DEVELOPMENT OF BIOGRAPHICAL PREDICTORS OF CASHIER TURNOVER AT A CONVENIENCE STORE CHAIN

THESIS

Presented to the Graduate Council of the University of North Texas in Partial Fulfillment of the Requirements

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By

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Subjects, 432 convenience store cashiers, were divided into long-tenure and short-tenure groups. Chi-square analysis of application blank information for a weighting sample drawn from both groups revealed two items which significantly ($p < .05$) differentiated between the long-tenure and short-tenure groups: number of previous jobs and full-time/part-time preference. Response weights were computed for these two items and used to calculate composite scores for the remaining holdout sample. A significant reduction in turnover would have occurred at the highest composite score level, if used as a hiring cut-off. Results were tempered by several considerations, including a high percentage of false negatives and an insignificant linear relationship between composite scores and tenure.
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CHAPTER I

INTRODUCTION

'Turnover occurs when employment is terminated and the employee is replaced. Various methods have been developed for calculating turnover rates. In a comprehensive review, Price (1977) identified several methods for calculating turnover rates, which are included in Appendix A. The separation rate outlined by Price appears to be the most prevalent method for measuring turnover in organizations (Mowday, Porter, & Steers, 1982). Separation rate is defined as the number of employees leaving in a specified period divided by the average number of employees during the same period.

Through 1981, the Bureau of Labor Statistics (BLS) reported separation rates for voluntary turnover in American durable and nondurable goods manufacturing sectors. Reporting was discontinued after 1981 for budgetary reasons (Bureau of Labor Statistics, 1983a). Separation rates for selected years are shown in Table 1.

Subsequent to 1981, the BLS has reported average tenure for all sectors on a periodic basis. Tenure is defined as the length of time an employee has worked
Table 1

Voluntary Turnover in American Manufacturing Sectors for Selected Years Between 1930 and 1981

<table>
<thead>
<tr>
<th>Year</th>
<th>Turnover Rate</th>
</tr>
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<tbody>
<tr>
<td>1981</td>
<td>1.3%</td>
</tr>
<tr>
<td>1980</td>
<td>1.5%</td>
</tr>
<tr>
<td>1975</td>
<td>1.4%</td>
</tr>
<tr>
<td>1970</td>
<td>2.1%</td>
</tr>
<tr>
<td>1960</td>
<td>1.3%</td>
</tr>
<tr>
<td>1950</td>
<td>2.3%</td>
</tr>
<tr>
<td>1940</td>
<td>1.1%</td>
</tr>
<tr>
<td>1930</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

continuously for the same employer. Although inversely related to turnover at an intuitive level, post-1981 tenure measurements are not comparable with pre-1981 turnover measurements. The BLS reported average tenure for workers 16 years and older of 3.2 years for 1981 and 4.4 years for 1983 (Bureau of Labor Statistics, 1984). Occupational membership in American manufacturing sectors for all years reported by the BLS, comprised of both turnover and tenure, is shown in Figure 1.
Figure 1. Occupational Membership in American Manufacturing Sectors for Selected Years Between 1930 and 1983.

Voluntary Turnover Separation Rate (1930-1981)

Average Years of Tenure (1981-1983)
Turnover is important because it involves costs to individuals. Psychological costs are involved in leaving an organization because old social relationships, often a source of support and identity, are broken. Psychological costs are involved in entering an organization, because new social relationships must be formed and new responsibilities must be learned. Financial costs may result from reduction or loss in pay, benefits, pension contributions, and seniority. Changing location, if involved, disrupts the family unit and incurs transition costs; new home, church, and schools must be found and friendships, social activities, and recreation established (Gardner, 1986; Mowday, Porter, & Steers, 1982).

Turnover also involves costs to organizations. Monetary costs in recruiting, selection, and training can be substantial. Data from five California companies revealed an estimated average turnover cost of $4,596 per employee (Hall, 1981). A study of tellers in a Midwestern bank estimated turnover cost per teller to be $2,522 (Mirvis & Lawler, 1977). A human resource cost is involved because an employee with experience and/or expertise is lost. Finally, there are costs to remaining work group members as a social member is lost and additional responsibilities may have to be temporarily assumed (Gardner, 1986; Mowday, Porter, & Steers, 1982).
Turnover may affect the organization in other ways, both positive and negative. Price (1977) contends that successively higher turnover leads to larger administrative staffs, higher formalization, lower integration, decreased satisfaction, higher innovation, and decreased centralization.

The problem of turnover is especially acute in retail sectors of the business community. In a Special Labor Force Report (Bureau of Labor Statistics, 1983b), the BLS reported that retail trade had one of the lowest average tenures with median years of 1.9 for men and 1.4 for women. Median tenure of selected occupations is shown in Table 2 for comparison.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile Manufacturing</td>
<td>10.8</td>
<td>4.6</td>
</tr>
<tr>
<td>Railroad/Railway Express</td>
<td>10.2</td>
<td>-</td>
</tr>
<tr>
<td>Postal Service</td>
<td>10.0</td>
<td>7.2</td>
</tr>
<tr>
<td>Agriculture</td>
<td>7.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Educational Services</td>
<td>4.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>3.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>1.9</td>
<td>1.4</td>
</tr>
</tbody>
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Note. Dash indicates median years not reported.
Retail sectors in America are growing rapidly. From 1950 to 1983, employment in retail trade increased 130 percent, from 6,751,000 to 15,545,000. Manufacturing employment for the same period increased only 21 percent, from 15,241,000 to 18,497,000 (Bureau of Labor Statistics, 1984).

Convenience Stores as a Population of Study

The trend of increasing retail outlets is typified by a relatively new phenomenon: convenience stores. Convenience stores are small, retail distributors of perishable consumer goods, often including petroleum products, located in high-density population areas. Typical products include dairy and grain items, soda pop, snack foods, cigarettes, liquor, gasoline, magazines, etc. The first known convenience store was created around 1928 by the Southland Corporation, when they started selling bread, milk, and eggs at Uncle Johnny's ice dock in Oak Cliff, Texas (Vroom & Wintzer, 1988a).

The convenience store industry has consistently been one of the fastest growing retail sectors over the past 25 years. Between 1962 and 1969, the number of convenience stores increased 232 percent, from 3,500 to 11,620. Between 1969 and 1977, the number of stores increased at an annual rate of over 15 percent. Since 1977, the number of stores has increased at an annual rate of 7.6 percent.
(Vroom & Wintzer, 1988a). At the end of 1987, there were 80,000 convenience stores across America, with annual sales of over $72 billion (Grondin, 1988).

Demand for products and services offered by convenience stores has grown as a result of social and demographic changes in America in recent decades. Rising numbers of working women and growing numbers of smaller families reduce time available for and the necessity of large supermarket trips. Suburban population growth has increased the distance to large supermarkets, making them less convenient. Increased per capita income has made cost efficiency less of an issue. Changing social attitudes place a higher priority on maximizing personal time. The combined effect of these changes has been increased demand for faster access to goods and services (Vroom & Wintzer, 1988a).

Convenience stores have capitalized on the increased demand for faster access to goods. At the end of 1986, almost 60 percent of customers traveled less than one mile to visit a convenience store. Furthermore, a majority of the stores, 75-80 percent, are open 24 hours per day (Vroom & Wintzer, 1988b). Thus, convenience store expansion was a business response to a social need.

The convenience store industry should continue to expand in the future as social and demographic trends in
America continue. A 4-5 percent annual increase in stores over the next 10 years is expected, with a total of 110,000 stores projected by the year 2000. To offset slower growth and boost sales, convenience stores are introducing new products and services like fast foods, video rentals, video games, car washes, film processing, and automatic teller machines (Vroom & Wintzer, 1988b; Grondin, 1988).

**Convenience Store Turnover**

Turnover in convenience stores has typically been high. In a 1986 survey of its members, the National Association of Convenience Stores (NACS) found an average annual turnover rate of 116.4 percent for clerks and cashiers (Melinsky, 1987).

The cost of turnover in convenience stores can be substantial. The director of human resources for one large convenience store chain estimated the cost of losing a store employee to be 500 times their hourly wage (Battagliola, 1987). NACS estimates that a 50 percent reduction in turnover could result in savings equal to net profits (Melinsky, 1987).

The business organization of convenience stores can contribute to high turnover by creating a nonsupportive atmosphere for employees. Many convenience store chains are just one part of a large, multinational corporation. Long chains of command, lengthy procedures, and low
priority can result in poor communication and little individual consideration. A recent NACS study revealed that 78 percent of employees who quit said they would have stayed if complaints had been better handled (Hussey, 1986).

Working conditions maintained by the business organization can contribute to high turnover in convenience stores. The pay is low, often at or slightly above minimum wage. One source estimated that a full-time convenience store employee making $4.25 an hour earns an annual wage $2,000 below the poverty level (Battagliola, 1987). Some employees must work late evening and early morning shifts, leaving them alone and vulnerable to crime.

The business organization may also be rewarding the wrong types of behavior (Melinsky, 1988). Employees are often told that customer service is paramount. Rewards, however, are often based on shrinkage reduction (losses, deficits) or ability to keep numbers and produce reports.

Individual factors also contribute to high turnover in convenience stores. Features like flexible hours, fast hiring, no skills or previous experience required, and opportunity for quick management experience tend to attract a somewhat transitory population of applicants. This includes people with low skills, people in-between jobs, and people in temporary situations like college.
Additionally, convenience stores provide an excellent means for people new to the country to get established and make social contacts. Overall, convenience store employment appears to represent a temporary holdout for many individuals, continuing only until more desirable employment can be found or a temporary situation ends.

Convenience stores represent an important opportunity to study turnover. Past success and growing popularity ensure that the convenience store industry will continue to be part of the national, if not international, retail landscape. Additionally, the large number of convenience stores combined with a traditionally high turnover rate allows a larger sample base for analysis than may be possible with other industries. Furthermore, convenience stores represent a chance to study a unique segment of the American population.

Potential benefits from studying convenience store turnover are significant. The existing body of knowledge on turnover can be increased. Results may provide greater social understanding of the unique population working at convenience stores. Results may be applicable to other retail operations and possibly industrial sectors, as well. Finally, individual and organizational costs associated with turnover can be reduced if effective cashier selection methods can be tested and implemented.
Convenience stores represent a relatively new business phenomenon with an old problem: turnover. The field of industrial/organizational psychology has done substantial research on turnover, providing research-based solutions. This research should help provide understanding of convenience store turnover and aid in its reduction.

Theories of Turnover

Mowday, Porter, and Steers (1982), in a landmark book entitled Employee-Organization Linkages: The Psychology of Commitment, Absenteeism, and Turnover, provide an excellent review of the research on turnover. Much of the following discussion is based on their review.

The first formal reviews of turnover appeared in the mid-1950's. Researchers like Brayfield and Crockett (1955) and Herzberg et al. (1957) found a relationship between employee dissatisfaction and subsequent turnover. March and Simon (1958) subsequently presented an inducements/contributions model of turnover. Increases in inducements relative to contributions reduce the possibility of turnover; decreases have the opposite effect. The inducements/contribution balance was thought to be influenced by the perceived desirability of leaving the organization plus the perceived ease of movement. The March and Simon model represented a significant theoretical advance to the field (Mowday, Porter, & Steers, 1982).
Vroom (1964) reviewed the literature from an expectancy theory framework and found a fairly consistent but modest relationship between dissatisfaction and turnover. Vroom suggested that the probability of an employee leaving was a function of the balance between forces to remain, namely job satisfaction, and forces to leave, influenced by the valence of outcomes unattainable without leaving and the expectancy of attaining these outcomes elsewhere.

Schuh (1967) reviewed studies predicting turnover by means of psychological inventories and tests. No consistent relationships were found between turnover and scores on intelligence, aptitude, or personality tests. Findings did indicate, however, that vocational interest blanks and scaled biographical information blanks could predict turnover fairly accurately in some cases.

Stoikov and Raimon (1968) examined the role of economic factors on turnover. They concluded that when business conditions are good, monetary rewards have a sizable effect on turnover.

Lefkowitz (1971) reviewed the literature and found six factors that consistently influenced turnover: initial job expectations, job satisfaction, physical work environment, financial compensation, intrinsic job aspects, and supervisory style/work-group dynamics.
Porter and Steers (1973) reviewed over 60 studies and found consistent support for the influence of job satisfaction on turnover. Satisfaction was viewed as the sum of an employee's met expectations on the job. Factors influencing expectations included pay and promotion policies, the immediate work environment, the job itself, and individual factors like age and tenure. An average correlation across 15 studies of only .25, however, led them to posit the existence of additional variables.

Price (1977) presented a conceptual model of the turnover process, suggesting that five factors determine job satisfaction: pay, integration, centralization, instrumental communication, and formal communication. Satisfaction combines with the opportunity to leave to determine actual turnover. A study of turnover in a service-orientated business (Martin, 1981) supported Price's model. Additional predictive variables were also found, including age, opportunity, routinization, gender, and length of service.

Forrest et al. (1977) expanded Vroom's earlier expectancy model, including both psychological and economic factors in the turnover process. Using the expanded model, they showed how various psychological and economic factors could potentially influence job attraction and willingness to maintain membership in the organization.
Mobley (1977) proposed a conceptual model of turnover focusing on intermediate linkages between job satisfaction and turnover. Dissatisfaction leads to thoughts of quitting, intention to search, intention to stay or leave, and finally, actual turnover. Central to Mobley's model is the premise that behavioral intentions to leave are a much stronger determinant of turnover than job satisfaction. A follow-up study by Mobley et al. (1978) resulted in a correlation of .49 between behavioral intentions and turnover, compared to .21 between job satisfaction and turnover. Recent studies support Mobley's conception of intermediate linkages in the withdrawal process (Bannister & Griffeth, 1986; Dalessio, Silverman, & Schuck, 1986; Hom, Griffeth, & Sellaro, 1984; Mowday, Koberg, & McArthur, 1984; Spencer, Steers, & Mowday, 1983), although some inconsistencies in the intermediate linkages were noted (Dalessio, Silverman, & Schuck, 1986).

In a subsequent review of literature, Mobley et al. (1979) found support for several predictive variables, including age, tenure, overall satisfaction, job content, intention to stay, and organizational commitment. The variables accounted for less than 20 percent of turnover variance, however, leading them to present an expanded model of turnover. While still founded on the centrality
of behavioral intentions, it also included individual, organizational, and economic factors.

Muchinsky and Tuttle (1979) reviewed over 150 studies from the preceding 50 years, grouping them into five general predictor categories: attitudinal factors, biographical factors, work-related factors, personal factors, and test-score factors. Fairly consistent relationships with turnover were found for all categories except test-score factors. Additionally, strong support was found for the importance of realistic job previews and met expectations in reducing turnover.

Steers and Mowday (1981) constructed a model of the processes leading to turnover. Largely cognitive in nature, it was comprised of three sequential stages: (1) job expectations & attitudes, (2) job attitudes & intent to leave, and (3) intent to leave, available alternatives, & actual turnover. Several unique factors were recognized, including job performance, multiple affective attitudes, and employee attempts to change the situation.

Mowday, Porter, and Steers (1982) presented a conceptual model of organizational commitment comprised of three stages: anticipatory, initiation, and entrenchment. Central to the model is the premise that new employees enter organizations with different levels of commitment and different propensities to become committed. Levels of
commitment are associated with particular work behaviors like absenteeism, turnover, and performance. Other studies support the relationship between commitment and turnover (Angle & Perry, 1981; Hom, Katerberg, & Hulin, 1979; Pierce & Dunham, 1987).

Jackofsky and Peters (1983) reviewed the March and Simon (1958) model of turnover. In a study with retail sales employees, they found that intra-organizational and inter-organizational mobility together provided a more appropriate criterion for predicting turnover than inter-organizational mobility alone.

Steel and Ovalle (1984) reviewed literature on the relationship between behavioral intentions and turnover using meta-analytic techniques. A weighted average correlation of .50 was calculated between behavioral intentions and employee turnover. Results showed that behavioral intentions were a stronger predictor of turnover than overall job satisfaction, satisfaction with the work itself, or organizational commitment.

Suszko and Breaugh (1986) examined the effects of realistic job previews (RJPs) on turnover, satisfaction, and coping ability. Results suggest that individuals receiving RJPs are more likely to turn down a job offer, perceive the organization as being honest with them, cope
with job demands, be satisfied with their jobs, and remain longer in their jobs.

Cotton and Tuttle (1986) analyzed studies of employee turnover using meta-analytic techniques. Results indicated that almost all of the 26 variables studied related to turnover. Results also suggested that study variables like population, nationality, and industry moderated the relationships between turnover and the variables studied.

McEvoy and Cascio (1987) investigated the association between turnover and employee performance using meta-analytic techniques. They found an overall mean correlation of -.28, suggesting that turnover was lower among good performers. Some support for three potential moderator variables was also found: type of turnover, time span of measurement, and level of unemployment.

Lee and Mowday (1987) tested propositions derived from the Steers and Mowday's (1981) model of employee turnover. Results indicated that met expectations, job attitudes and values, intention to leave, and actual leaving were related to many, though not all, theorized antecedent variables.

Pierce and Dunham (1987) analyzed organizational commitment in relation to the turnover process. A study with hospital employees during the first three months of employment found that commitment was strongly associated with behavioral intentions to turnover and subsequent
turnover. This supported the Mowday et al. (1982) model of organizational commitment.

Fleishman (1988) discussed issues and methodology of life history data. An important trend in recent life history research was identified, involving subgrouping individuals on the basis of responses to background items. Summary descriptions are formulated, then subgroup membership is used in criterion prediction rather than individual life history items.

In overview of the research on turnover, certain conclusions are apparent. Job satisfaction appears to play a central role in the turnover process. Many antecedents to satisfaction have been proposed, including expectations, available opportunities, preemployment information, age, etc. Additionally, intermediate linkages between job satisfaction and turnover have been established. A host of other factors like commitment and performance have also been associated with turnover. Finally, potential moderator variables have been suggested. Thus, it appears that the turnover process is a complex and multifaceted phenomenon.

Theories of Turnover Applied to Convenience Stores

The Steers and Mowday (1981) cognitive model of turnover provides a basis for understanding convenience
store turnover. Their model will now be presented in greater detail.

The first stage of Steers and Mowday's model is job expectations and attitudes. Employees enter the organization with various expectations regarding the job, interactions, rewards, etc. Expectations are influenced by various factors, including available information about the job and organization, individual characteristics, and alternative job opportunities foregone. These expectations set the stage for actual organizational experiences.

The second stage is job attitudes and intent to leave. Affective responses like satisfaction and commitment develop from actual experiences with the organization. These are influenced by factors such as met expectations, values, and performance level. Affective responses interact with nonwork considerations, leading to formation of behavioral intentions like a desire to leave, an intent to leave, or an intent to stay.

The final stage is intent to leave, available alternatives, and actual turnover. Behavioral intent to leave interacts with available opportunities, modified by nonwork considerations. Possible results of this interaction include immediate termination, increased search for alternatives, or a decision to stay. A diagram of the Steers & Mowday model is provided in Figure 2.
Figure 2. Steers & Mowday (1981) Cognitive Model of Voluntary Turnover.
The Mowday, Porter, and Steers (1982) model of organizational commitment provides additional understanding of convenience store turnover. Commitment reflects the relative strength of individuals' identification with and involvement in a particular organization. Their model will now be presented in greater detail.

In the Anticipation stage, new employees enter organizations with different levels of commitment and different propensities to become committed. Commitment is influenced by personal characteristics such as values, beliefs, personality, needs, motivations, etc. Commitment is also influenced by expectations about the job and the organization, and characteristics of the job choice like opportunities foregone.

In the Initiation stage, employees directly experience the new organization, job, supervisor, and coworkers for the first time. If experiences are not positive, commitment will probably not be built. Early experiences appear to be a crucial factor in building long-term commitment to the organization.

In the Entrenchment stage, employees have accumulated service, building a certain level of commitment to the organization. Morris and Sherman (1981) found that the longer employees work in an organization, the more likely they are to report high levels of commitment. Other
factors influencing commitment include psychological/social investments in the organization and decreased mobility. A diagram of the Mowday, Porter, and Steers model is provided in Figure 3.

If the two models presented are correct, we should be able to understand why high turnover occurs in convenience stores. The Steers and Mowday (1981) model explicitly recognizes that individuals enter new jobs with certain expectations. If these expectations are not met, turnover is more likely to occur (Lee & Mowday, 1987). It logically follows that high turnover in convenience stores may be partially attributable to unmet expectations.

Unmet expectations can result from unrealistically high expectations. Factors like cultural upbringing and lack of information about realities of the working environment can contribute to high expectations. People with little prior work experience, for example, may have high expectations. In these cases, organizational experiences will probably not live up to expectations. Realistic job previews could potentially help by lowering expectations.

Negative organizational experiences can also contribute to unmet expectations. Poor communication (Hussey, 1986), little individual consideration, low pay, and sometimes late hours result in an experienced organizational reality that offers little in meeting employee expectations and
Figure 3: Mowday, Porter, & Steers (1982) Model of Organizational Commitment.

- **Anticipation Stage (New Employment)**
  - New employees enter org. with different levels of commitment/propensity to become committed

- **Initiation Stage (Early Employment)**
  - Employees directly experience the new organization, job, supervisor, and coworkers for the first time

- **Entrenchment Stage (Middle Employment)**
  - Employees accumulate service, build a certain level of commitment to the organization

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Time on the Job

Level of Commitment
needs. Affective responses like dissatisfaction soon result, followed by formation of behavioral intentions to leave and subsequent turnover. Attempts by employees to change the situation would not be expected to have much impact.

The Mowday, Porter, and Steers (1982) model recognizes that individuals enter organizations with different levels of commitment and different propensities to become committed. Since low commitment is associated with high turnover (Pierce & Dunham, 1987), it logically follows that high turnover in convenience stores may be partially attributable to hiring employees with low commitment and low propensities to become committed.

Some convenience store applicants may have low commitment due to low motivations and values. Transient types, for example, may have low overall motivation to work; they prefer not to establish long-term commitments and consequently look for temporary, quick-fix employment. Other individuals may have difficulty maintaining employment due to poor work values. Either way, sustained employment in convenience stores is unlikely.

Other convenience store applicants may have low commitment due to situational considerations. These individuals predetermine that convenience store employment does not meet their long-term expectations, but presents a
short-term solution. Students securing immediate income, housewives seeking extra income, career types looking for quick management experience, and retirees looking for a social outlet all are potential examples of this condition.

Thus, various applicant scenarios have been identified from expectation and commitment factors which help explain high convenience store turnover. Conceptually, commitment may be adding another dimension to expectations, both of which have empirically demonstrated association with turnover. The actual relationship between commitment and expectations is an issue for future research. It is also interesting to note that certain typologies of applicants emerge from this analysis. This could be another area of future research.

Overall, it appears that convenience stores may be attracting applicants with difficult expectations, poor work values, low motivations, and/or low levels of commitment. Combined with less than optimal organizational experiences and numerous other employers in the same pay range, high turnover is an understandable consequence.

With this model of convenience store dynamics in mind, the focus becomes finding a solution to the problem of convenience store turnover. One proven technique is the use of applicant background information, commonly called biographical information.
Biographical Information and Work Behavior

Biographical information is a psychologically-based method with proven effectiveness in predicting future work behaviors like performance and turnover. Biographical information is defined as any aspect of a person's life history, verifiable or unverifiable, hypothetical or actual. Readers should note that the terms biographical information, biodata, and personal history are used interchangeably in the literature. Biographical information can be obtained from sources like traditional application blanks, biographical inventories, and interviews. Since most companies routinely collect such information, it is a rich and important source of data.

History of biographical information. Biographical information has a long and rich history in personnel selection. The first recorded use of biographical information was in 1919 at the Phoenix Mutual Life Insurance Company (Guion, 1965). A weighted application blank was developed and used to select successful life insurance salesmen. The second recorded use of biographical information was also with insurance salesman. Goldsmith (1922) developed a weighted application blank to predict successful salesmen. Consisting of nine personal history items (e.g., age, home ownership, etc.), she was
able to predict 84 percent of the successful salesmen and 54 percent of the unsuccessful salesmen.

Use of biographical information subsequently increased and expanded to a wide variety of occupations. Some notable applications include Y.M.C.A. secretaries (Becknell, 1928), industrial employees (Hovland, 1939), aircraft pilots (Jenkins, 1941), Army truck drivers (Adjutant General's Office, 1943), Naval Aviation cadets (Fiske, 1947), taxicab drivers (Ghiselli & Brown, 1949), air crew personnel (Levine & Zachert, 1951), telephone operators (Friedman & McCormick, 1952), commercial truck drivers (Parker, 1953), seasonal workers (Dunnette & Maetzold, 1955), service station managers (Soar, 1956), production supervisors (Lockwood & Parson, 1960), scientists and engineers (Ellison, James, & Taylor, 1968), hospital aides and orderlies (McClelland & Rhodes, 1969), warehouse employees (Parker, 1977), and air traffic controllers (VadDeventer, Taylor, Collins, & Boone, 1983). The criteria for these studies included such factors as tenure, absenteeism, productivity, creativity, patent disclosures, rate of salary increase, and grades in training programs.

The Navy conducted a study to identify predictors of performance in seven occupational groups (Hoiberg & Pugh, 1978). Predictors consisted of five areas: life history,
aptitude, motivation, expectations, and personality. Performance criteria comprised several measures, including pay grade level, discharge, and incarcerations. Life history was the best predictor of performance, with a cross-validated correlation of .33. Significant life history items included age at enlistment, education, school expulsions, suspensions, and arrests. The next best predictor of performance was personality, with a cross-validated correlation of .17. Significant personality factors included orderliness, social conformity, and extraversion.

Johnson, Newton, and Peek (1979) conducted a study of turnover with municipal clerical employees of a large southwestern city. Subjects consisted of 162 female clerical workers and were divided equally into two groups. A multiple regression analysis of application blank information revealed five significant biographical predictors in each group. Correlation coefficients for each group separately were .62 and .52, respectively. Cross-validation using weights from one group to analyze the other group resulted in correlation coefficients of .56 and .29, respectively. Three items were statistically significant with both groups: salary at last job, age at application, and reason for leaving last job.
Gable, Hollon, and Dangello (1984) conducted a study of turnover with managerial trainees in a large retailing organization. Biographical information was collected from application blanks of 279 individuals entering management training programs. Four items were found to be statistically significant: prior military service, earned own income to finance college, clearer understanding of the job, and past retail experience. A probit analysis of biographical items resulted in an R-square of .204.

Several researchers have performed literature reviews on biographical information, grouping a number of studies together for analysis. These reviews provide an excellent overview of the effectiveness of biographical information in predicting work behavior.

Schuh (1967) reviewed 21 biographical studies and found that 19 of them discovered one or more biographical items which had predictive relationships to turnover. He concluded that "... some items in an applicant's personal history can be found to relate to turnover in most jobs" (Schuh, 1967, p. 145).

Asher (1972) reviewed 11 biographical studies which met three criteria: they were cross-validated, biographical items were used in combination rather than singly, and items were judged to be historical and verifiable. He found that 97 percent of the cross-
validated coefficients were .30 or higher, and that 35 percent were .60 or higher.

Reilly and Chao (1982) reviewed 58 biographical information studies which were cross-validated. Average correlations were computed for six occupational groups using five criteria measures. Results for all groups are presented in Table 3. Average tenure correlations included .52 for clerical occupations and .50 for scientific and engineering occupational groups. It is interesting to note

Table 3

Reilly and Chao (1982) Biographical Information Validity Coefficients for Six Occupational Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Tenure</th>
<th>Training</th>
<th>Ratings</th>
<th>Production</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military</td>
<td>.30</td>
<td>.39</td>
<td>.25</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Clerical</td>
<td>.52</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Management</td>
<td>--</td>
<td>--</td>
<td>.40</td>
<td>--</td>
<td>.23</td>
</tr>
<tr>
<td>Nonmanagement</td>
<td>.14</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sales</td>
<td>--</td>
<td>--</td>
<td>.40</td>
<td>.62</td>
<td>--</td>
</tr>
<tr>
<td>Scientific</td>
<td>.50</td>
<td>--</td>
<td>.32</td>
<td>.43</td>
<td>.43</td>
</tr>
<tr>
<td>Average</td>
<td>.32</td>
<td>.39</td>
<td>.36</td>
<td>.46</td>
<td>.34</td>
</tr>
</tbody>
</table>

Note. Scientific includes scientists and engineers. Dashes indicate no studies found in literature.
that an average correlation of .62 was found for production in sales occupations, but no cross-validated studies were found for tenure in sales occupations. Thus, it appears that further research is needed predicting tenure in sales occupations from biographical information.

Using biographical information in selection and placement appears to be a viable and established method for predicting work behaviors like turnover. It is necessary, however, to compare biographical information to other testing methods in order to gain proper perspective of its potential use.

Ghiselli (1966) compiled data on validity studies using tests to predict work behavior and/or success in training for specific jobs like mechanical repairmen, general clerks, bench workers, and machine tenders. Biographical information significantly outperformed the other testing methods, including intelligence, mechanical aptitude, finger dexterity, personality, and spatial relations (Ghiselli, 1966). Biographical studies had almost twice as many validity correlations .50 or higher than mechanical aptitude, the next highest testing method. Overall, Ghiselli found that 97% of the biographical validity coefficients were .30 or higher. Percentages of studies with validity coefficients of .50 or higher are presented in Figure 4.
Figure 4. Ghiselli (1966) Review of Validity Coefficients.

Percentage of Validity Coefficients .50 or Higher Using Job Proficiency as the Criterion

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biographical Information</td>
<td>55%</td>
</tr>
<tr>
<td>Mechanical Aptitude</td>
<td>28%</td>
</tr>
<tr>
<td>Intelligence Tests</td>
<td>17%</td>
</tr>
<tr>
<td>Personality Inventories</td>
<td>13%</td>
</tr>
<tr>
<td>Finger Dexterity</td>
<td>12%</td>
</tr>
<tr>
<td>Spatial Relations</td>
<td>3%</td>
</tr>
</tbody>
</table>
Hunter and Hunter (1984) used meta-analysis to study cumulative research on alternate predictors of job performance. Validities were corrected to remove statistical artifacts due to small sample size, criterion attenuation, and range restriction. They compared a wide range of studies dealing with entry-level jobs where training followed hiring and the criterion was job performance (defined by supervisors' ratings). Results revealed biographical information to be the third best predictor of performance, with a mean correlation of .37. The first and second best predictors of performance were ability tests and job tryouts, with mean correlations of .53 and .44, respectively. Results from their study are presented in Table 4.

Thus, it appears that biographical information, in many cases, accurately predicts work behaviors like performance and turnover. It has a long and established history with many diverse applications and demonstrated empirical success. Additionally, it holds up very well in comparison to other selection devices, outperforming many of them. Therefore, it can be concluded that biographical information is a viable and attractive selection method alternative.

Theories of biographical information. Three theories have been forwarded to explain why biographical
information, in many cases, accurately and systematically predicts work behavior: the nonfictional theory, the relevant item theory, and the point-to-point theory. Each of these will now be presented.

Table 4

Hunter & Hunter (1984) Mean Validity Coefficients for Alternate Predictors of Performance With Entry-level Jobs

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Mean Validity</th>
<th>No. Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability composite</td>
<td>.53</td>
<td>425</td>
</tr>
<tr>
<td>Job tryout</td>
<td>.44</td>
<td>20</td>
</tr>
<tr>
<td>Biographical inventory</td>
<td>.37</td>
<td>12</td>
</tr>
<tr>
<td>Reference check</td>
<td>.26</td>
<td>10</td>
</tr>
<tr>
<td>Experience</td>
<td>.18</td>
<td>425</td>
</tr>
<tr>
<td>Interview</td>
<td>.14</td>
<td>10</td>
</tr>
<tr>
<td>Training &amp; experience ratings</td>
<td>.13</td>
<td>65</td>
</tr>
<tr>
<td>Academic achievement</td>
<td>.11</td>
<td>11</td>
</tr>
<tr>
<td>Education</td>
<td>.10</td>
<td>425</td>
</tr>
<tr>
<td>Interest</td>
<td>.10</td>
<td>3</td>
</tr>
<tr>
<td>Age</td>
<td>-.01</td>
<td>425</td>
</tr>
</tbody>
</table>
The relevant item theory (Lykken & Rose, 1963) is based on the premise that most tests contain both relevant and irrelevant items. Irrelevant items potentially exist whenever the overall test score, not individual items, is analyzed for significance in predicting criterion behavior. Validity is reduced, according to Lykken and Rose, by the presence of irrelevant items. With biographical information, each item is separately analyzed for significance, then only significant items are combined to form the selection test.

The nonfictional theory (Asher, 1972) is based on the premise that biographical items represent an individual's actual or hypothetical history, while other methods, like interviews and personality tests, attempt to create a caricature of the person. Personal history items, often verifiable, tend to be more systematic and factual than other tests and potentially more accurate. Previous job tenure, for example, is a factual and verifiable biographical item.

The point-to-point theory (Asher, 1972) is based on test strategy. A common strategy is to use general mediators like traits, aptitudes, and/or intelligence to predict criterion behavior. Test validity with this strategy is determined by the accuracy of mediator measurement and degree of association between mediators and
criterion behavior. An alternate strategy is to use tests that have higher point-to-point commonality with criterion behavior, including ability tests and biographical information. Research suggests that the more points in common between the criterion and predictor, the higher the validity (Asher, 1972).

**Advantages and disadvantages.** Biographical information has several distinct functional advantages over other testing methods. Scoring is fast and relatively easy to perform; scores are usually available in a matter of minutes. Results are interpreted immediately, so no profile plotting is necessary. Finally, biographical information works especially well with transient populations, which may not be included in normative samples of other testing methods. Every individual has a personal history, including such factors as age, education level, marital status, etc.

Like all selection methods, biographical information has limitations and these should be clearly understood. One major limitation is that it loses validity over time and must be revalidated on a periodic basis (Guion, 1965). The reason behind this is that both people and cultures continually change, and this affects the predictive ability of biographical items.
Another major limitation is that biographical information works best with large, homogeneous employee groups. England (1971) recommends a minimum sample size of 150 for any biographical study. This limits the use of biographical information to discrete job populations, unless methods of combining job categories can be established without sacrificing validity and functionality.

**Ethical and legal considerations.** Biographical information can be considered a psychological test (Anastasi, 1988), and therefore subject to ethical guidelines of the field. Four ethical principles apply to this study: decision to do research, informed consent, confidentiality, and use of results.

The decision to do research is itself an ethical consideration (APA, 1973). Potential benefits to science and society must be weighed against costs to individual participants and a decision made whether or not to proceed. Potential benefits of this study include increased knowledge of factors affecting turnover and potential reduction in the social and organizational costs associated with turnover. The cost to participants is minimal, since they are not personally involved in the study and their information will be kept confidential.

Research involving people should generally be performed only with informed consent of participants (APA, 1973).
Due to the archival nature of this study, however, informed consent was not obtained. This was approved by the University of North Texas Institutional Review Board.

Confidentiality of participant information is another ethical consideration (APA, 1973). Confidentiality was maintained by identifying biographical information only with the employee number. Furthermore, no cashier was referred to individually at any point in the study.

Finally, possible misuse of results is an ethical consideration (APA, 1973). If the convenience store corporation decides to use the results of this study in their cashier selection, three steps will be taken to minimize possible misuse. First, the limitations of biographical information will be explicitly expressed to the general manager and his staff. Second, an expiration date of two years past inception will be listed on the scorable biographical form itself, in order to insure that revalidation is performed in a timely manner. Finally, a note will be placed on the form stating that it should be used for cashier selection only.

Legal ramifications are important in addition to ethical considerations. Both validation and fairness issues must be examined in the possible use of biographical information as a selection device. Examining legal
ramifications helps protect rights of individuals and helps minimize chance of litigation against the corporation.

Any test used in selection must be properly validated. In Griggs vs. Duke Power (1971), for example, the Supreme Court ruled that invalid tests causing adverse impact are unfairly discriminatory (Cascio, 1987). In Moody vs. Albemarle (1975), the Supreme Court ruled that tests based on poor validity studies causing adverse impact are discriminatory (Cascio, 1987). For biographical information, initial validation should be properly established and periodic revalidations performed to maintain validity.

Even though properly validated, fairness should still be considered with biographical information. Any attempt to use results of a biographical study in actual selection should be preceded by an adverse impact analysis. If adverse impact does exist, remedial steps should be taken. Furthermore, potentially sensitive items like gender and age should be used judiciously or not at all.

Biographical information methodology. There are two general techniques available for collecting biographical information. Weighted Application Blanks (WABs) contain information typically collected at the time of employment application. Standard items include education, previous tenure, salary at last job, reason for leaving last job,
etc. Biographical Information Blanks (BIBs) typically contain items relating to how one would act in a given situation, childhood experiences, or a variety of other types of questions. A typical BIB question might be "Did you ever build a model airplane?" (Asher, 1972). BIBs can be quite long, even several hundred items, and are cast in a multiple-choice format.

In comparison, BIBs have the advantage of a larger pool of items to analyze for significance. However, BIBs tend to include more unverifiable information due to the subjective and hypothetical nature of the questions. WABs have fewer items, but generally contain more factual and verifiable information. WAB items also tend to have higher face validity, since they often relate directly to occupational experiences (e.g., previous tenure). Some devices contain both types of information, like the Insurance Salesman Aptitude Index (Thayer, 1977).

Analyzing biographical information for significance and assigning response weights can be accomplished in a number of different ways. Two predominant techniques are multiple regression and criterion group percent (Guion, 1965). Both techniques have been successfully used in a variety of different applications.

Multiple regression is a very sophisticated mathematical procedure that has the advantage of being very
flexible and accurate in describing relationships between predictors and the criterion. Predictor variables are correlated with the criterion variable, resulting in assigned weights for each predictor. Certain statistical assumptions are necessary, however, for regression analysis and these are linearity, homoscedasticity, and normality (Cascio, 1987). Curvilinearity can be analyzed somewhat by the use of higher order terms (squared, cubed, etc.), but interpretations are complicated. Furthermore, since the combination of predictors is optimized (in the least squares sense), computed weights tend to be sample specific and must be cross-validated (Cascio, 1987).

Criterion group percent involves formation of high and low criterion groups, based on a predetermined division of the criterion. A weighting sample is drawn from both groups and combined. Response frequencies of high and low criterion group members are tabulated for each item, then analyzed for significance with a chi-square test. Response categories of significant items are subsequently weighted (England, 1971; Guion, 1965). The remaining high and low criterion group members constitute the holdout sample, used to evaluate the weights and set cut-off scores. England (1971) recommends a two to one ratio of weighting sample to holdout sample members. Using one group to form weights and another to evaluate the weights is necessary to avoid
misleading results (England, 1971). A diagram of the process is provided in Appendix B.

The issue of response weights with criterion group percent deserves consideration. Response category weights can be unity (+1, 0, -1) or variable. Variable weights generally provide more variance discrimination than unity weights, at the expense of increased sample specificity (Guion, 1965). Guilford (1954) reviewed research on both methods and concluded that unity weights yielded total scores which were as valid and reliable as variable weights if the number of items was fairly large.

**Statement of Hypothesis**

Turnover is a costly social problem which affects individuals, families, work groups, and organizations. Convenience stores, a representative part of the retail sector, have high turnover and are growing rapidly. They present a unique opportunity to study turnover.

Biographical information is a psychologically-based method with proven effectiveness in predicting work behaviors like turnover. Therefore, it is reasonable to expect that biographical information can be used to differentiate long-tenure convenience store cashiers from short-tenure convenience store cashiers. Selecting applicants with longer predicted tenure should logically result in lower cashier turnover. It is therefore
hypothesized that biographical information can differentiate long-tenure convenience store cashiers from short-tenure convenience store cashiers.

Additionally, a secondary analysis will be performed to rationally identify if significant biographical items appear to relate to either commitment or expectations. This analysis should help bridge turnover theory with empirical results.
CHAPTER II

METHOD

Subjects

Subjects consisted of 432 convenience store cashiers employed by a national corporation in a large, southwestern metropolitan area. Cashiers with 75 days or more of tenure were considered long-tenure, cashiers with 45 days or less of tenure were considered short-tenure. The long-tenure group consisted of 227 cashiers, 82 current and 145 terminated. The short-tenure group consisted of 205 terminated cashiers. Current cashiers with less than 75 days of tenure were not included in this study due to uncertainty regarding their final outcome.

Demographic characteristics were captured for most of the subjects. Subsequent analysis revealed that 47 percent were female, 53 percent were male. Additionally, 69 percent were White, 26 percent were Black, 2.8 percent were Hispanic, 1.6 percent were Asian, and 0.5 percent were American Indian. Ages of subjects ranged from 18 to 67 years, with a median of 27 years. Tenure of subjects ranged from 0 to 536 days, with a median of 81 days.
Subjects were selected from a total of 546 cashiers hired between 10/1/86 and 10/1/88. Of the initial 546 cashiers identified, 114 were not used in the study for various reasons. Seventy-six (76) cashiers had tenure between 45 and 75 days. Thirteen (13) were currently employed with less than 75 days of accumulated tenure. Finally, personnel files could not be found on 25 cashiers. This left a remaining sample of 432 cashiers.

Background

The corporation involved in this study, a national concern headquartered in the southwest, operates a convenience store chain as the retailing segment of their operations. Each convenience store is typically staffed with three cashiers, one assistant manager, and one manager. The corporation currently operates 46 convenience stores in a large, southwestern metropolitan area, the target of this study, maintaining 138 cashier positions.

The accession turnover rate for cashiers appears to be approximately 200 percent. This is based on 546 cashiers hired over a two year period for 138 positions. The cost of convenience store turnover has been estimated at 500 times the hourly wage (Battagliola, 1987). Assuming an average starting rate of $4.50 per hour and 273 new cashiers hired per year, the cost of cashier turnover in this area is estimated to be over $600,000 annually.
Clearly, this presents a unique opportunity to reduce these costs.

The general manager of the convenience store segment was approached in June of 1988 regarding the possibility of a biographical study of turnover with the convenience store cashiers. On July 21, 1988, an informal proposal was made to the general manager and one of his staff members. A three page handout was prepared for the meeting and used as the basis for discussion. After some discussion and clarifications, it was agreed to proceed with the study.

**Measures**

The Weighted Application Blank technique was chosen as the selection measure over the Biographical Information Blank technique based on two considerations. First, the possibility existed that results might be used in actual cashier selection; the WAB technique provided a more job relevant and defensible approach. Second, using existing application information provided a large and immediately accessible sample base of cashiers.

The convenience store application blank was analyzed and 23 biographical information items were identified. One additional item, method of application, was available from the corporation's training center. A pilot run consisting of 40 randomly chosen samples eliminated six items which showed virtually no differences in responses. For example,
no one reported ever being addicted to narcotics or alcohol. The pilot run also helped refine the item response categories. A list of the final 18 items and response categories is included in Appendix C.

A data collection form was developed to capture biographical information from cashier files. The form is identified only by the employee number, in order to maintain confidentiality. A copy of that form is included in Appendix D.

The initial 546 cashier sample was analyzed to determine tenure classification cut-off points. Cut-offs of 75 days or more for long-tenure and 45 days or less for short-tenure were chosen because they resulted in roughly equal numbers in each group, with an acceptable number of cashiers in-between. Separate cut-off points were used to provide maximum differentiation between the long-tenure and short-tenure groups (Guion, 1965).

**Procedure**

Biographical information was collected for all 432 cashiers using the data collection form. Subsequently, the long-tenure cashiers were separated from the short-tenure cashiers. Both groups were randomly divided into weighting and holdout groups in a two to one ratio (England, 1971). Groups were divided using a weighting-holdout-weighting sequence for separation. Since files were arranged
numerically by employee number by calendar year, adequate randomization should have resulted. The long-tenure group was divided into 151 weighting and 76 holdout cashiers. The short-tenure group was divided into 137 weighting and 68 holdout cashiers. The combination of both groups resulted in a weighting sample of 288 cashiers and a holdout sample of 144 cashiers. Missing data eliminated two holdout cashiers, reducing the holdout sample to 142.

Item response frequencies were tabulated for the weighting sample. A matrix was constructed for each item showing the number of long-tenure and short-tenure cashiers in each response category. A chi-square analysis was performed to identify items with statistically different response frequencies. Statistical significance implies that the pattern of responses cannot be attributed solely to chance.

Significant items were rationally analyzed for overlap. Unlike multiple regression, criterion group percent methods do not mathematically account for overlap between items. If two items rationally appear to overlap, the less predictive item would be eliminated.

Significant items were weighted using the method of horizontal $t$ weights (Guion, 1965). A $t$ test was performed between the proportion of long-tenure cashiers in each response category and the overall proportion of long-
tenure cashiers. The obtained \( t \) values formed the basis for establishing category weights.

Composite scores were calculated for cashiers in the holdout sample. This constituted a cross-validation of response weights derived from the weighting sample. Tables were constructed showing the number of long-tenure and short-tenure cashiers at each composite score level, hiring percentages at each composite score cut-off level, and selection results that would occur at the optimum composite score cut-off level.

To test the linear relationship, a point-biserial correlation was performed between composite scores for cashiers in the holdout sample and tenure classification. The point-biserial was used instead of the Pearson \( r \), because the sample included currently employed long-tenure cashiers whose "true" tenure is not yet known. The obtained correlation was compared against the minimum correlation necessary to establish statistical significance at the .05 level. If the correlation is significant, then it can be assumed that the linear relationship between composite scores and tenure classification did not occur by chance.
CHAPTER III

RESULTS

Chi-square analysis of the weighting sample revealed two items significant beyond the .05 level: (8) number of previous jobs, $p = .04$, and (15) full-time/part-time status preference, $p = .03$. Response frequencies for these two items are shown in Table 5. Response frequencies for the remaining 16 nonsignificant items are included in Appendix E. Chi-square values and associated levels of statistical significance for all 18 biographical information items are presented in Table 6. Significance levels ranged from .03 to .99, inclusive.

Analysis of the response categories for items (8) and (15) revealed three categories which had long-tenure proportions statistically different from the overall sample proportion of .53, at the .05 level. Two of the categories, five or more previous jobs and part-time/no preference, had long-tenure proportions significantly higher than .53, and consequently were weighted +1. One category, 0-2 previous jobs, had a long-tenure proportion significantly lower than .53, and consequently was weighted -1. Remaining categories were weighted zero. Category weights for items (8) and (15) are shown in Table 7.
Table 5
Weighting Sample Response Frequencies for Biographical Items (8) and (15)

<table>
<thead>
<tr>
<th>Item</th>
<th>No. ST Cashiers</th>
<th>No. LT Cashiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8) Number of previous jobs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2</td>
<td>37</td>
<td>26</td>
</tr>
<tr>
<td>3-4</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>≥ 5</td>
<td>36</td>
<td>58</td>
</tr>
<tr>
<td>(15) Status preference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>full-time</td>
<td>105</td>
<td>100</td>
</tr>
<tr>
<td>part-time/none</td>
<td>29</td>
<td>50</td>
</tr>
</tbody>
</table>

Note. ST=Short-tenure, LT=Long-tenure.

Composite scores for cashiers in the holdout sample were computed using the derived weights. Each cashier received a score for number of previous jobs (+1, 0, or -1) and a score for status preference (0 or +1). The sum of these two scores became the overall composite score. Combined, the two items provided a possible range of -1 to +2 for composite scores. The number of long-tenure and short-tenure cashiers at each composite score level is shown in Table 8.
Table 6

Chi-Square Values for 18 Biographical Information Items
Arranged in Order of Significance

<table>
<thead>
<tr>
<th>Item</th>
<th>D.O.F.</th>
<th>Chi-Square Obtained</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>1</td>
<td>4.82</td>
<td>.03</td>
</tr>
<tr>
<td>8.</td>
<td>2</td>
<td>6.58</td>
<td>.04</td>
</tr>
<tr>
<td>10.</td>
<td>1</td>
<td>2.28</td>
<td>.14</td>
</tr>
<tr>
<td>5.</td>
<td>2</td>
<td>3.49</td>
<td>.18</td>
</tr>
<tr>
<td>9.</td>
<td>4</td>
<td>5.88</td>
<td>.21</td>
</tr>
<tr>
<td>14.</td>
<td>1</td>
<td>1.53</td>
<td>.22</td>
</tr>
<tr>
<td>3.</td>
<td>5</td>
<td>6.04</td>
<td>.30</td>
</tr>
<tr>
<td>11.</td>
<td>1</td>
<td>0.80</td>
<td>.39</td>
</tr>
<tr>
<td>13.</td>
<td>1</td>
<td>0.65</td>
<td>.44</td>
</tr>
<tr>
<td>16.</td>
<td>3</td>
<td>2.24</td>
<td>.53</td>
</tr>
<tr>
<td>4.</td>
<td>4</td>
<td>2.96</td>
<td>.57</td>
</tr>
<tr>
<td>1.</td>
<td>1</td>
<td>0.28</td>
<td>.61</td>
</tr>
<tr>
<td>12.</td>
<td>3</td>
<td>1.71</td>
<td>.64</td>
</tr>
<tr>
<td>18.</td>
<td>4</td>
<td>2.41</td>
<td>.66</td>
</tr>
<tr>
<td>17.</td>
<td>1</td>
<td>0.02</td>
<td>.89</td>
</tr>
<tr>
<td>6.</td>
<td>4</td>
<td>0.49</td>
<td>.97</td>
</tr>
<tr>
<td>2.</td>
<td>1</td>
<td>0.00</td>
<td>.99</td>
</tr>
<tr>
<td>7.</td>
<td>1</td>
<td>0.00</td>
<td>.99</td>
</tr>
</tbody>
</table>
Table 7
Response Category Weights for Significant Biographical Information Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Number of previous jobs</td>
<td></td>
</tr>
<tr>
<td>0-2</td>
<td>-1</td>
</tr>
<tr>
<td>3-4</td>
<td>0</td>
</tr>
<tr>
<td>≥5</td>
<td>+1</td>
</tr>
<tr>
<td>15. Status preference</td>
<td></td>
</tr>
<tr>
<td>full-time</td>
<td>0</td>
</tr>
<tr>
<td>part-time or none</td>
<td>+1</td>
</tr>
</tbody>
</table>

Table 8
Number of Long-Tenure and Short-Tenure Cashiers at Each Composite Score Level (CSL) for the Holdout Group

<table>
<thead>
<tr>
<th>CSL</th>
<th>No. ST</th>
<th>No. LT</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>0</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>+1</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>+2</td>
<td>1</td>
<td>11</td>
</tr>
</tbody>
</table>
Each composite score level was analyzed to determine the effect on hiring that would have resulted if that level had been used as a hiring cut-off. Results indicated that the optimum cut-off level for long-tenure discrimination occurred at the maximum possible composite score, +2. If only cashiers with a composite score of +2 had been hired, the percentage of long-tenure cashiers in the holdout sample would have increased from 53 percent to 92 percent. The corresponding hiring ratio at the +2 composite score cut-off level would have been 8 percent, or approximately 1/13. These results are shown in Table 9.

Table 9

Hiring Analysis at Each Composite Score Cut-off Level (CSCL)

<table>
<thead>
<tr>
<th>CSCL</th>
<th>No. ST Hired</th>
<th>No. LT Hired</th>
<th>Total Hired</th>
<th>% Hired</th>
<th>% LT Hired</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>67</td>
<td>75</td>
<td>142</td>
<td>100</td>
<td>53</td>
</tr>
<tr>
<td>0</td>
<td>59</td>
<td>60</td>
<td>119</td>
<td>84</td>
<td>50</td>
</tr>
<tr>
<td>+1</td>
<td>29</td>
<td>35</td>
<td>64</td>
<td>49</td>
<td>55</td>
</tr>
<tr>
<td>+2</td>
<td>1</td>
<td>11</td>
<td>12</td>
<td>8</td>
<td>92</td>
</tr>
</tbody>
</table>
Results of a selection analysis at the +2 composite cut-off level are shown in Table 10. The number of true predictions was 77, including 11 true positives and 66 true negatives. The number of false predictions was 65, including 1 false positive and 64 false negatives. Based on 142 cashiers in the holdout sample, this calculated to a 54 percent hit rate and a 46 percent miss rate.

A point-biserial correlation coefficient of $r = .03$ was computed between composite scores and associated tenure classification. This correlation was not statistically significant.

Table 10

Selection Analysis at a Composite Score Level of (+2)

<table>
<thead>
<tr>
<th>No. of True Positives</th>
<th>No. of False Positives</th>
<th>No. of True Negatives</th>
<th>No. of False Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>1</td>
<td>66</td>
<td>64</td>
</tr>
</tbody>
</table>
CHAPTER IV

DISCUSSION

The focus of this investigation was to determine if biographical information could differentiate long-tenure convenience store cashiers from short-tenure convenience store cashiers. Results indicated that biographical information did, in fact, discriminate long-tenure cashiers from short-tenure cashiers. At the highest composite score cut-off level, 92 percent of the cashiers were long-tenure, compared to 53 percent initially. These results are tempered, however, by several considerations.

First, the point-biserial correlation of .03 indicated no linear relationship between composite scores and tenure. This is somewhat disappointing considering the high correlations indicated in the research. Reilly and Chao (1982), for example, found an average correlation of .32 for tenure across multiple studies. Johnson, Newton, and Peek (1979) reported cross-validated correlations of .56 and .29, respectively, in a biographical information study of turnover with municipal clerical employees.

Second, the resulting number of false negatives at the highest composite score cut-off level was high. Table 10
shows that the number of false negatives was 64 out of 142, or 45 percent. In short, a lot of potential long-tenure employees would not be hired. This would be unfair from an ethical standpoint and potentially litigious to the corporation.

Third, adding biographical selection to existing hiring practices would not have supplied the corporation with the number of cashiers needed to maintain operations. The selection program for cashiers existing at the time of this study already resulted in a selection ratio of approximately 1/36. Further selection with biographical information would have resulted in hiring only 1/13 of the 1/36 applicants originally selected for cashier employment. Thus, while biographical information did discriminate long-tenure from short-tenure cashiers, the relationship was less than optimal for the aforementioned reasons. Three possible explanations for these results are offered.

First, the number of significant items found was low. While most biographical studies reviewed found between three and five significant items, only two were found with this study. This resulted in a restricted range for the composite score predictor (-1 to +2). Additional significant items would have expanded the range, possibly resulting in a higher correlation, lower number of false negatives, and lower selection ratio.
Second, the effect that the corporation's existing hiring practices had on this study was unknown. Their selection program for cashiers consisted of a traditional interview, Reid Honesty test, and polygraph test. These tests were used in a multiple-hurdle fashion, with a resulting selection ratio of approximately 1/36. All three tests have questionable validity as selection devices, and no validation studies were performed.

Third, some potentially significant items were not available for analysis. Items like distance to work, regular customer of the store, friend/relative working for the corporation, etc., might have been significant with this sample if available for analysis. Some of these items were found to be significant in other studies.

Overall, results of this study are favorable, although not conclusive enough to recommend for use in actual cashier selection at this time. However, continued research with cashier turnover does appear to be warranted. Consequently, the following recommendations will be made to the corporation.

First, institute a biographical supplement to the current application blank. This would allow items potentially significant but not presently available to be captured. Additionally, various modifications to the format of the current application blank would be suggested to enhance data collection.
Second, move to a predictive research format. Have all new applicants fill out the biographical supplement in addition to the normal application blank, but perform no scoring or interpretation. In approximately one year, perform another validation study including supplement items. If more predictive results are found, then implementation in actual cashier selection could be considered at that time.

Finally, explore other possible alternatives to current testing practices. Realistic job previews are easy to develop and could potentially help reduce turnover by lowering expectations. Structured interviewing is an established method with good applicability to the retail environment. Both methods could be potentially viable cashier selection devices.

In terms of turnover research, findings of this study, while not as strong as desired, have shown some positive outcomes. A higher number of previous jobs was associated with higher tenure, fewer jobs with lower tenure. Conceivably, more previous work experience could have lowered expectations. A status preference of part-time or none was associated with higher tenure, full-time with lower tenure. Part-time cashiers may not have tired of the convenience store environment as quickly as full-time cashiers, possibly leading to higher commitment. Cashiers
with no full-time or part-time preference might have been in a situation where they needed to secure immediate employment, possibly also leading to higher commitment (at least in the short run).

Finally, implications for future research warrant discussion. Development of tests directly measuring retail commitment and expectations would be a major advance in connecting turnover theory with empirical methodology. These tests could ultimately prove to be highly predictive of work behaviors like turnover. In terms of biographical information, the wave of the future appears to be development of subgroup classifications through clustering of biographical responses. Research, both individual studies and meta-analytic reviews, is needed to evaluate the predictive ability of subgroup membership as compared to that of individual biographical items. Thus, much work on retail turnover remains to be done.
APPENDIX A

METHODS OF CALCULATING TURNOVER
**Figure 5. Price (1977) Methods of Calculating Turnover.**

Average length of service: sum of service for all employees divided by the number of employees

Accession rate: number of new employees added for a specified period divided by the average number of employees for the same period

Separation rate: number of employees leaving for a specified period divided by the average number of employees for the same period

Stability rate: number of employees remaining after a specified period divided by the number of employees present at the beginning of the period

Instability rate: number of employees leaving after a specified period divided by the number of employees present at the beginning of the period

Survival rate: number of new members who remain after a specified period divided by the number of new members present at the beginning of the period

Wastage rate: number of new members who leave after a specified period divided by the number of new members present at the beginning of the period
APPENDIX B

ILLUSTRATION OF METHOD FOR SUBDIVIDING
HIGH AND LOW CRITERION GROUPS
Figure 6. Method for Subdividing High and Low Criterion Groups.

Initial Sample (432)

- Long-Tenure (227)
  - Weighting Group (151)
  - Holdout Group (76)
- Short-Tenure (205)
  - Weighting Group (137)
  - Holdout Group (68)

Weighting Sample = 151 + 137 = 288
Holdout Sample = 76 + 68 = 144
APPENDIX C

BIOGRAPHICAL INFORMATION ITEMS USED IN THE STUDY
AND ASSOCIATED RESPONSE CATEGORIES
**Figure 7.** Biographical Items Used in the Study.

1. Live in same city as store
   - no
   - yes

2. Employed when applied
   - no
   - yes

3. Salary difference ($/per hour)
   - $\leq -2.00$
   - $-.51 \text{ to } -1.99$
   - $-.50 \text{ to } 0$
   - $+.01 \text{ to } +.49$
   - $\geq +.50$
   - variable salary/not reported

4. Tenure on last job (months)
   - 1 to 2
   - 3 to 5
   - 6 to 9
   - 10 to 19
   - $\geq 20$

5. Type of last job
   - general retail
   - general labor non-retail
   - specific other (health care, military, etc.)

6. Reason for leaving last job
   - job ended
   - more hours/$
   - moved/family reasons
   - other/not reported
   - school

7. Management capacity in last job
   - no
   - yes

8. Number of previous jobs listed
   - 0-2
   - 3-4
   - $\geq 5$
Figure 7—Continued

9. Average previous tenure (months)
   1 to 5
   6 to 10
   11 to 19
   20 to 29
   ≥ 30

10. Direct cashier experience
    no
    yes

11. Served in armed forces
    no
    yes

12. Highest grade completed
    not a high school graduate
    high school graduate/GED
    college/trade school 1-2 years
    college/trade school ≥ 3

13. Currently attending school
    no
    yes

14. Current overall health
    fair/good
    superior

15. Status preference
    full-time
    part-time or none

16. Shift preference
    7 AM to 3 PM
    3 PM to 11 PM
    11 PM to 7 AM
    multiple/none

17. Prior convictions during last 7 years
    no
    yes

18. Method of application
    walk-in/saw sign
    newspaper advertisement
    agency
    referral
APPENDIX D

DATA COLLECTION FORM
Figure 8. Data Collection Form.

<table>
<thead>
<tr>
<th>File #</th>
<th>Record #</th>
<th>Status: TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex: M F</td>
<td>Race Code: 1 2 3 4 5</td>
<td>Tenure (days):</td>
</tr>
<tr>
<td>Classification: LT ST</td>
<td>Group: W H</td>
<td>Composite Score:</td>
</tr>
</tbody>
</table>

1. Live in same city as store: Y N
2. Employed when applied: Y N
3. Salary Difference ($/hr): 1 [-2.00] 2 [-0.51 to -1.99] 3 [-0.50 to 0] 4 [+0.01 to +0.49] 5 [≥+0.50] 6 [variable salary/NR]
4. Tenure on last job (months): 1 2 3 4 5 6
   Actual tenure: 1-2 3-5 6-9 10-19 ≥20 N/A
5. Area of last job: 1-general retail 2-general labor non-retail 3-specific other (e.g. military) 4-N/A
6. Reason for leaving: ended more hours mov/fam all other/NR school
   1 2 3 4 5
7. Management capacity in last job: Y N
8. Number of previous jobs: 1 [0-2] 2 [3-4] 3 [5 or more]
9. Avg previous tenure (months): 1 2 3 4 5 6
   Actual tenure: 1-5 6-10 11-19 20-29 ≥30 N/A
10. Direct cashier experience: Y N
11. Served in armed forces: 1-no 2-hon disch 3-dis disch
12. Education: 1<hs grad 2 hs grad/GED 3 coll/tt 4 <=3
   1 2 3 4
13. Currently attending school: Y N
15. Full-time or part-time: 1-FT 2-PT or no preference
   1 2 3 4
17. Prior convictions: Y N
18. Method of application: walk-in newspaper ad agency referral
   1 2 3 4

Note. NR=No Response. N/A=Not Applicable.
APPENDIX E

WEIGHTING SAMPLE RESPONSE FREQUENCIES FOR NONSIGNIFICANT BIOGRAPHICAL ITEMS
Figure 9--Weighting Sample Response Frequencies for Nonsignificant Biographical Items

<table>
<thead>
<tr>
<th>Item</th>
<th>No. ST Cashiers</th>
<th>No. LT Cashiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Live in same city as store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>49</td>
<td>48</td>
</tr>
<tr>
<td>yes</td>
<td>83</td>
<td>93</td>
</tr>
<tr>
<td>(2) Employed when applied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>99</td>
<td>110</td>
</tr>
<tr>
<td>yes</td>
<td>35</td>
<td>39</td>
</tr>
<tr>
<td>(3) Salary difference ($/hour)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-2.00)</td>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>(-.51 \text{ to } -1.99)</td>
<td>18</td>
<td>28</td>
</tr>
<tr>
<td>(-.50 \text{ to } 0)</td>
<td>32</td>
<td>37</td>
</tr>
<tr>
<td>(+.01 \text{ to } .49)</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>(+.50)</td>
<td>29</td>
<td>23</td>
</tr>
<tr>
<td>variable/NR</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>(4) Tenure on last job (months)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 2</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>3 to 5</td>
<td>27</td>
<td>36</td>
</tr>
<tr>
<td>6 to 9</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>10 to 19</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>(\geq 20)</td>
<td>38</td>
<td>50</td>
</tr>
<tr>
<td>(5) Type of last job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>general retail</td>
<td>80</td>
<td>72</td>
</tr>
<tr>
<td>nonretail</td>
<td>48</td>
<td>65</td>
</tr>
<tr>
<td>specific other</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>(6) Reason for leaving last job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>job ended</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>more hours/$</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>moved/family reasons</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>other/NR</td>
<td>56</td>
<td>58</td>
</tr>
<tr>
<td>school</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>(7) Management capacity last job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>109</td>
<td>120</td>
</tr>
<tr>
<td>yes</td>
<td>27</td>
<td>30</td>
</tr>
</tbody>
</table>
Figure 9--Continued

(9) Average previous tenure (months)  
- 1 to 5: 19 / 10  
- 6 to 10: 31 / 34  
- 11 to 19: 31 / 40  
- 20 to 29: 18 / 28  
- ≥ 30: 36 / 34

(10) Direct cashier experience  
- no: 23 / 36  
- yes: 113 / 113

(11) Served in armed forces  
- no: 116 / 122  
- yes: 20 / 28

(12) Highest grade completed  
- not HS grad: 11 / 17  
- HS grad/GED: 62 / 62  
- college/tt 1-2: 37 / 47  
- college/tt ≥ 3: 25 / 24

(13) Currently attending school  
- no: 113 / 120  
- yes: 22 / 30

(14) Current overall health  
- fair/good: 41 / 56  
- superior: 93 / 93

(16) Shift preference  
- 7 AM to 3 PM: 23 / 36  
- 3 PM to 11 PM: 29 / 32  
- 11 PM to 7 AM: 23 / 25  
- multiple/none: 59 / 57

(17) Prior convictions  
- no: 123 / 137  
- yes: 11 / 13

(18) Method of application  
- walk-in/sign: 42 / 40  
- referral: 24 / 23  
- newspaper: 9 / 17  
- shoppers guide: 10 / 10  
- other: 8 / 9
REFERENCES


