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An Interrogation of Turnover Antecedents at an
Automobile Manufacturer in Northwest Ohio

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Abstract

The manufacturing industry is one of the largest industries in Northwest Ohio. With the growing influence of Lean/Six Sigma manufacturing systems, the industry is becoming much more automated and team-oriented. The manufacturing facility in question is a Tier 1 and 2 automotive manufacturer that is a part of one of the largest global companies in this sector and uses many Lean and Six Sigma processes across three shifts. In recent years, this company has seen a trend of high turnover and it is a constant point of contention for both supervisors and Human Resources. The current study aimed to determine the most significant correlations and predictors of turnover using the Job Descriptive Index, training investment, and other scales to quantitatively aid the management team in creating interventions to reduce turnover.

Keywords: manufacturing industry, turnover, Job Descriptive Index, Job in General, Stress in General, Trust in Management, production, job satisfaction

An Interrogation of Turnover Antecedents at an
Automotive Manufacturing Facility in Northwest Ohio

“Auto-line Northwest Ohio (NWO)” (name changed to protect the client) is a manufacturing organization in Northwest Ohio that machines and assembles different driveline components and systems. The Autoline division exists under the umbrella company of “All-Line Plc”. The umbrella company is headquartered in England, and has been in business for over 250 years in various industries, beginning from a tiny iron works in Wales to become the largest in the nation in the 18th century. Hailed as the “Master of Industrial Evolution”, All-Line has been able to evolve from a tiny iron works in Great Britain into a technological world leader. Currently, All-Line is made up of 3 divisions and employs over 55,000 people in 30 countries. Heavily dependent on Lean Six Sigma practices since the process’s inception, All-Line is a streamlined corporation with success in its past and in its future.

Bought in 2005 from a Japanese manufacturing giant, the Northwest Ohio plant has also evolved from modest beginnings as a 40-person, 2-line plant into a bustling business with 10 machining and assembly lines and over 200 regular employees. This particular plant is a tier one and a tier two supplier that manufactures clutches, trans-axel components, and other driveline systems for Ford, General Motors, Nissan, Toyota, Fiat-Chrysler, American Axle Manufacturing, and for other Autoline plants in the Americas. Being the closest Autoline facility to Detroit, Autoline NWO is only going to expand in both material, land, and manpower in the future. Autoline NWO uses a three-shift system that runs 24 hours a day, 7 days a week on many occasions. Because of its location in Northwest Ohio, there is lower diversity in comparison to other Autoline plants: 10% of employees are Hispanic-American, 8% of employees are African-American, and 1% are Asian-American. On the management team, there is only one female out

of twelve management positions, and one ethnic minority (Hispanic-American) of those twelve as well.

Although its continuous success has cemented its place at the forefront of automotive technology and manufacturing, turnover has plagued this facility and has shown to be a consistent area of opportunity. In 2016, turnover rates for temporary employees reached over 100% in certain months, with turnover rates for regular employees soaring up to 40%. Much of this turnover is voluntary; employees either stop showing up to work or quit with short notice. Because Lean Manufacturing is so dependent on teamwork and the reality exists that six-man lines cannot be run with five people, this turnover is a constant bother to both production supervisors and human resources. Under the current system, each employee takes about two and a half weeks to train, and lines are constantly falling behind because they simply do not have the manpower to continue.

The main purpose of this study is to identify statistically significant antecedents of turnover. Management is unsure if it is the job itself, pay, promotion opportunities, the stress associated with production, training, satisfaction with supervision, or trust in management driving the high turnover rate. The current study interrogated these possible variables to see which variable should be the priority to be addressed by the management team.

Turnover & Turnover Intention

Turnover is one of the costliest issues of organizations due to the extensive budget of advertising, recruitment, selection, and hiring (Yin-Fah, Foon, Chee-Leong, & Osman, 2010). When an employee leaves, organizations also lose existing knowledge and potential trainers, while the employees that remain with the organization experience increased pressure to fill the void that the exiting employer left, therefore decreasing job satisfaction in turn (Yin-Fah et al.,

2010). With a such a high volume of turnover that Autoline experiences, especially in contract employees, Autoline is unable to complete an exit interview for every separation. Additionally, temporary employees cannot contractually complete a Positive Climate Index (PCI) to determine the employees' concerns that could be related to turnover and because the participant list generated for the PCI is random, some full-time Autoline employees may never have the chance to participate. As such, the interrogate chose to use the construct of "turnover intentions" instead of taking previously existing information into the data analysis.

Turnover intention is the variable that describes whether an employee intends to leave the organization that he or she is currently employed with, and is the strongest predictor for turnover and are often the direct precursor of turnover (Allen, Weeks, & Moffitt, 2005). It is also described as the last step in a sequence of withdrawal behaviors (Mobley, Homer, & Hollingsworth, 1978). A meta-analysis performed by Griffeth, Hom, & Gaertner (2008) also reinforces this idea and determine that intent to quit has a strong relationship with turnover ($p = .45$). Other meta-analyses also offer evidence to the strong predictive relationship of turnover intent with actual turnover (Cotton & Tuttle, 1986; Tett & Meyer, 1993). Additionally, Turnover intention was used in this interrogation of turnover because the goal of the study is to determine factors that can decrease employees' urge to leave the organization and to create retention plans to keep them with Autoline NWO. Because the intent to turnover is the emotional step right before the physical act of turning over and right after other withdrawal behaviors that could affect the business, it is imperative to interrogate in the current study, which aims to prevent such intentions.

Autoline NWO specifically uses many costly services in the onboarding process: the costs of subscribing to online recruitment, drug screens, physicals, and audiograms at a local

health provider for each new hire, and a thorough background check through an accredited agency are just some of the financial resources that go towards all new hires. In regards to temporary labor, a percentage of each labor hour for every temporary employee is charged to Autoline as a mark-up to go towards the temporary agency's recruitment fee. Autoline's workforce is heavily made up of temporary employees with the intent to hire these workers as full-Autoline employees after 90 days. However, most temporary employees do not even make it past their 3-week training period; in 2016, 103 temporary employees turned over before reaching the end of their training period. Even without the mark-up, \$115,346 was paid to these employees in wages. Direct hires tend to stay with the company longer than temporary employees, but 7 directly-hired Autoline employees turned over within two weeks of orientation. Another 10 Autoline employees did not reach the end of their 90-day probationary period. As budgets begin to shrink along with inventory in the lean environment, this poses a great concern for the site's budget. Reduction of the intent to turnover in these low-tenured employees and in the senior employees that will train and embed the culture in new employees is imperative to a lean budget and higher productivity and satisfaction.

Job in General

“Job in General” (JIG) is a term developed by Ironson et al., (1989) to measure overall job satisfaction under the umbrella of the Job Descriptive Index, which is a five-faceted measure of job satisfaction. Job satisfaction is included in nearly every interrogation of turnover because of the basic idea that an employee tends to stay with a company that satisfies them. Griffeth et al. (2000) found job satisfaction to be highly correlated with turnover intentions ($p = -.19$), while Rubenstein, Eberly, Lee, and Mitchell (2015) found in their meta-analysis that job satisfaction was highly correlated with turnover ($p = -.26$), pointing to the idea that employees with low job

satisfaction are also likely to quit without having an alternative career lined up. Hausknecht, Rodda, and Howard (2009) determined in their study of job retention that 51% (the most frequent) of respondents indicated that job satisfaction was the reason why they stay with a company, indicating that job satisfaction is key in both retention and in turnover and thus is one of the most pervasive underlying constructs in the workplace.

Stress, Work Itself, and Coworkers

Turnover can be a consistent issue in the manufacturing workplace with the rise of Lean Manufacturing because of the impact it can have on an employee's job satisfaction in the realms of stress and view of their coworkers. Lean is a series of sequential actions and conditioning that allows a way to "do more" with less human effort, equipment, time, and space while providing high quality products, at least in theory (Womack & Jones, 2003). This system has many positive outcomes for the companies that implement it, such as higher quality goods manufactured at a lower cost, but it can be very high pressure and exploitative for its production employees (Hines, Holweg, & Rich, 2004). Yet, very little research was done about the human element when it came into popularity, and employee satisfaction is not included in its definition of "success" (Wickramasinghe & Wickramasinghe, 2008). Lean stresses higher job involvement and more responsibilities for the average employee, and an emphasis on teamwork, which causes a great reliance on team members and decreases tolerance for loafing (Brown & Mitchell, 1991). When an employee turns over, there is a stronger impact on lean environments than in others; because of the high level of interdependence and team-based production, employees must over-compensate for the missing person and therefore experience much more stress and distaste for the missing coworker due to the inherently high demands and the now inadequate level of manpower. Increases in stress can be dangerous for a company's turnover, and it has been well-

documented to be correlated with turnover (Fong & Mahfar, 2013; Griffeth et al., 2000). As such, it is important to interrogate how one views the work they are doing, the people in their team, and their stress level when looking for turnover antecedents in a lean environment.

Pay and Reward

Satisfaction with pay is one of the most studied factors in relationship to turnover. New employees (0-1 years of tenure) at Autoline NWO are paid anywhere from \$11.95 to \$12.52 depending on their job, with increases each year based on performance. They receive health, dental, and vision benefits along with optional life insurance, a 401k match, paid time off, and two weeks of vacation, all of which are available to use nearly immediately upon hire. Other rewards are given based on merit. Throughout the year, employees are also given the opportunity to participate in various engagement activities that involve rewards, such as the annual Christmas party (where they can also receive expensive prizes like large televisions, expensive cameras, Apple watches, etc.), family day, and other events. Griffeth et al. determined through meta-analysis that pay satisfaction ($p = -.12$) and reward contingency ($p = -.20$) do have a significant effect on turnover. Turning over from an organization is not an easy decision, and can be easily affected by the perception of loss (Allen et al., 2005). If an employee perceives pay and benefits as being good (and therefore are satisfied), then their perception of other employee opportunities and intent to quit may be less.

Promotion Opportunities

Satisfaction with promotion opportunities (which is linked to pay) also has an inherent relationship with perceived organizational support and in extension, turnover. Employees who receive less pay increases than they deem fair based on performance or who do not receive predicted promotions based on training, performance, and tenure do not expect to be fairly

treated as their tenure grows with the organization and are thus more likely to turn over due to perception of very little organizational support (Moorman, Blakely, & Niehoff, 1998). High performers and those with long tenure, in particular, are less likely to quit unless they do not receive these advancements. In that case, they will continue to withdraw until they eventually turn over (Griffeth et al., 2000). This is dangerous, as much of the process knowledge and training competency resides in these employees and can cause a snowballing effect of turnover in new employees due to training deficits.

Training Investment

Perceived training investment is another important antecedent of turnover that was considered in the current study. When there is a trend finding a disproportionate number of leaves with less than 6 months of tenure, it may indicate a need for a re-designed training and orientation process (Laureani & Antony, 2010). Employees that receive sub-par training often see other, more tenured employees performing at a high level while refusing to share information with the trainee, which in turn affects the socialization process. Chang, Chi, & Chuang (2010) determine in their interrogations of training investment that such perception of training investment had a significant and negative relationship with turnover intentions ($p = -.19$). This is because the employee perceives that the organization is committed to helping them to meet not only their job requirements, but also to meet the needs for advancement into new positions. Therefore, the employee feels like they are a part of the organization and have the ability to move up and learn different skills (Chang et al., 2010). When this perception is not present, then the employee is more likely to turn over.

Trust in Management and Supervision

Trust in management and satisfaction with supervision go hand-in-hand to influence turnover of employees. Various meta-analyses determined the significance between supervisor satisfaction and turnover (Cotton & Tuttle, 1986; Griffeth et al., 2008). In a lean environment that emphasizes teamwork and interdependence, it is important for the employee to not only trust the person next him/her, but also in those leading him/her whether it be front-line or senior management. Trust, in this context, is defined as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer, Davis, & Schoorman, 1995). In other words, employees trust their managers when they act in their employee’s interest, not just in the interest of suppliers and clients. An employee must perceive that their management team respects them and is making the right decisions not only for the company, but for them as well.

On a front-line level, it is important for supervisors to establish leadership behaviors. One important aspect of good supervision is high leader-member exchange, which is the quality of the relationship between an individual and his/her supervisor (Graen, 1976). Supervisors that establish such a relationship with all of his/her subordinates equally are able to influence the turnover process by providing (or not providing) encouragement, kindness, and useful feedback (Han & Jekel, 2011). Leaders can also influence the stress levels of employees, which in turn can contribute to turnover due to role overload (Kelloway & Barling, 2010; Kelloway, Sivanathan, Francis, & Barling, 2005). On the other side of the spectrum, House (1981) found that supportive supervision may moderate the effects of stress on an employee’s satisfaction.

Neuroticism

In addition to work factors, personality factors are shown to have a relationship with turnover and the intent to turnover (Cotton & Tuttle, 1986; Griffeth et al., 2000; Rubenstein et al., 2015; Zimmerman, 2008). The strongest correlation according to Zimmerman, neuroticism or emotional stability (2008). This variable was interrogated in the current study because despite having one of the strongest correlations with turnover intentions, emotional stability actually moderates the turnover intentions and the actual act of turning over; employees with low emotional stability are less likely to quit after reporting their intent than their peers (Griffeth et al., 2000). As such, all participants were screened for emotional stability.

Method

Participants and Procedure

Participants were taken from a pool of hourly employees on all three shifts, in machining, assembly, and material handling areas, including temporary employees. Each participant was given a consent form prior to filling out the paper-and-pencil questionnaire and signed the form once their questions were answered to their satisfaction. The consent form and the introductory paragraph to the questionnaire informed the participant that they are voluntarily giving their consent to participate in the study and to the researcher's usage of their information in the data analysis. The participants were assured that their information was to be kept confidential, that they may skip any question that may make them feel uncomfortable, and that they may exit the questionnaire at any time without penalty. The participants were given a questionnaire with a random number assigned at the top (for data entry purposes) and the questionnaires and consent forms were kept in separate folders.

75 employees participated in the study, but two questionnaires were removed from consideration: one at the request of the participant, and another was returned blank.

Measures

Demographics. Participants were asked to indicate their gender, their shift and preferred shift, age, pay rate, area, value stream, status as team leader, status as advanced or senior operator, and tenure.

Job Descriptive Index. The Job Descriptive Index was used to measure facets of job satisfaction, including satisfaction with pay, coworkers, the work itself, and supervision. The participant's satisfaction of their job in general was also measured with the JDI. Participants were presented with multiple statements about their job (or coworkers and supervisors) and asked to mark "yes" if the statement described their job (or coworkers and supervisors), "no" if it did not, or "?" if unsure. Higher scores indicated higher levels of satisfaction.

Stress in General. Participants' stress while at work was measured using an add-on to the JDI, the Stress in General (SIG) scale, which featured the same ranking system. Higher scores indicated higher stress.

Trust in Management. Participants' trust in senior management was measured using another add-on to the JDI, the Trust in Management (TIM) scale, which featured the same ranking system. Higher scores indicated more trust in management.

Training Investment. To provide a measure of training investment, Chang, Chi, & Chuang's scale (2010) of perceived organizational training investment was administered. This scale contained 4 items on a 7-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree". Higher scores indicated a stronger perception of training investment.

Emotional Stability. The Goldberg International Personality Inventory Project was used to administer a scale that contained 10 items which measured emotional stability on a 5-point Likert scale ranging from "Very Inaccurate" to "Very Accurate". Participants were asked to mark how

accurate the descriptions described themselves using the Likert scale. Higher scores indicated more emotional stability, which lower scores indicated more neuroticism.

Turnover Intentions. Participants were directed to indicate how they feel about the organization on a 3-item scale based on Mobley, Horner, and Hollingsworth's theory (1978) as used in Yin-Fah et al. (2010) using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree". Higher scores indicated more intentions to quit.

Results

Table 1. Coefficients

<i>Variables</i>	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
Age	0.01	0.03	0.04	0.33	0.74
Tenure (Months)	-0.02	0.02	-0.23	-1.36	0.18
Hourly Wage	0.27	0.46	0.16	0.58	0.57
Leadership	1.58	1.97	0.15	0.80	0.43
Advanced or Senior Operators	-3.58	1.81	-0.43	-1.98	0.06
Gender	0.34	0.90	0.04	0.38	0.71
Work	-0.05	0.10	-0.07	-0.54	0.59
Pay Satisfaction	-0.08	0.09	-0.12	-0.85	0.40
Promotion Opportunities	-0.06	0.11	-0.09	-0.53	0.60
Supervisor	-0.22	0.09	-0.35*	-2.33	0.03
Coworkers	0.07	0.09	0.09	0.77	0.44
Job in General	-0.27	0.10	-0.47*	-2.65	0.01
Trust in Management	-0.03	0.06	-0.07	-0.59	0.56
Stress in General	-0.03	0.08	-0.05	-0.36	0.72
Training Investment	0.11	0.11	0.14	1.02	0.32

Notes: a. Dependent Variable: Turnover Intention. *Correlations are significant at $p \leq 0.05$.

To test the hypotheses, a multiple regression was run on the data after Likert scores were summarized. The coefficient table in the output (using turnover intention as the dependent variable) only revealed two statistically significant predictors of turnover from the variables used in the study: Satisfaction with Supervision, $\beta = -0.22$, $t(57) = -2.30$, $p < .05$ and Job in General, $\beta = -0.26$, $t(57) = 0.014$, $p < .05$.

In addition to the multiple regression, the data was also analyzed using a bivariate correlation to determine any significant correlations between the sets of data. Out of the fifteen independent variables collected in this study, eleven were significantly correlated with turnover intentions. In order of statistical significance and strength, the correlations were: satisfaction with supervisors, $r(71) = -.62, p < .01$; satisfaction with the job in general, $r(71) = -.61, p < .01$; satisfaction with promotion opportunities, $r(71) = -.58, p < .01$; satisfaction with work on the job, $r(71) = -.56, p < .01$; satisfaction with pay, $r(71) = -.54, p < .01$; trust in management, $r(71) = -.44, p < .01$; stress in general, $r(71) = .38, p < .01$; training investment, $r(71) = -.40, p < .01$; hourly wage, $r(71) = -.33, p < .01$; and tenure, $r(71) = -.28, p < .05$. While these correlations are significant with turnover intentions, they were not significant when placed into the regression

Table 2. Means and standard deviations of supervisor satisfaction across shifts and areas

<i>Current Shift</i>	<i>Area</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>
1st	Assembly	10.31	16.00	6.85
	Machining	4.63	8.00	4.44
	Materials			
	Total	8.42	24.00	6.64
2nd	Assembly	14.71	7.00	6.60
	Machining	10.29	14.00	6.21
	Materials	18.00	1.00	
	Total	12.05	22.00	6.51
3rd	Assembly	8.47	15.00	5.41
	Machining	9.75	8.00	6.76
	Materials	1.00	1.00	
	Total	8.24	25.00	6.02
Total	Assembly	10.39	38	6.50
	Machining	8.63	30.00	6.26
	Materials	9.50	2.00	12.02
	Total	9.48	71.00	6.53

model, with the exception of satisfaction with supervisors and satisfaction with the job in

general, knowledge of these correlations is essential in the creation of a retention plan.

With retention plans and the goal of decreasing turnover in mind, it is beneficial to compare shifts based on a significant predictor of turnover that is shift-specific: turnover. Therefore, means were compared on the dependent variable “Satisfaction with Supervisor”. On 1st and 2nd shift, only one material handler on each shift responded with 1st shift reporting the highest-average average of 18 ($SD = 0$) and 2nd shift reporting the lowest-possible average of 1 ($SD = 0$). Further studies must be involved to determine the cause of the polar opposite reports. Besides the material handling area, the lowest supervisor satisfaction score was 1st shift machining ($M = 4.63, SD = 4.44$) while the highest supervisor satisfaction score was 2nd shift assembly ($M = 10.29, SD = 6.60$). While the low satisfaction on 1st shift could be explained by the fact that the most tenured employees work on 1st shift ($M = 69.46, SD = 51.94$) compared to 2nd shift ($M = 22.32, SD = 33.92$) and 3rd shift ($M = 32.44, SD = 33.62$), there is no significant correlation between tenure and supervisor satisfaction, $r(71) = 0.01, p = 0.91$. As discussed previously in Kelloway & Barling (2010), poor supervision can have an effect on stress in a lean environment, and that is reinforced with the correlation between the two, $r(71) = -.472, p < 0.01$. A multiple regression also shows that supervisor satisfaction can predict stress, $\beta = -.456, t(57) = -4.413, p < .01$.

When breaking down participants’ responses to individual supervisor satisfaction items, it was determined that nearly half of the participants reported that their supervisor does not praise good work (45.2%), their supervisor is not influential (52.1%), and their supervisor is not tactful (43.8%). However, very few employees reported that their supervisor is annoying (23.3%), and about half note that their supervisor knows the job well (50.7%).

Table 3. Correlations Between Tested Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Shift		-0.25	0.34**	-0.25	-0.10	0.03	-0.03	-0.01	-0.17	-0.07	-0.19	0.03	-0.01	0.09
2. Age	-0.25		0.37**	0.25	0.15	-0.29*	-0.02	-0.02	0.16	-0.09	0.17	0.08	-0.02	-0.04
3. Tenure	0.34**	0.37**		0.72**	0.06	0.04	-0.12	0.01	0.08	-0.03	-0.04	0.09	-0.13	-0.28*
4. Wage	-0.25	0.25	0.72**		0.00	0.26*	0.05	-0.04	-0.14	0.07	-0.10	0.11	-0.01	-0.33**
5. Work	-0.10	0.15	0.06	0.00		0.35**	0.56**	0.62**	0.25*	0.64**	0.54**	-0.36**	0.49**	-0.56**
6. Pay	0.03	-.288*	0.04	.26*	0.35**		0.54**	0.47**	0.04	0.45**	0.27*	-0.25*	0.35**	-0.54**
7. Promotion	-0.03	-0.02	-0.12	0.05	0.56**	0.54**		0.56**	0.20	0.65**	0.60**	-0.48**	0.66**	-0.58**
8. Supervisor	-0.01	-0.02	0.01	-0.04	0.62**	0.47**	0.56**		0.42**	0.59**	0.56**	-0.47**	0.49**	-0.62**
9. Coworkers	-0.17	0.16	0.08	-0.14	0.25*	0.04	0.20	0.42**		0.22	0.39**	-0.25*	0.28*	-0.21
10. Job in General	-0.07	-0.09	-0.03	0.07	0.64**	0.45**	0.65**	0.59**	0.22		0.52**	-0.60**	0.60**	-0.61**
11. Trust in Management	-0.19	0.17	-0.04	-0.10	0.54**	0.27*	0.60**	0.56**	0.39**	0.52**		-0.43**	0.60**	-0.44**
12. Stress in General	0.03	0.08	0.09	0.11	0.36**	-0.25*	-.48**	-0.47**	-0.25*	-0.60**	-0.43**		-0.51**	0.38**
13. Training Investment	-0.01	-0.02	-0.13	-0.01	0.49**	0.35**	0.66**	0.49**	0.28*	0.60**	0.60**	-0.51**		-0.40**
14. Turnover Intentions	0.09	-0.04	-0.28*	0.33**	0.56**	0.54**	-.58**	-0.62**	-0.21	-0.61**	-0.44**	0.38**	-0.40**	

$N = 73$; Tenure measured in months; Work, Pay, Promotion, Supervisor, Coworkers, and Job in General are facets of satisfaction; * $p \leq 0.05$, and ** $p \leq 0.01$

When it comes to participants' responses to job satisfaction in general, there was only one negatively perceived item of job satisfaction: over half (57.5%) of participants reported that their job was not excellent. However, nearly three-quarters of the participants (74%) reported that the job is good and over half (61.6%) of participants saw their job as "better than most".

The interrogator also generated frequency tables for each hypothesized variable. Interestingly, 31.9% of participants reported no satisfaction with pay (.00) with 78.3% of participants reporting below-average satisfaction with pay (9.00 and below), but pay is less correlated with turnover intentions than the significant predictors, job in general and satisfaction with supervision, for which only 6.8% and 16.7%, respectively, of participants reported no satisfaction and 52.8% of participants reporting below-average satisfaction with supervision (9.00 and below) and 31% reporting below-average satisfaction with their job in general (12.00 and below). Similarly, only 7% of participants reported no satisfaction with the job in general (the other significant predictor and second-strongest correlate with turnover intentions) and 31% reporting below-average satisfaction with job in general (12.00 and below).

The data in the frequency table also showed that 11% of participants intend to quit, and nearly half (46.6%) of participants displayed above-average (8.00 and above) turnover intentions. 16.4% of participants showed no intentions of quitting.

Discussion and Possible Interventions

Although only two variables analyzed in the current study were failed to be rejected as predictors of turnover at Autoline, Inc., the correlations and other statistics have proven to be extremely valuable in the big picture of Autoline's turnover. The goal of the current study was to determine the most statistical significant antecedents of turnover in order to prioritize job factors when determining retention interventions. It is clear that global job satisfaction (job in general) is

the first priority of management, followed closely by interventions related to supervision to increase satisfaction in that facet. After those are addressed, management should focus on, in order of significance, developing more promotion opportunities, satisfaction with work on the job, satisfaction with pay, trust in management, stress on the job, and investing in training and employee development. These interventions, however, may not even be needed after successful interventions in job satisfaction and supervisor satisfaction because the latter are inherently connected to the others as will be discussed.

Job satisfaction, although heavily studied, is deeply reliant on the individual organization's culture and environment. Job satisfaction has been shown to be a moderator between pay satisfaction and turnover, and so increasing this satisfaction at Autoline could also increase satisfaction with pay, especially coupled with the recent substantial pay increase and re-organized pay structure (Cotton & Tuttle, 1986; Mobley, 1982; Hayati, Charkhabi, Kalantari, De Paola, 2015). Although the participants rated their satisfaction with the job in general above the median possible score ($M = 14.07$, $SD = 7.17$), many showed with their scores that the job is not "excellent". A goal for management in the new year can be to make the job "excellent" in the employees' perception. In a global climate such as Autoline's, it may be difficult to engage in too many events or developments to increase satisfaction because of global red tape and shrinking budgets to accommodate the company's growth elsewhere. However, there may be some low-cost interventions to help increase the overall job in general for employees. Beitinger (2012) notes that although job satisfaction is internal, it can be influenced by objective circumstances; in a lean environment, Beitinger suggests that to increase job satisfaction, managers must first get to know their employees. He uses the example of Siemens Guadalajara, a company that is as global as Autoline, where managers reviewed what "moved" employees, their

interests, and their perception of social benefits and activities to find company events that would be tailored to the employees. This is an off-shoot of Vroom's Expectancy Theory (1964) with the main goal being satisfaction instead of motivation. Using this model, Autoline NWO can also conduct plant-wide surveys about employees' interests and what they find to be valuable. For example, the company picnic was always chosen by management and human resources. This year, employees could be involved in the decision-making process when deciding what event should be held (whether it be on-site or at another venue). By encouraging employee voice, management can expect not only an increase in overall satisfaction, but also in trust in management.

Wall and Clegg (1981) implemented an intervention based on Hackman and Oldham's (1980) job characteristics model in a confectionary company in an attempt to increase satisfaction and decrease turnover. They increased task identity by removing barriers in the production area to create process visibility and increased autonomy by allowing the production group to decide on task allocation, break times, and speed. The interrogators found that there were significant increases to long-term intrinsic motivation, job satisfaction, and performance. In the application of a similar study at Autoline, job involvement for production associates can be increased by allowing them to engage in a project in improving material flow and floor-plan logistics with the ultimate goal of increasing task identity. Many value streams are blocked off from one another, and an open floor plan with very little obstacles in between the different assembly and machining lines may create identity. Nobody knows the process better than the associates that engage in the process daily, and they would be able to determine the best setup with the highest visibility. Autonomy can be increased in manner similar to the precedent studies, with operators choosing amongst themselves which tasks will be allocated to each other

and by de-emphasizing speed and production numbers, which would increase naturally with higher autonomy as in Wall and Clegg's (1981) intervention.

The second most significant antecedent and highest correlate with turnover intentions was satisfaction with supervisors. This is not unusual; the supervisor is the individual that has the most visibility with the hourly production associates. An emphasis on improving supervisor satisfaction can have residual effects on the other variables that were determined to be correlated with turnover; perceived supervisor support can increase job satisfaction (Logan & Ganster, 2005; Snell, Yi, & Chak, 2013) and moderate stress (Bono, Foldes, Vinson, & Muros, 2007; Kelloway & Barling, 2010; Kelloway et al., 2005; Pignata & Winefield, 2012; Offermann & Hellmann, 1996), making it a critical factor to improve when considering turnover. The most common negative comment about supervisors made by the participants was that the supervisors "do not praise good work". Case studies such as Omilion-Hodges & Baker's Leadership-Member Exchange Scale development (2017) find similar stories in other organizations. Many managers agreed that if employee do not make efforts to reach out to their supervisor, do not directly present a problem to them, or attempt to get their attention, then the employee "is not the first one on [the] list to get a reward like time or support" and the supervisor "assume[s] that they are fine" (Omilion-Hodges & Baker, 2017). Although supporting supervision and natural leadership-member exchange is based on inherent traits and personality, supervisors still can be trained to give them a fair chance to improve the turnover.

Some interventions require a great deal of leader-member exchange and emphasizes effort on individual supervisor-subordinate relationships. Snell et al. (2013) suggest a few other interventions that are based on individualized consideration, a construct of supervision related to the idea that the employees feel neglected by their supervisor (i.e. "my supervisor does not praise

my good work”) and also significantly correlated with job satisfaction. In this discussion-based intervention, the supervisor should ask each subordinate about what they consider to be the most important aspects of their job and then discuss the response. Afterwards, the supervisor should prompt the subordinate to report any past problems that they were able to solve or prevent without informing or needing intervention from the supervisor. Thirdly, the supervisor should ask the employee to identify and explain any continuous problems or unmet needs that they encounter. Supervisors should listen more than they talk in these conversations to exercise patience and to fully listen to their subordinates’ experiences and perceptions. Managers can also engage in these exercises to encourage more subordinate trust in management. Armstrong and Baron (2005) provide an on-the-job individualized intervention geared towards production supervisors that would address the current study’s concerns. The supervisor should observe and review each subordinate’s work objectively, take notes on the work, and then offer praise with appropriate sincerity while referencing the notes taken. This encourages trust and support while allowing the production to continue.

Paustian-Underdahl et al. (2013) suggest a few other interventions that relate to the improvement of overall supervision quality and are less-involved than Snell et al.’s exercises. First, Autoline can implement a peer-mentoring system between supervisors that scored high in satisfaction (the 2nd shift supervisor) and supervisors that scored low (the 1st shift machining supervisor) to facilitate the transference of supportive behaviors. Secondly, supervisors can be required to attend training and development programs that emphasize supervisor-subordinate communication such as listening, feedback, and conflict supervision to enhance the supervisors’ own self-awareness of these behaviors. Autoline offers some training programs at the Americas headquarters in Michigan, which is only a short drive from this facility. By attending

development programs at the corporate headquarters, the supervisors can be assured a quality training by experienced and educated talent development professionals while avoiding the perception of being “judged” by the rest of the plant. These trainings can be seen by the supervisor as an opportunity for improvement that will be a great point of interest when being considered for promotions. Thirdly, supervisors could go through a 360-degree survey to increase their awareness of their behaviors and encourage the acceptance of feedback. Finally, Autoline can use team-building exercises for supervisors and their subordinates to encourage rapport and support, like an outdoor game in the summer during a short break or a value stream dinner in one of the conference rooms.

Satisfaction with promotion opportunities is the next construct to address on the list of priorities for reducing turnover at Autoline. It can be nearly impossible to predict possible promotion opportunities on a site level in a manufacturing facility; team leader positions are only posted in the event of separation and hourly associates are often not qualified enough for higher-level roles. Autoline offers educational assistance, so there is an opportunity to work towards a potential promotion. Because promotions cannot be guaranteed to every employee, a promotions-related intervention could be communication-based. In performance reviews, supervisors and managers can give each employee a set of realistic goals to achieve to continue developing skills and emphasize that although the goals may be met at the next review, the employee will not be automatically granted a new role. However, the completion of these goals will greatly impact their chances of receiving a promotion if they apply. Failure to complete these goals should be reviewed as the reason why the employee was not chosen for a specific role to decrease the employee’s blame on the organization and turn the locus of control inwards.

Satisfaction with the work on a job is another statistically significant correlation with turnover, and can be addressed on the same plane as training investment to reduce or discourage turnover. In a manufacturing facility where employees are either machinists or assembly operators, the job is almost never going to be “fascinating” or “exciting”. Each employee follows the same set of standard rules every day to produce identical products. To help employees find the job interesting, rewarding, and at least “good,” managers can pull in the perception of training investment in their intervention by encouraging cross-training on different value streams to enable job rotation. Job rotation is a correlate of job satisfaction (Dawal, Taha, & Ismail, 2009; In & Byung, 2016) and aids the production and flexibility of employees in the lean environment (Jeon & Jeong, 2010). In and Byung (2016) found that workers’ boredom was also reduced through job rotation. Inside Autoline, each employee is assigned to a specific team and value stream, where they work every day unless covering another operator’s absence on another value stream. To improve work satisfaction, job satisfaction, and perceived training investment, Autoline can implement a daily or weekly job rotation schedule determined by the Value Stream Manager (VSM). The VSM can also monitor teamwork and perhaps discover which employees work the best with each other. This “ideal team” can be used when production needs soar and parts need to be machined or assembled very productively. By increasing work satisfaction and coworker satisfaction through job rotation, Autoline could retain many high-performers.

Trust in management is key to many different aspects of a business, including satisfaction, turnover, and policy implementation. A manager gains trust when subordinates see that manager as not acting in a way that is harmful to them, that they will act in a beneficial way, will act reliably, and will behave or respond in a “predictable and mutually acceptable manner” (Paliszkiewicz, 2011). Because over half of the participants in the current study marked

management as “change mind often” (60.3%), “unpredictable” (61.6%), and as “not consistent” (52.1%), it can be inferred that the latter half of Paliszkiewicz’ assumptions (2011) of trust are not present at Autoline. Reliable, predictable, and mutually acceptable behaviors can be coached using interventions based on Six’s ideas (2005) of building interpersonal trust.

The idea that can be the most beneficial to trust in management at Autoline NWO is to “be open” and disclose information accurately and timely, be open and direct about task problems, and be open and honest about motives. If managers continuously share information showing their train of thought and reasons why they are changing their mind or treating situations inconsistently, employees may react in a more trusting fashion to these decisions. Not every situation or business problem is the same, and cannot be treated that way. However, when employees do not see transparency during the process and are only exposed to the end result, distrust rises (Paliszkiewicz, 2011). Managers can show their thought process and explain reasoning through their monthly employee communication meetings, or daily when they relay a decision to an employee. When having these conversations, they should also take the subordinate’s negative and positive feedback and task problems into account as well for a two-sided conversation. Six also declares “delegation” as an idea of trust, where managers should delegate tasks and responsibilities and expect success, not failure, and to encourage that success in a meaningful manner (2005). This idea also uses the idea of taking responsibility instead of making excuses for a lack of transparency or for capricious decision-making. Using these ideas in conjunction, managers should document every conversation and decision involving someone on the floor by having the employee in question sign a “conversation keeper,” a book of decisions and changes being made with approving signatures next to the decision. If an employee refuses to sign, the manager reserves the right to make the decision anyway, but must document

every reason why the decision was made and relay that information when the decision takes place. After only a few months, this practice will likely not even be needed anymore because the employees will come to understand and trust that their manager's decisions have them in mind.

Stress while at work in a lean environment can be very common, especially where manpower is very low and production needs increase. Because production cannot be halted in a manufacturing setting to implement socio-technical stress interventions, it is likely that a psychosocial intervention to stress must take place, where the aim is to reduce stress through changing employee perceptions of the environment (Hurrell, 2005). As previously discussed, Kelloway et al. (2010) identified stress as a moderator in the supervision-turnover relationship, but also suggests that supervision could also moderate the relationship between stress and turnover, and therefore the supervisor intervention may decrease stress if successful. Pignata and Winefield (2012) also found that pay, promotion opportunities, and social as well as supervisor support moderated the relationship between stress and turnover. Therefore, because stress is the least significant correlate with turnover and is significantly correlated with the other facets of job satisfaction (see Table 3), it is likely that it will decrease as the other metrics increase.

Limitations and Directions for Future Research

One limitation of the current study is the technological issue encountered on the first day of data collection, where the online questionnaire could not be accessed on the computers provided on the data site. Instead, one-hundred paper questionnaires were printed and participants had to fill out the questionnaire using a traditional pen-and-paper design. Because of this flaw, some employees filled out multiple bubbles for a single item (an online questionnaire would have forced one response per item) or wrote notes in the margins such as "sometimes" or "it depends". Some employees also wrote the names of the specific manager that they did not

trust and still others wrote paragraphs about unhappiness with certain problems that the current study was not interrogating. This paper-and-pen method also impacted data entry; although each survey transcription was triple-checked for correct data input, human error could still be present in the data entry. In the future, the questionnaires should be given strictly online and computers should be checked days in advance for any technical problems.

Another limitation of the current study is the exemption of certain clarification prompts and other demographic information that would have been valuable to the current data collection. For example, a question prompting the participant to identify status as “temporary employee” or “direct employee” could have identified any shortcomings in temporary employee onboarding. A question asking if the participant was formerly a temporary employee (temporary-to-permanent) would have been interesting to analyze as well; if temp-to-perm employees were proven to have higher satisfaction in certain facets and lower intent to turnover, Autoline could consider relying more on temporary onboarding than direct hiring. Questions about trust in management and satisfaction with supervision also should have included more written or verbal clarification; it might be the case that the low satisfaction in machining supervisors on 1st shift was based on their perceptions of the Machining Value Stream Manager (a senior manager), not the Machining Value Stream Leader, as she is the most hands-on and visible to 1st shift operators.

While more questions about demographics may be needed, further research in turnover intentions at Autoline NWO could decrease the number of variables in the study. Since it is already apparent that overall job satisfaction and satisfaction with supervision significantly predict turnover intentions, it would be interesting to test only a few correlated variables at time. It is difficult to be significant in a regression when the variables are so strongly correlated with each other. When the vast array is removed, Autoline NWO may see that each of these correlates

do, in fact, predict turnover intentions significantly and managers can rank the predictors by significance.

Because this study was tailored specifically for Autoline in Northwest Ohio, generalizability was not emphasized. Future studies could generalize the link between training investment and satisfaction to all North America Autoline plants (in other divisions) or to similar non-union manufacturing facilities in Northwest Ohio/Southeast Michigan. Each facility could then be compared to determine if satisfaction with the job in general and supervisor satisfaction are predictors across these other facilities as well.

Future research could interrogate supervisor satisfaction further to determine the exact causes of low satisfaction. For example, it is unclear if the supervisor's intervention should focus on Leader-Member Exchange (LMX), transactional leadership, transformational leadership, or general leadership behaviors to determine the best intervention plan for the supervisors on each shift. Supervisors themselves could also be interviewed using Paustian-Underdahl et al.'s (2013) biographical antecedents of supportive supervisors to identify weaknesses and strengths in personality-related characteristics, skills and abilities, and social identity/social support. Using that information, personalized improvement plans can be developed for the supervisors.

Conclusion

This interrogation of turnover antecedents at Autoline NWO is the conclusion of a 4-semester internship in the Human Resources department with the intent to leave a lasting impression on behalf of the employees. The Human Resources department is only staffed by three employees – the Human Resources Manager, the Human Resources Generalist, and the part-time Human Resources Intern. Because of the time and expense of constant recruiting and hiring that goes into replacing separated employees, it can be difficult for a staff of three to fit

recruitment into the schedule and openings tend to go unfilled for weeks. In a Lean environment, those openings greatly impact the production employees. As such, the goal to determine reasons for turnover and interventions to decrease turnover is key to keeping the lean machine running smoothly and the cogs in the machine working to their highest potential.

The interrogation revealed two significant antecedents to the high rate of turnover at this facility; satisfaction with the job in general and satisfaction with supervision. By increasing both facets of satisfaction through interventions and coaching, Autoline can expect to see a lower turnover rate and improved satisfaction in pay, stress, and the work itself, as well as more trust in management. In addition to the two antecedents, eleven other variables including job satisfaction and satisfaction with supervision, (satisfaction with promotion opportunities, satisfaction with work on the job, satisfaction with pay, trust in management stress in general, training investment, hourly wage, and tenure), were found to be significantly correlated with turnover, indicating that continuous improvement in these areas will encourage retention. While some of the proposed interventions require a great deal of effort, time, and in some cases, monetary capital, the long-term positive effects will outweigh the short-term sacrifices. Autoline employees, both non-exempt and exempt, can use the proposed interventions as a starting point for more cohesion and a better job environment with happy, satisfied employees that are going to stay with the company for a long time.

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