1 and 2 and their social validity is examined, as well as the experimental methodology. Also, possible future research is presented.

#### Experiment 1

Feedback was found to produce a decline in the frequency of shoplifting in the Baseline 1--Feedback 1--Baseline 2 experimental sequence. The mean number of items shoplifted per day for these three conditions was 1.0 items per day in Baseline 1, .75 items per day in Feedback 1, and 1.4 items per day in Baseline 2. The experimental effect of feedback was also apparent when the cumulative number of items shoplifted for each condition was divided by the cumulative number of business transactions for the specific condition. In Baseline 1 this cumulative ratio was .0032, while the ratio of Feedback 1, .0023, indicates a decline in shoplifting losses. The cumulative frequency ratio of Baseline 2, .0058, indicates an increase in shoplifting losses with the withdrawal of feedback. These data are supported by the statistical analysis; i.e., Baseline 1 and Feedback 1 differed

significantly in slope, and Feedback 1 and Baseline 2 differed significantly in level.

This feedback effect, however, was only partially supported in the Baseline 3--Feedback 2--Baseline 4 sequence. There was a decline in shoplifting frequency with intervention in Feedback 2, but no increase in shoplifting frequency at withdrawal. It was found, in fact, that from Baseline 3 onward the rate of shoplifting continually declined until it reached zero frequency in Baseline 6.

This decline in shoplifting frequency with the introduction of feedback was very likely due to changes in the behavior of the store personnel; i.e., they began engaging in shoplifting deterring behaviors. Although the behavior of the store personnel was not observed directly, the subjects did report changes in their behavior on the post-experimental questionnaire. Three of the eight subjects reported that following the introduction of feedback they began engaging in shoplifting deterring behaviors that they had not engaged in previously. Four of the eight subjects indicated that following the implementation of feedback they began checking for suspicious shopper behaviors that they had not checked for previously.

The absence of a return-to-baseline effect following the withdrawal of feedback in Baseline 4 was not experimentally desirable in that internal validity was not demonstrated. Although not experimentally desirable, the absence of a



return-to-baseline was socially desirable in that the desired decrease in shoplifting frequency occurred and was maintained. It is possible that the absence of a return-to-baseline was due to the intervention having been too effective.

There are four possible explanations for the maintenance of the reduction in shoplifting losses. One possibility is that the experimenter's daily contact with the subjects was prompting and reinforcing shoplifting deterring behaviors. This possibility was tested in Baseline 5, when experimenter-subject contact was reduced. Rather than an increase in the frequency of shoplifting, there was less shoplifting in Baseline 5 than in Baseline 4. Although experimenter-subject contact cannot explain the absence of a return-to-baseline in shoplifting frequency when feedback was withdrawn, three additional explanations will be offered. First, the subjects reported on the postexperimental questionnaire no decline in their motivation to prevent shoplifting with the withdrawal of feedback. Second, the continuing decline in shoplifting frequency may reflect more consistent cashier behavior in removing identification tags than changes in shoplifting, as elaborated below. The higher shoplifting frequency in the previous conditions may have been due to more errors by the cashiers in removing the identification tags. If a target item was purchased but the cashier failed to remove the tag, the item would be counted as missing. As the study progressed, the subjects may have become more accurate in identifying target items and removing the tags.

Between Baseline 2 and Baseline 3 was a two-week period during which reliable and representative data could not be taken. One reason the data were not representative was the much higher number of business transactions during this interval, which coincided with the start of the academic semester. At this time the bookstore was extremely busy selling textbooks and academic supplies. The average number of transactions per day during this interval was 2108. No other condition had half as many mean transactions per day. The mean number of daily transactions for the eight experimental conditions were as follows: Baseline 1--309, Feedback 1--323, Baseline 2--239, Baseline 3--928, Feedback 2--734, Baseline 4--561, Baseline 5--594, and Baseline 6--559. The cashiers continued to remove identification tags during the interval between Baseline 2 and Baseline 3. As the level of business was much higher during this interval than any other time during the study, this interval may be viewed as a training period during which the cashiers received massed practice in tag removal. It would not be surprising if the cashiers were more consistent in removing identification tags following this interval. This explanation, however, is not supported by the data. The consistency of tag removal by the cashiers was assessed 30 times, and on 29 of the 30 checks the tag was correctly removed.

A fourth possible explanation for the failure to find an increase in shoplifting frequency in Baseline 4 is the

presence of carryover effects owing to new, conditioned reinforcers (Bijou, Peterson, Harris, Allen, & Johnston, 1969). It was suggested by Bijou et al. (1969) that the use of experimental periods of short duration would prevent the establishment of new, conditioned reinforcers. This solution, however, would have been inappropriate in this study as it is questionable whether representative data could be collected over a short period of time.

Although the frequency data on shoplifting losses were influenced by the introduction of feedback in the Baseline 1--Feedback 1--Baseline 2 sequence, there was no effect on the value of shoplifting losses. As can be seen in Figures 3 and 4, there was no decline in the value of shoplifting losses until Baseline 5 and Baseline 6, but this low value of losses is to be expected as only one item was found to be missing during these latter two conditions combined. A possible explanation for the failure to find a decline in the value of losses prior to these final two conditions is the wide range in the cost of the target merchandise. The cost of the target merchandise (Table 2) ranged from \$.49 to \$14.95. Given this wide range in the value of the target, it is possible that there could be a change in the frequency of shoplifting losses without changes in the value of these losses. Seasonal changes also may account for no change in the value of losses. Some of the target items would be in demand during certain seasons, but in low demand in others. For example,

two of the target items were clothing, a windbreaker and a sweatshirt, which would only be worn in cool weather. The demand for these items would be low and the ease of shoplifting them more difficult during warmer weather. Experiment 1 ran during warm and cool weather, as the experiment started in July and ran until the latter part of November. None of the clothing items were missing during Baseline 1, Feedback 1, or Baseline 2, which covers the period from July 7 to August 19. One of the clothing items was found to be missing during Baseline 3, and two were missing during Feedback 2. These two conditions cover the period from September 6 to October 3. Given that these items cost \$10.95, the loss of only one could greatly alter the value data.

### Experiment 2

In Experiment 2 it was found that, with minimal assistance, the store personnel could carry out the daily data collection tasks used in Experiment 1. The duration of Experiment 2 was not specified in advance. The experimental plan was to follow the progress of the program until it failed, (within reason), and hopefully, to determine possible causes for the collapse of the program. The store personnel collected daily data for almost seven weeks, but these data-collecting behaviors were not maintained. One possible explanation for the failure of the program to continue was the departure of key personnel. The last day data were collected was also the last day two of the five subjects were

employed by the bookstore. A second possible explanation for the lack of durability of the program was the absence of reinforcing consequences. The only possible reinforcing consequence of the subjects' data collecting behavior was information. It is doubtful that this would be sufficient to maintain the behavior.

### Social Validation

As Wolfe (1978) has recently pointed out, applied research cannot be evaluated solely on objective data. Rather, the research must also be evaluated in terms of its costs, benefits, and the acceptance of the findings by potential users. It was found that the costs in equipment and store personnel time were not unreasonable. The procedures were not found to be inconvenient for the store personnel, as the manager and seven of the eight subjects reported the program did not interfere with their doing their jobs. The procedures also produce beneficial information in addition to the shoplifting data, e.g., sales and inventory data. The sales data can be used for making marketing decisions, e.g., the effect of location of merchandise on sales rate. The daily inventory data could be used for reordering merchandise before the inventory is depleted.

Although the daily inventory procedure appears to have many benefits and minimal cost, the program could be abused. For example, a punitive manager could use the shoplifting loss data to harass employees whenever it was felt losses

were too high. In effect, the data could be used by the manager to "catch them being bad." This inappropriate managerial practice is, however, unlikely for two reasons. First, the feedback was to the subjects as a group; therefore, no individual could be singled out and held accountable for specific shoplifting losses. Second, the operation of this program was dependent upon the cooperation of the employees. If the data were used to punish the employees, they could easily alter the data. For example, in Experiment 1 the cashiers could alter the data by falsely reporting target items on the error sheet (Appendix D), which was used for recording occasions when the cashier forgot to remove a tag or when a target item missing the proper tag was purchased. It would have been extremely easy to alter the data in Experiment 2, as store personnel were involved in taking inventory and tagging target merchandise.

#### Methodology

The results of Experiments 1 and 2, while encouraging, are limited by methodological problems. The procedure used in Experiment 1 had five limitations. First, the use of shoplifting losses as a dependent measure did not directly measure the behavior of sales personnel because it was a behavior product measure. Therefore, changes in the subjects' behavior were inferred but not measured. Second, the procedure of subtracting sales data from inventory data actually produced a measure of inventory shrinkage rather than

shoplifting. Inventory shrinkage is due to paperwork errors, shoplifting, and employee theft. The data collection procedure controlled paperwork errors, but could not control employee theft. The third limitation concerns feedback. The description of the feedback procedure in the method section was in operational rather than in functional terms because it could not be determined whether the feedback served as a reinforcer, a punisher, or a prompt. Fourth, the lengths of the conditions were unequal in that Baseline 1 ran 15 days, Feedback 1 ran 12 days, and Baseline 2 ran 5 days. The increasing shoplifting losses during Baseline 2 would have been a more convincing withdrawal effect if the length of the condition had been 12 to 15 days, as was the case in the two previous conditions. It was not possible, however, to extend the length of Baseline 2 because following Baseline 2 was a 10-day period during which reliable and representative data could not be collected. During this period the number of business transactions was more than twice that of any other condition. In addition, part-time personnel were employed as cashiers who were not reliable in removing identification tags. During some of these days campus police patrolled the premises. If it is not possible for the lengths of the conditions in an ABAB design to be equivalent, Hersen and Barlow (1976) recommend that the initial baseline condition be extended in order to get as stable a measurement as possible, or to extend the second

treatment condition to make the treatment effect as permanent as possible. Although the lengths of the conditions are unequal, they comply with Hersen and Barlow's (1976) first recommendation. Fifth, the reduction in shoplifting losses was the result of a molar package. This package included data collection on inventory, sales, and losses, and providing the store personnel with written and oral feedback on shoplifting losses. It was not possible to determine which of these components or combinations of these components were responsible for the decline in shoplifting losses.

A methodological problem of Experiment 2 concerns the reliability of the inventory counts. It was possible for the experimenter on four occasions to independently count the inventory items as a check on the subjects' counts. At other times the experimenter inspected the data sheets to determine if the inventory counts had been made in duplicate, which was the prerequisite for the subjects making reliability checks. It was not possible, however, to observe the subjects actually comparing inventory counts for reliability. Therefore, the reliability of the inventory counts is only known for four days.

#### Future Research

Although shoplifting is a social problem with major economic and social costs, there has been very little research on controlling the problem. Case studies have been reported which attempted to alter the behavior of compulsive



shoplifters (Guidry, 1975; Kellam, 1969; Kraft, 1970). Bickman and his associates have attempted to increase the reporting of shoplifting incidents by shoppers observing the act (Bickman, 1975; Bickman & Green, 1977; Bickman & Rosenbaum, 1977). Attempts also have been made to control shoplifting by manipulating environmental variables. For example, the effect of anti-shoplifting signs (McNees et al., 1976) and restricted access to merchandise (McNees, Note 1; Couture & Wheeler, Note 3) have been investigated. The present study attempted to control shoplifting by altering the behavior of store personnel. If shoplifting is to be controlled, a great deal of future research must be done. Possible extensions of the present research, and needed future research will be discussed.

One possible extension of the present study would be to compare group and individual feedback using a multiple baseline design across subjects. Emmert (1978) has reported individual feedback to be superior to group feedback in increasing productivity in a manufacturing setting. In doing this study, however, care would have to be taken to insure that possible use of the feedback in an aversive manner would be avoided.

A prerequisite for an increase in shoplifting research is the development of a more convenient and sophisticated data collection procedure than that developed by McNees et al. (1976) and also used in the present study. This need for a

more convenient and sophisticated data collection system may be satisfied by recent applications of computer technology in retail sales ("Computer Talk," 1977). Some large retail chains have begun using electronic equipment at the point of sale. This equipment records sales information, which in turn is fed into a computer already storing inventory data. Although this equipment has only been used in obtaining marketing and inventory information, it could easily be used to obtain shoplifting data. The sales count could be subtracted from the inventory count. The resulting figure could then be compared with an inventory count made at the store by the store personnel. Any shortage would indicate that there had been inventory shrinkage. This procedure would be much easier because it would only require store personnel to make inventory counts. The need for tagging target items and removing identification tags at the time of sale is eliminated.

Along with improved data collection more research is needed which would reduce the economic and social costs of shoplifting. Two proposed procedures, both of which received the Behavioral Engineering in Business Awards, will be discussed. One proposal involves the manipulation of antecedent conditions and is designed to reduce the economic costs, and the second proposal involves the manipulation of consequences and is designed to reduce the social costs.

Johnston and his associates have proposed altering multiple antecedent conditions in a retail setting which

would restrict the possibility of theft and optimize the probability of detection (Johnston, Adelman, Bakke, Barkmeier, Duncan, Hansen, Monroe, Pisor, Rosenbaum, Storzinger, & Ward, Note 4). In effect, the retail store would become a more dangerous place to shoplift. One proposed change in the retail environment would include altering the floor plan in order to maximize the visibility of the shopper. Shopper traffic would be separated into one-way traffic at specific exits and entrances. Observation of shoppers would be facilitated by maximizing lighting and placing flat mirrors on the walls. The location of stationary employees, e.g., cashiers, would be elevated to facilitate observation of shoppers. In addition to altering the retail setting, it was also proposed that the behavior of the store personnel should be altered. Employees would be trained and reinforced for engaging in a high frequency of observation and interaction with shoppers.

Drury (Note 5) has developed a procedure designed to reduce the social costs of shoplifting. One of the social costs of shoplifting involves youth, as over 50% of all shoplifters apprehended are 13 to 19 years old ("Losses Hit \$5 Billion Annually," 1975). The apprehension of juvenile shoplifters may lead to their involvement in the juvenile justice system, which would result in their being labeled and being restricted in future educational and employment opportunities. Drury (Note 5) has proposed that the present

procedure of apprehension and arrest be replaced by a non-intervention procedure, which would avoid labeling but would provide information on shoplifting. This would be accomplished in the following manner: First, when the store personnel apprehended a youth, a card would be filled out listing identifying information on the individual. Second, the parent or guardian would be required to come in and the information provided by the youth would be verified. The youth would then be released to the parent, and it would be explained to the parent that it was the store policy to allow the parents to correct the youth's behavior rather than the police. The parents would also be told that the information listed on the card would be kept on file at the police department. If the youth had previous arrests or three subsequent arrests, the police department would make a follow-up contact. The compiling of information on all apprehensions allows for appropriate action to be taken against repeated offenders, but prevents the labeling of the first-time offender. An interesting addition to the nonintervention procedure outlined above would be a restitution procedure in which the parent or youth was required to return the stolen item or pay for it. This restitution procedure is supported by a case study reported by Kraft (1970) in which overcorrection was used. In this case study a female shoplifter was successfully treated by requiring her after each shoplifting incident to mail the correct payment to the store, and then return to the store and not shoplift.

### Conclusion

The purpose of this research was to determine if shoplifting could be prevented by providing feedback on shoplifting losses to store personnel. A second experiment was conducted to determine if store personnel by themselves could carry out the data collection and feedback procedures used in the first experiment. While the results were positive, they are by no means a final solution. A great deal of further research is needed to develop a treatment package which would prevent shoplifting in a humane manner and at a reasonable cost. In addition to developing this treatment package, research will be needed on the most efficient and socially acceptable procedures for disseminating and implementing the package.

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Appendix A

Tables

Table 1

The Twenty Target Items, Their Prices, and the Cumulative Sales and Losses Data for the 26-Day Pilot Study

Item	Price	Total Number Missing	Value	Total Number Sold	Value of Sold Items
1. Calculus book	17.95	9	\$179.55	214	\$4,269.30
2. Sociology book	13.95	4	55.80	93	1,297.35
3. Physics book	17.95	0	0.00	56	1,005.20
4. Drama-Speech book	14.95	2	29.90	64	956.80
5. Psychology book	4.75	2	9.50	53	251.75
6. History book	6.95	3	20.85	72	500.40
7. English book	2.95	4	11.80	78	230.10
8. Paperback (trade)	1.95	0	0.00	1	1.95
9. Paperback (trade)	1.95	0	0.00	1	1.95
10. Thesaurus	1.50	6	9.00	20	30.00
11. Lined jacket	14.95	0	0.00	6	89.70
12. Ruby shirt	8.35	4	33.40	16	133.60
13. T-shirt	3.25	12	39.00	58	188.50
14. Ink pen	2.98	7	20.86	27	80.46
15. Make-up	1.65	0	0.00	10	16.50
16. Lipstick	1.35	1	1.35	13	17.55
17. Sunglasses	5.00	5	25.00	8	40.00
18. Book bag	4.95	5	24.75	53	262.35
19. Paint	1.65	25	41.25	8	13.20
20. Paint brush	3.00	0	0.00	0	0.00
Total		89	\$502.01		

Table 2

The Thirty Target Items, Their Prices, and  
Identification Codes for Experiment 1

Inventory Items	Price	Code
1. windbreaker--#33050 Artex, medium	\$10.95	LJ
2. sweatshirt with hood	10.95	HS
3. book bag	5.95	BB
4. pen/marker/ballpoint in blister pack	1.98	A
5. Swingline cub stapler	2.98	CS
6. rubber cement	.75	RC
7. magic transparent scotch tape--#119	.88	MTS
8. Hamilton Bell dissecting kit	6.50	HBC
9. X-acto #6 knife	2.50	X
10. Liquitex paint--titanium white	1.15	LP
11. #524 9 x 12 tracing pad	.80	#524
12. Colgate toothpaste	.49	C
13. Vaseline hand lotion	1.35	V
14. small UNC-G mug	2.50/2.75	M
15. pool caps	2.50	BCP
16. Schaeffer refillable fountain pen	1.49	FP
17. Globemaster combination locks	1.95-2.25	GL
18. men's black plastic handle umbrella #802	2.95	#802
19. typewriter ribbon #4	1.59	#4
20. pom pom socks	1.00	P
<u>Books</u>		
21. Clothing for Moderns	13.50	HE101
22. Introduction to Statistical Analysis	14.95	E350
23. Drama with Children	9.95	DWC
24. Children's Literature	13.95	E346
25. Roget's Thesaurus	1.50	RT
26. Writing Research Papers	2.95	E102
27. Display Book (Passages, Gold Mountain)	2.50	DB
	1.95	
28. School Psychology	3.95	Psy452
29. Star Trek books	1.50	STK
30. First Aid book	1.95	HEA338

Table 3

The Thirteen Target Items, Their Prices, and  
Identification Codes for Experiment 2

Inventory Items	Price	Code
1. TOT Stapler	\$1.59	TS
2. No-Nonsense Pen	1.98	A
3. #4 Typewriter ribbon	1.59	#4
4. Nail polish	1.00	N
5. White liquitex paint	1.15	LP
6. Ultra-Ban deodorant	1.49	B
7. #820 Sketch Book	1.00	#820
8. Chapstick	.59	D
9. Jogging suit	22.95	JS
10. Red sweat shirt	6.50	#999
11. Alpine back pack	9.95-12.95	PK
12. Book--Dibs	1.95	DIB
13. Book plate	1.95-2.25	BP



Table 4

## Tests for Differences in Slope and Level

---

<u>Comparisons for Differences in Slope</u>			
<u>Comparison</u>	<u>df</u>	<u>F</u>	<u>p</u>
Baseline 1 vs. Feedback 1	1, 23	24.91	p < .0001
Feedback 1 vs. Baseline 2	1, 13	0.61	ns
Baseline 3 vs. Feedback 2	1, 16	0.00	ns
Feedback 2 vs. Baseline 4	1, 26	11.22	p < .0025
Baseline 4 vs. Baseline 5	1, 24	3.80	p < .06
Baseline 5 vs. Baseline 6	1, 21	7.53	p < .01

<u>Comparisons for Differences in Level</u>			
<u>Comparison</u>	<u>df</u>	<u>F</u>	<u>p</u>
Feedback 1 vs. Baseline 2	2, 13	45.70	p < .001
Baseline 3 vs. Feedback 2	2, 16	4.23	p < .05
Baseline 4 vs. Baseline 5	2, 24	21.91	p < .001

## Appendix B

Sample Tag Used for Identifying Books  
as Target Items

---

Price \_\_\_\_\_

Cashier: Remove this  
slip only when the book  
is sold.

Code

Appendix C

Data Sheet Used for Collecting Inventory Data in the Pilot Study,  
Experiment 1, and Experiment 2

Date					
Item					
	Beginning inventory				
	Number sold				
	# on error sheet				
	Closing inventory				
	Number missing				
	Beginning inventory				
	Number sold				
	# on error sheet				
	Closing inventory				
	Number missing				
	Beginning inventory				
	Number sold				
	# on error sheet				
	Closing inventory				
	Number missing				
	Beginning inventory				
	Number sold				
	# on error sheet				
	Closing inventory				
	Number missing				
Total					
Total Daily Sales					
Total Number					
Daily Transactions					
Number of Sales					
Personnel on Duty					



## Appendix E

Postexperimental Questionnaire Filled Out by  
the Subjects Following Experiment 1

## I.

- A. How much did you enjoy participating in this program?

Circle the correct rating.

1	2	3	4
not at all			a great deal

- B. Were aspects of the program inconvenient in that they interfered with your job? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, give specific examples.

- C. Did any aspects of the program seem unnecessary or in need of change? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, what were specific examples?

- D. Did any aspects of the program arouse your suspicion? No \_\_\_\_\_ Yes \_\_\_\_\_ If yes, please elaborate.

- E. What do you think is the best procedure for preventing shoplifting. Please describe in detail.

- F. If you were a store security director, what procedures would you use to prevent shoplifting?

- G. Approximately how often did you look at the chart listing shoplifting information?

1	2	3	4
every day	every other day	once a week or less	never

H. Did you begin doing anything differently after you began receiving daily information on shoplifting losses that you had not done previously? Yes\_\_\_ No\_\_\_

If yes, what did you do differently?

I. How much do you think the daily information on shoplifting losses helped in preventing shoplifting?

Circle the correct rating.

1

2

3

4

not at all

a great deal

J. How much did the daily information on shoplifting losses motivate you to prevent shoplifting? Circle the correct rating.

1

2

3

4

not at all

a great deal

K. What was your reaction during the times that shoplifting information was not being provided?

L. Did your motivation to prevent shoplifting decrease during the times the chart providing shoplifting information was removed?

1

2

3

4

not at all

a great deal

II. The following six questions deal with things store personnel may do to prevent shoplifting. If you did any of these things check "yes" in the appropriate space. If you did any of these things before you began receiving information on shoplifting losses check "before" in the

space to the left of the question. If you began doing these things after you began receiving information on shoplifting losses, check "after" in the blank to the left of the question.

A.

before after Did you attempt to prevent shoplifting by  
 \_\_\_\_\_ \_\_\_\_\_ waiting on shoppers quickly? Yes\_\_\_ No\_\_\_  
 If yes, how soon, on the average, did you  
 wait on customers after they had entered  
 your department? \_\_\_\_\_

B.

before after Did you attempt to prevent shoplifting by  
 \_\_\_\_\_ \_\_\_\_\_ altering your movement pattern in the store?  
 Yes\_\_\_\_\_ No\_\_\_\_\_  
 If yes, did you:  
 \_\_\_\_\_ \_\_\_\_\_ 1. Move about more frequently in the store?  
 \_\_\_\_\_ \_\_\_\_\_ 2. Locate yourself in a position where you  
 could easily see shoppers?  
 \_\_\_\_\_ \_\_\_\_\_ 3. Other (specify) \_\_\_\_\_  
 \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

C.

before after Did you ever avoid observing or interacting  
 with a potential shoplifter because you felt  
 you would not know what to do if you observed  
 \_\_\_\_\_ \_\_\_\_\_ a shoplifting incident? Yes\_\_\_\_\_ No\_\_\_\_\_

before after If yes, how often did you feel this way?  
 Write the appropriate numerical rating in the "before" and/or "after" spaces to the left.

		Always	Most of the Time	Half of the time	Occasion-ally	Once
_____	_____	5	4	3	2	1

D.

before after Did you ever repeatedly wait on shoppers who on each occasion refused assistance?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, how often did you do this? Write the appropriate numerical rating in the "before" and/or "after" spaces to the left.

		Always	Most of the time	Half of the time	Occasion-ally	Once
_____	_____	5	4	3	2	1

E.

before after In order to prevent shoplifting, did you make any changes in the area of the store in which you stock merchandise and/or wait on shoppers? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, did You:

\_\_\_\_\_ Rearrange the merchandise display?

\_\_\_\_\_ Place shoplifting warning signs in clear view?

\_\_\_\_\_ Other (specify) \_\_\_\_\_

\_\_\_\_\_



F.

before after Did you and other store personnel develop  
 a teamwork procedure that facilitated observ-  
 ing potential shoplifters or waiting on  
 \_\_\_\_\_ shoppers? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, describe the cooperative pattern  
 you practiced.

III. The following is a list of specific activities which  
 may indicate that a shopper is going to shoplift.  
 Please check those shopper behaviors which you regularly  
 looked for that may indicate the customer was going to  
 shoplift. If you looked for these suspicious behaviors  
 before you began receiving information on shoplifting  
 losses, check "before" in the blank to the left of the  
 behavior described. If you started looking for these  
 suspicious behaviors after you began receiving information  
 on shoplifting, check "after" in the blank to the left.  
 Leave the spaces blank if you did not look for these  
 suspicious behaviors.

A. Appearance of the Customer

before after

- |       |       |   |
|-------|-------|---|
| _____ | _____ | 1. Perspiring though the store is cool                |
| _____ | _____ | 2. Flushed face                                       |
| _____ | _____ | 3. Startled when they find they are being<br>observed |
| _____ | _____ | 4. Wearing a wide-sleeved coat                        |

before after

- \_\_\_\_\_ 5. Wearing out of season clothing
- \_\_\_\_\_ 6. Wearing outer garments with slit pockets
- \_\_\_\_\_ 7. Wearing loose fitting or oversized clothing
- \_\_\_\_\_ 8. Other (specify) \_\_\_\_\_

B. Methods of Concealment

before after

- \_\_\_\_\_ 1. Briefcase
- \_\_\_\_\_ 2. Large purse
- \_\_\_\_\_ 3. Shopping bag
- \_\_\_\_\_ 4. Umbrella
- \_\_\_\_\_ 5. Other (specify) \_\_\_\_\_

C. Eye and Body Movement of the Customer

before after

- \_\_\_\_\_ 1. Looking up to determine if there are any convex mirrors or closed-circuit television cameras in use.
- \_\_\_\_\_ 2. Frequent 360-degree turns to determine if they are being observed.
- \_\_\_\_\_ 3. Glancing without moving the head.
- \_\_\_\_\_ 4. Looking in mirrors in order that they may observe the store personnel.
- \_\_\_\_\_ 5. Glancing from side to side on cross aisles.
- \_\_\_\_\_ 6. Quickly glancing up from merchandise from time to time.

before after

- \_\_\_\_\_ 7. Looking at other customers and around  
the room rather than at merchandise.
- \_\_\_\_\_ 8. Excessive haste in leaving an area of  
the store.
- \_\_\_\_\_ 9. Looking around or behind them as they  
leave an area to determine if their  
departure was observed by store personnel.
- \_\_\_\_\_ 10. Other (specify) \_\_\_\_\_

D. Customer Hand Movement

before after

- \_\_\_\_\_ 1. Closing the hand completely over mer-  
chandise.
- \_\_\_\_\_ 2. Picking up two of the same item.
- \_\_\_\_\_ 3. Folding merchandise. This makes the  
merchandise smaller and easier to conceal.
- \_\_\_\_\_ 4. Holding identical items for comparison.  
Placing hands in their pockets while  
near a display containing small items.
- \_\_\_\_\_ 5. Placing a hand on merchandise and then  
quickly looking around.
- \_\_\_\_\_ 6. Other (specify) \_\_\_\_\_

E. Customer Behavior at a Display Counter

before after

- \_\_\_\_\_ 1. Starting to examine merchandise, then  
leaving the counter and then returning.

before after

- |       |       |  |
|-------|-------|--|
| _____ | _____ | 2. Holding merchandise below counter level.  |
| _____ | _____ | 3. Taking merchandise and then turning their back to the counter.  |
| _____ | _____ | 4. Placing merchandise near an exit counter.   |
|       |       | 5. Taking merchandise from a counter but then returning repeatedly.  |
|       |       | 6. Taking merchandise to another counter or mirror.  |
|       |       | 7. Placing a hat or handkerchief on a display counter containing small items, which could easily be slipped under the hat or handkerchief. |
|       |       | 8. Turning and walking away when the sales person looks directly at them.  |
|       |       | 9. Other (specify) _____   |

F. Non-Shopping Activities

before after

- |       |       |   |
|-------|-------|---|
| _____ | _____ | 1. Repeatedly refusing service from sales personnel.              |
| _____ | _____ | 2. Making repeated trips to a specific department without buying. |
| _____ | _____ | 3. Loitering in a department.                                     |
| _____ | _____ | 4. Aimlessly walking up and down aisles.                          |
| _____ | _____ | 5. Leaving the store but returning in a short time.               |
| _____ | _____ | 6. Other (specify) _____  |

G. Other Antecedents to Shoplifting

before    after

- |       |       |   |
|-------|-------|---|
| _____ | _____ | 1. Requesting empty boxes, sacks, or wrapping paper.          |
| _____ | _____ | 2. Dropping articles on the floor.                            |
| _____ | _____ | 3. Excessive inspection of packages.                          |
| _____ | _____ | 4. Placing a package, coat, or purse over merchandise.        |
| _____ | _____ | 5. Placing a shopping bag on the floor between clothes racks. |
| _____ | _____ | 6. Other (specify) _____                                      |

## Appendix F

Postexperimental Questionnaire Filled Out by the  
Store Manager Following Experiment 1

1. How much did you enjoy participating in this program?  

1	2	3	4
not at all			a great deal
2. What do you think is the best procedure for preventing shoplifting? Please describe in detail.
3. What do you think is the best possible shoplifting prevention procedure which could be used economically in your store?
4. Were aspects of the program inconvenient in that they interfered with your job? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, please give specific examples.
5. Did aspects of the program interfere with your employees performing their duties? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, please give specific examples.
6. Did any aspectsof the program seem unnecessary or in need of change? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, please give specific examples.
7. How much did the daily information on shoplifting losses help in reducing shoplifting?  

1	2	3	4
none at all	a little	moderate amount	a great deal

8. Did your employees begin doing anything differently after they began receiving daily information on shoplifting losses that they had not been doing previously?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, what did they do differently?

9. Overall, how effective do you think the program was in preventing/reducing shoplifting?

1

2

3

4

not  
effective

slightly  
effective

moderately  
effective

very  
effective

10. Please describe any ideas you have for improving this type of program.

## Appendix G

Description of Instructions, Rationale, and Baseline  
Information Received by Store Personnel Prior  
to Feedback Conditions

At this time I would like to thank the store personnel for their help in collecting inventory information. The reason for the daily collection of data is to measure daily inventory changes, and more importantly, to measure shoplifting losses. The shoplifting losses have been calculated by subtracting the daily sales, as measured by the number of tags removed, from the daily inventory. What has been found over the last three weeks is presented on this chart (Appendix G). As you can see the number of items shoplifted for each of the 30 types of merchandise inventoried daily is listed. Also, the total value of items shoplifted is listed for each type of merchandise. At the bottom of the chart is the total number of items shoplifted and the total value of merchandise lost to shoplifting. (The experimenter will next go over the shoplifting losses for each specific type of target merchandise.) This information from the last three weeks will remain on the chart in order that future shoplifting losses can be compared with past losses.

Starting tomorrow I will be passing this shoplifting loss information on to you each day. Each morning I will post this information on the chart. For each type of merchandise the total number of items missing and their value will be posted. Also the total number of items and the



total value of shoplifted merchandise will be listed at the bottom of the chart. In the next two columns the cumulative shoplifting losses will be listed. That is the number and value of items missing each day will be added to the losses for the day before. These cumulative losses will consist of the losses from today's date.

Now I would like to tell you why I am doing all of this. First, studies have found that school bookstores lose a great deal of merchandise to shoplifting. Questionnaires given to bookstore shoppers have found that shoppers think bookstores charge too much and make unfair profits, which allows them to rationalize shoplifting. It has also been found that warning signs, policemen, detectives, and closed circuit television cameras in stores can have an effect opposite of that which is intended. That is, shoppers may be challenged to beat the system and shoplift successfully. It is also apparent that catching people shoplifting is difficult because this would require sales personnel to be detectives, which is incompatible with running a store. Even if people were apprehended shoplifting the procedure is disagreeable due to the actual arrest, court proceedings, and adverse publicity. Rather than writing off shoplifting losses or trying to catch shoplifters, it may be better to try to prevent shoplifting in the first place. Hopefully, the daily information on the chart identifying the merchandise that is being shoplifted will enable shoplifting to be prevented.

Appendix H

Feedback Chart Used in Experiments 1 and 2

This is a smaller representation of the chart which was used to provide the store personnel feedback on shoplifting losses. The information included the number and value of specific types of merchandise missing. The data were daily and cumulative for the feedback condition. The cumulative data for the baseline condition were included for comparative purposes.

Type of merchandise	Number of items missing yesterday	Value of items missing yesterday	Total number of items missing since _____	Value of items missing since _____ (date) feedback started)	Number of items missing from _____ to _____	Value of items missing from _____ to _____
1.						
2.						
3.						
.						
.						
.						
30.						
	Total number of items missing yesterday	Total value of items missing yesterday	Total Average # of items missing per day _____	Total Average value of items missing per day _____	Total Average # of items missing per day _____	Total Average value of items missing per day _____

Appendix I

Figures

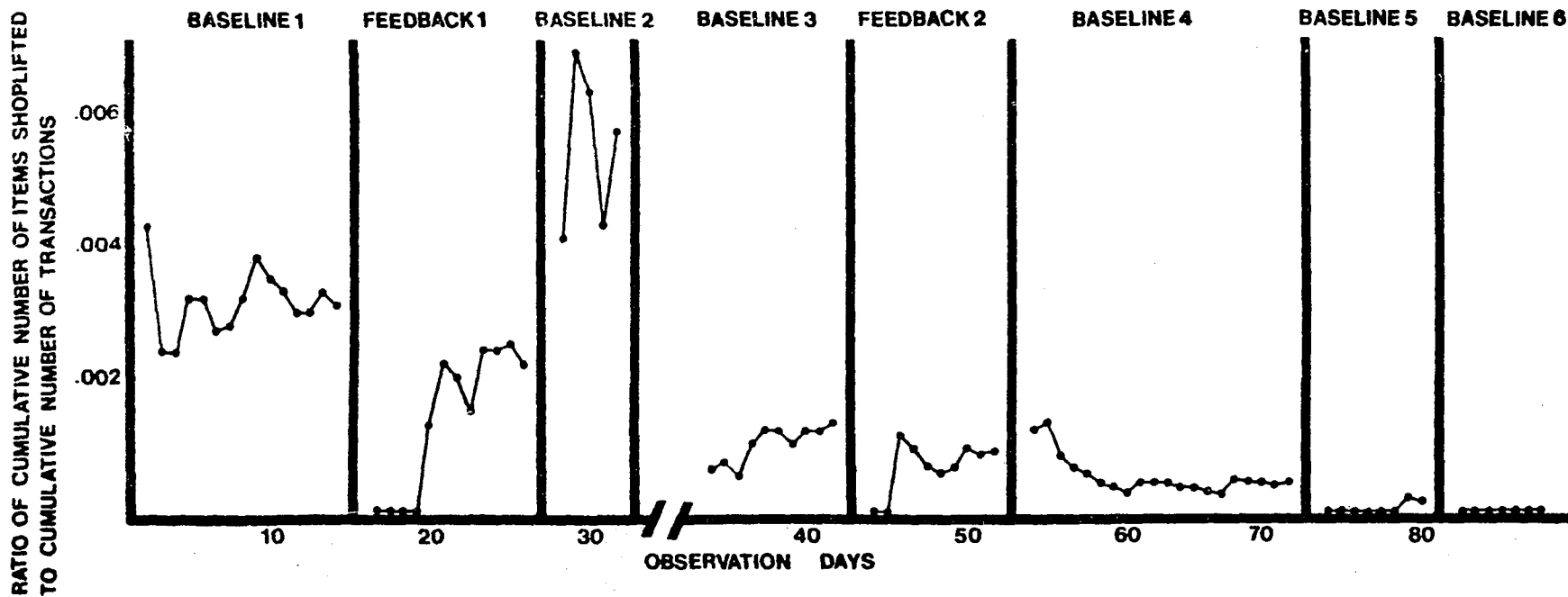
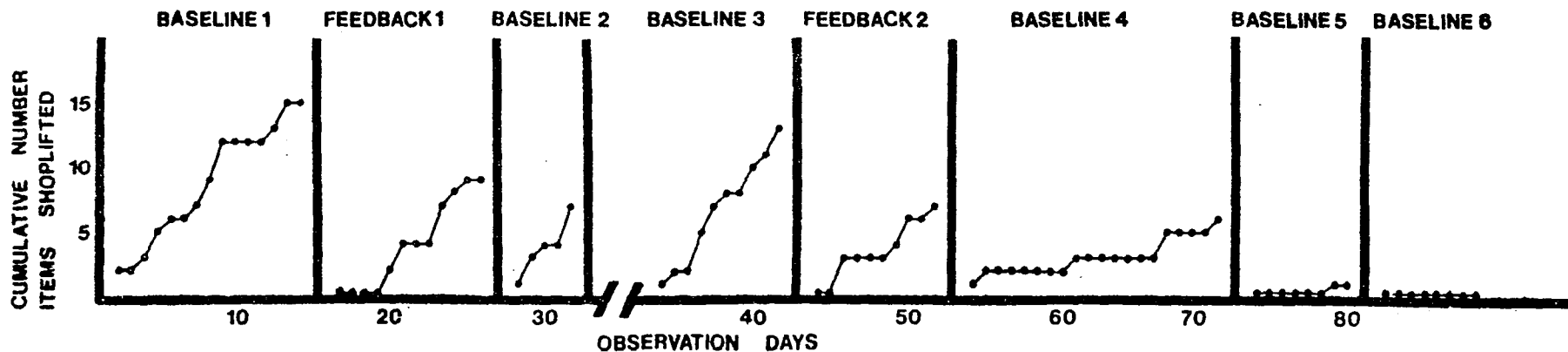


Figure 1 (top). Cumulative number of target items shoplifted for each of the eight conditions in Experiment 1.

Figure 2 (bottom). Ratio of cumulative number of items shoplifted to cumulative number of business transactions for each of the eight conditions in Experiment 1.

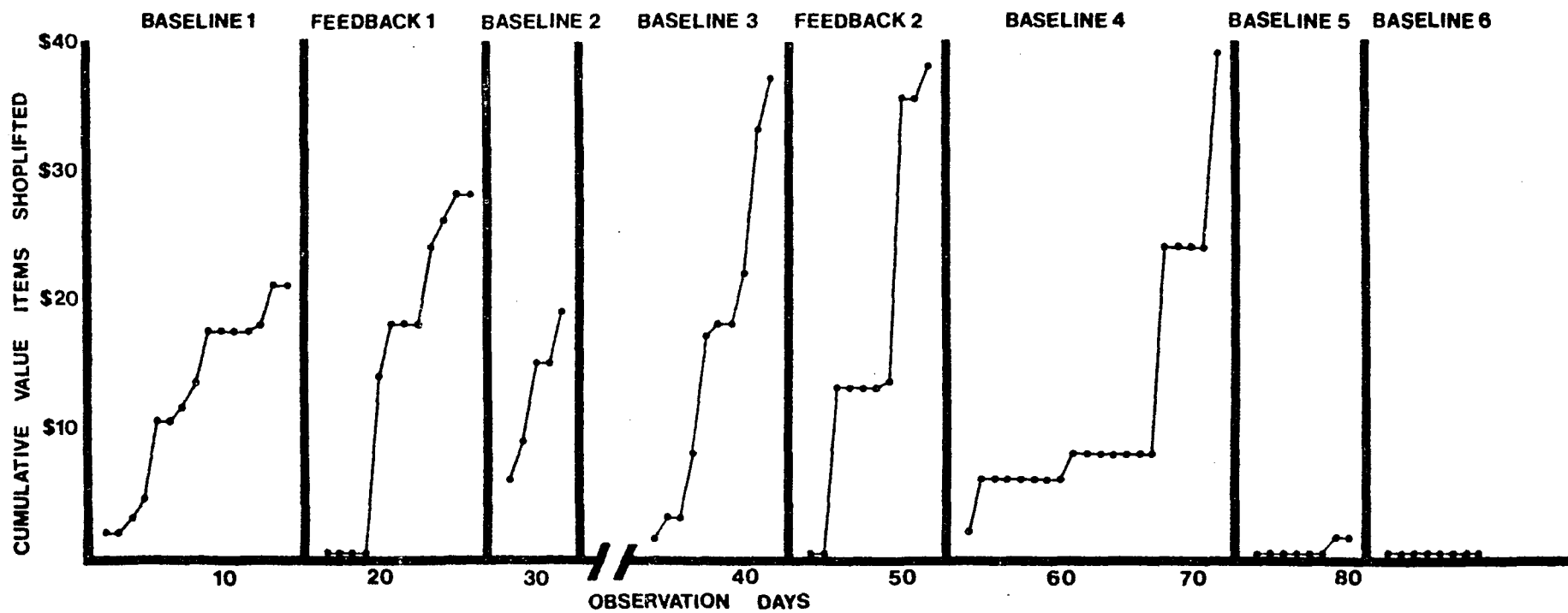


Figure 3. Cumulative value of the target items shoplifted for each condition in Experiment 1.

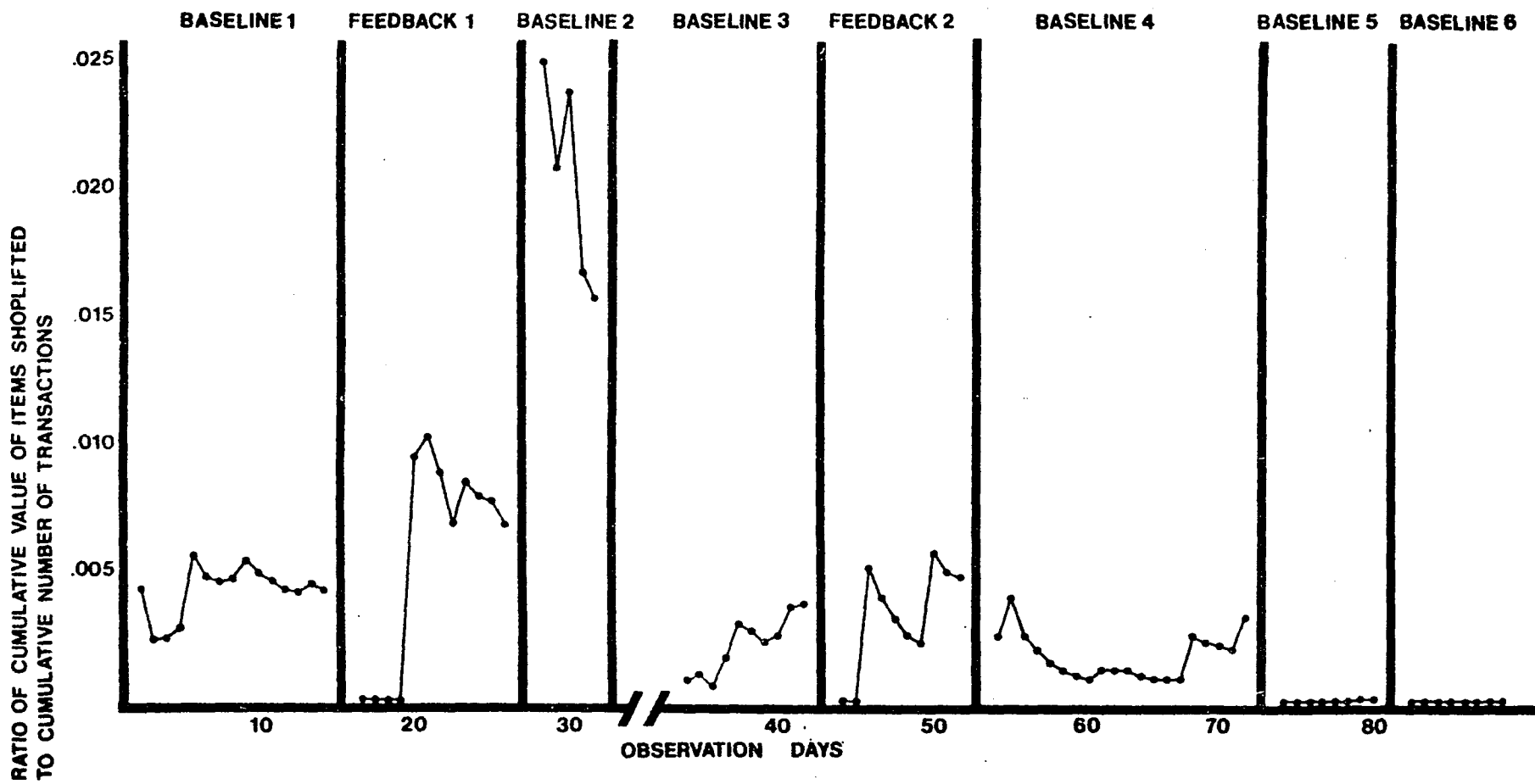
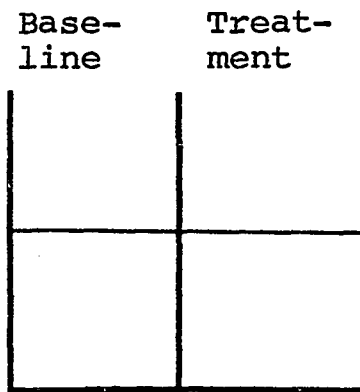
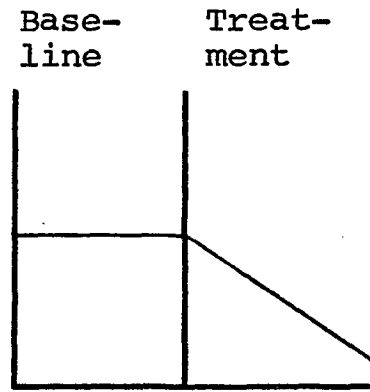


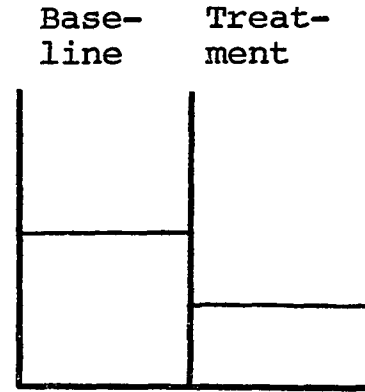
Figure 4. Ratio of cumulative value of the items shoplifted to the cumulative number of transactions for each condition in Experiment 1.



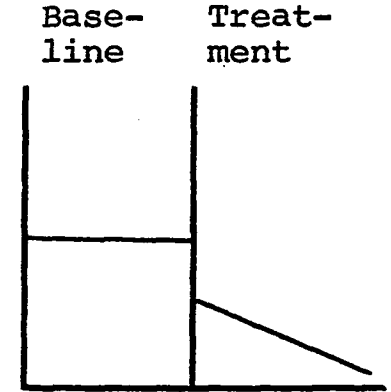
a. Zero slope in baseline; no change in level; no change in slope.



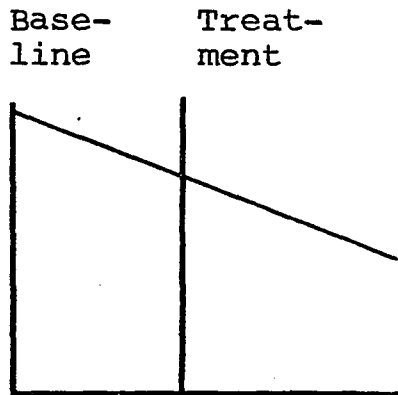
b. Zero slope in baseline; no change in level; change in slope.



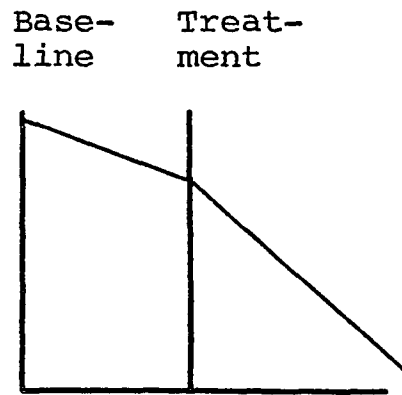
c. Zero slope in baseline; change in level; no change in slope.



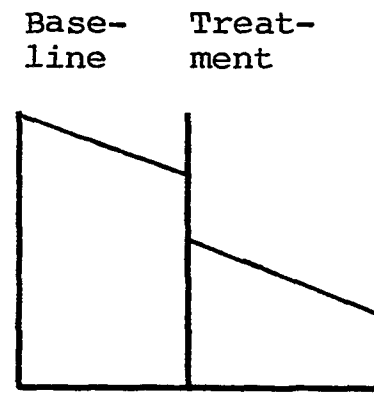
d. Zero slope in baseline; change in level; change in slope.



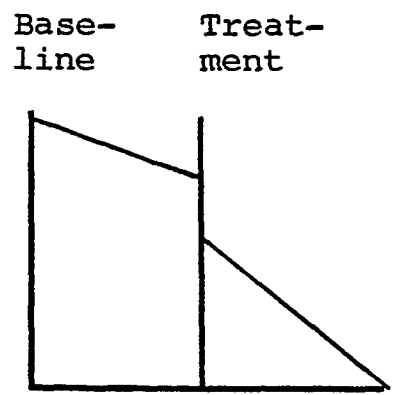
e. Nonzero slope in baseline; no change in level; no change in slope.



f. Nonzero slope in baseline; no change in level; change in slope.



g. Nonzero slope in baseline; change in level; no change in slope.



h. Nonzero slope in baseline; change in level; change in slope.

Figure 5. Eight possible patterns of data for the first two phases of an A-B-A-B design.

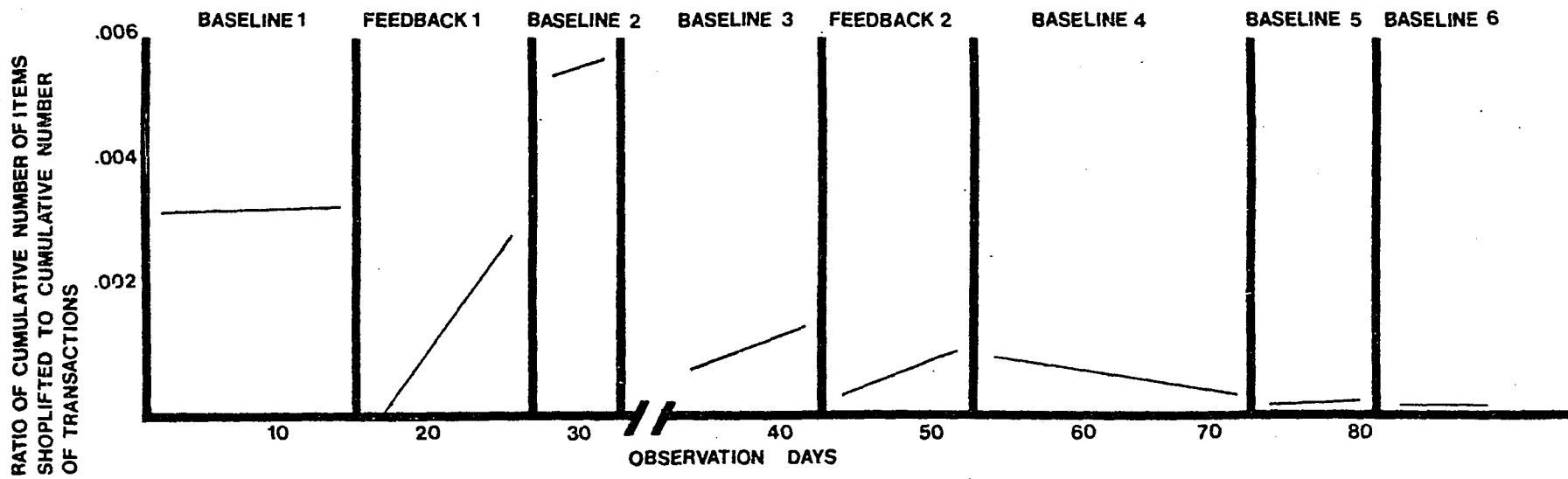


Figure 6. Lines of best fit for the adjusted shoplifting frequency data in Experiment 1.