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ABSTRACT

Job satisfaction has been found to impact behavioral choices at the workplace. Since levels of satisfaction are not guaranteed to remain high, understanding the consequences of job dissatisfaction is essential. Hence, I analyze the relationship between a worker's job satisfaction and her training investments. Based on my theoretical model, I expect a U-shaped relationship if dissatisfied workers attempt to improve the situation or plan to quit. In contrast, there is an overall positive relationship if dissatisfied workers neglect their duties. Using logit regressions with the Household, Income and Labour Dynamics in Australia (HILDA) survey I find tentative evidence that there is on average an overall positive relationship with a 1 standard deviation increase in job satisfaction being associated with a 1.5% increased likelihood of participating in training. A closer inspection of the reasons for training as well as quit intentions reveals some hints of a U-shaped relationship. My results highlight the importance of considering the source of dissatisfaction as there are heterogeneous effects along different job satisfaction facets.

Keywords: Human Capital Investment, Work-related Training, Job Satisfaction
JEL Codes: J24, J28, C23

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This paper uses unit record data from the Household, Income and Labour Dynamics in Australia Survey (HILDA). HILDA is conducted by the Australian Government Department of Social Services (DSS). The findings and views reported in this paper, however, are those of the author and should not be attributed to the Australian Government, DSS, or any of DSS' contractors or partners.
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1 Introduction

Workers are constantly faced with continuous changes in the labor market, such as technological advancements. Additionally, quick or unexpected changes (such as those brought upon firms and workers in the COVID-19 pandemic) require workers to rapidly adapt to new circumstances. In the wake of such changes, regularly assessing the need for an update of skills is required. Training has been recognized to be an effective tool in the battle of the ever-changing labor market: Multiple studies find that workers who participate in training also experience wage increases (see e.g. Frazis and Loewenstein, 2005; Leuven and Oosterbeek, 2008; Melero, 2010; Haelermans and Borghans, 2012). Similarly, firms also profit from their workers' training because it is associated with a productivity increase on the firm level (Dearden *et al.*, 2006; Konings and Vanormelingen, 2015). In addition, there is a series of non-pecuniary returns to training that the worker can benefit from. Training participation has been found to have a positive relationship with job performance (Bartel, 1995), the chance of receiving a promotion (Bishop, 1990; Pergamit and Veum, 1999; Melero, 2010), and the chances of re-employment in case the worker has been laid off (Ok and Tergeist, 2003), and a negative relationship with the risk of a job loss (Büchel and Pannenberg, 2004). Finally, burgeoning studies suggest that training participation can have a positive impact on job satisfaction (Georgellis and Lange, 2007; Jones *et al.*, 2009; Burgard and Görlitz, 2014). Overall, training reveals to be a pertinent tool for workers in their attempts to increase the security of their job and induce the desired advances in their career. Consequently, a series of studies aim to understand which traits or characteristics result in a lower willingness to participate in training, for instance firm characteristics, socio-demographics, or personality traits (see e.g. Lynch and Black, 1998; Weaver and Habibov, 2017; Caliendo *et al.*, 2022). I contribute to the literature by investigating the relationship between job satisfaction and training investments, in an attempt to understand whether job satisfaction contributes to a worker's willingness to develop in unison with the labor market.

Job satisfaction is an important attitude, which economists widely interpret as the (net) utility from working (see e.g. Verhofstadt *et al.*, 2003; Burgard and Görlitz, 2014). Psychologists have put multiple definitions forward of which some focus on the job itself, others on the sum of job-related factors, and, finally, some that consider the difference in expected and actual gains (for an overview see Tsai *et al.*, 2007). Verhofstadt *et al.* (2003) summarize four reasons for the importance of analyzing job satisfaction: (i) the humanitarian perspective

of treating all individuals with respect; (ii) job satisfaction constitutes a valuable proxy of utility at work; (iii) the quality of the organizational functioning of the firm can be captured in the job satisfaction; and finally (iv) job satisfaction influences the behavioral choices of the worker which can impact the organizational functioning of the firm.

There is a plethora of studies examining this last aspect on how job satisfaction influences behavioral choices as workers usually do not continuously exhibit high levels of job satisfaction (Rusbult *et al.*, 1988). Consequently, it is of great value to understand which behavior results from high levels of dissatisfaction. Unsatisfied workers are found to react in either of the following four categories: exit (quit their job), loyalty (bear the unsatisfaction), voice (take action to improve the dissatisfactory situation), or neglect (disregard duties) (Farrell, 1983; Jodlbauer *et al.*, 2012). Most noteworthy, job dissatisfaction is a profound predictor of both quit intention as well as subsequent labor turnover (see e.g. Spencer and Steers, 1981; Lance, 1988; Clark *et al.*, 1998; Boswell *et al.*, 2005; Singh and Loncar, 2010; Chen *et al.*, 2011). On the other hand, increased levels of job satisfaction have been found to be associated with higher levels of performance (Judge *et al.*, 2001) and job motivation (Kinicki *et al.*, 2002). Overall, Clark *et al.* (1998) point out that satisfied workers are expected to "behave in a way that will enable them to keep [their job], that is, work harder or shirk less" (p. 499). In this vein, there are some studies considering job satisfaction in the context of training courses: Ensour *et al.* (2018) analyze the effect on training motivation and find an association between higher levels of job satisfaction and higher levels of training motivation. Similarly, job satisfaction has been found to be positively related to the commitment to learning new skills during training (Tsai *et al.*, 2007) as well as the willingness to transfer these new skills into the work environment after completing the training course (Jodlbauer *et al.*, 2012).

The aim of this study is to contribute to this strand of literature by analyzing how the job satisfaction of a worker influences her decision to invest into training. To the best of my knowledge, no study specifically considers the impact on actual training participation. I strive to close this gap by presenting a theoretical model in which workers decide whether to invest into training based on potential returns and the costs of training. I hypothesize that increased levels of job satisfaction lead to a higher probability of training participation. However, low levels of satisfaction (i.e. high levels of dissatisfaction) can result in two different scenarios: Highly dissatisfied workers may react with the exit or voice channel (i.e. quit or improve the situation) which may increase the probability of training participation,

as training may improve the chances of getting a new position or improve the unsatisfactory situation. Inversely, the neglect reaction may lead to a lower likelihood of training participation, as the worker may be less willing to invest into work-related training.

I turn to representative Australian data to test which channel dominates. An extensive investigation of the functional form lends support to the second scenario, in which the neglect channel dominates: There appears to be an overall positive relationship between job satisfaction and training participation as a one standard deviation increase in job satisfaction is associated with a 1.5% increase in the probability of participating in training. However, due to a limited number of highly unsatisfied workers in the sample, strong conclusions are difficult. In an attempt to enhance the analysis of the rather unsatisfied workers, I further examine the potential channels by considering different purposes of training, quit intentions and different facets of the job satisfaction. My findings suggest that for overall job satisfaction the neglect channel dominates the voice channel more strongly than the exit channel. However, once considering different facets of the job satisfaction the voice channel gains dominance for some of the facets (e.g. the satisfaction with pay), highlighting the importance of the origin of the dissatisfaction.

The remainder of this paper is structured as follows: Section 2 introduces the theoretical framework and hypotheses. The utilized data is introduced in Section 3, followed by the empirical strategy, main results and robustness in Section 4. A thorough investigation of the potential channels is presented in Section 5. Section 6 concludes.

2 Theoretical Framework

In this chapter, I discuss the theoretical framework of the training investment decision. I assume that the worker and the firm jointly decide upon training participation of the worker.[1] Training takes place if it results in a non-negative return for both the worker and the firm and positive returns for at least one of the involved parties. The possible returns for the firms are the increase in the worker's productivity and with that an increase in revenues. For the worker, potential returns to training are more varied: In addition to

[1] In this model, I consider only training that is optional. It is to be expected that workers are not involved in the decision process of mandatory training. Hence, the worker's job satisfaction is unlikely to influence the participation decision of mandatory training. Smith *et al.* (2019) find in their study for Australia that at least 50% of the surveyed employers offered some form of optional training. Much of the mandatory training is arranged for the introduction of the job or for health and safety training. These statistics suggest that a large portion of training is undertaken optionally. In Section 4.3, I discuss the issue of mandatory training in the context of the empirical analysis.

monetary returns, workers may for example seek an improvement in their performance, opportunities for new responsibilities (either by expanding their horizon, paving the way for promotions, or qualifying for different jobs) or to secure their current position. In the following model, I incorporate both monetary and non-monetary returns in the investment decision.

I assume a perfectly competitive market with output prices normalized to one. Both the workers and the firms are risk-neutral[2] and have no liquidity constraints. While the firms aim at maximizing their expected discounted profit, workers aim at maximizing their expected utility for both monetary and non-monetary benefits. The model consists of two periods ($t = 0, 1$). In $t = 0$, the worker's productivity equals her marginal revenue product (mP_L). In this period, the worker i and firm f jointly decide whether the worker should participate in training. This is the case if training yields a positive return for at least one of the two without resulting in a negative return for the other.

Training comes at the cost of C which is shared by the worker and firm according to the exogenous cost-sharing rule α, such that the worker pays αC and the firm $(1 - \alpha)C$. For the worker, it is possible that αC includes time costs in case the training does not take place (exclusively) during working hours. The costs of training are constant across workers and known prior to the investment decision in $t = 0$.

When the worker participates in training ($T_i = 1$, otherwise $T_i = 0$), two types of returns emerge. First, the productivity of the worker increases by K. This return is shared by the worker and the firm depending on the degree of transferability of the training course γ, such that the worker receives γK and the firm $(1 - \gamma)K$ in monetary returns. Following Becker (1962), for "perfectly general" training ($\gamma = 1$), all newly acquired skills are also applicable in other firms, while "perfectly specific" training ($\gamma = 0$) only provides skills that are of interest for the current firm. As a result, for general (specific) training the worker (firm) reaps all of the monetary returns of training, while for transferable training the returns are shared. Because I additionally consider non-monetary returns (see below) which are not shared with the firm, not all returns depend on the transferability of skills (e.g. the opportunity to increase the job security). Consequently, the distinction is not pivotal in this analysis. However, I return to this notion in Section 4.3.

Additionally, workers have the opportunity to receive non-monetary returns b_i which

[2]Considering risk-averse workers does not change the predictions of the model; it merely increases the complexity of the model.

are always non-negative. These returns cover a wide spectrum of possible non-monetary returns and vary across workers: which returns the worker intends to reap depends on her characteristics and the current situation she is in, e.g. which career goals she is striving for or whether she currently has difficulties with specific tasks. The factors influencing the potential non-monetary returns are summarized as x_i.[3]

One of these factors is the worker's job satisfaction JS_i. Job satisfaction is often (and in the utilized data here) measured by asking individuals to rate their satisfaction on a scale from "Totally dissatisfied" (e.g. 0) to "Totally satisfied" (e.g. 10). Thus, the scale is increasing in job satisfaction, or inversely, decreasing in job dissatisfaction. Hence, an individual ranked on the far right (left) of the scale is satisfied with all (no) aspects of the job. All other values represent a combination of satisfaction with some and dissatisfaction with other aspects of the job. Hence, it is useful to categorize the non-monetary returns in two types: those that arise from a point of satisfaction ($b_{1i} \geq 0$) and those that emerge in a state of dissatisfaction ($b_{2i} \geq 0$). Examples of b_{1i} are opportunities to gain new responsibilities or to manifest career advances.[4] Similarly, workers who enjoy their job may seek to improve their skills generally or simply secure themselves from future job losses. On the other hand, b_{2i} includes returns which can help workers change factors of the job they are not satisfied with. For instance, if a worker is dissatisfied as she finds a certain task too difficult, she could engage in training to learn how to perform the task more easily. This reflects the voice reaction to dissatisfaction as this person would seek ways to improve the current situation. Additionally, training participation may help a worker qualify for a different job or position. If the dissatisfaction of a worker results in an intention to quit, i.e. the exit reaction, training holds the potential return of increasing the probability of receiving a new job.[5] While the returns b_{1i} and b_{2i} arise independently from each other, they can be similar and yet are distinct due to the point of view of the worker. For instance, both include a type

[3]It is possible to consider potential non-monetary returns for the firm as well: the firm may be interested in increasing the job satisfaction of their workers, may intend to groom a certain worker for another position, or may seek to retain workers by providing training courses they desire. It would be easy to incorporate such benefits in the model as well. However, since I focus on the worker's perspective, I exclude such benefits to simplify the model and leave this discussion for future work.

[4]Note that the utility of career advances does not reflect potential wage increases associated with this advancement: monetary returns are already captured in K. Rather, this could, for instance, reflect pride about achieving the promotion or excitement about the new responsibilities.

[5]It is worth noting that it is also possible to gain non-monetary returns from specific training that is useful for the exit reaction. For instance, participating in any type of training - including specific training - could be seen as a signal for potential future employers that the worker is willing to learn and develop and willing to invest in firm-specific training. Nevertheless, I return to the notion of general vs. specific training in Section 4.3.

of performance increase. In b_{1i} this may reflect the bonus of being able to perform a task in a new creative or more efficient way. In contrast, the gain in b_{2i} may instead merely arise from learning how to conduct a task in the first place. Importantly, for any given training course, it is unlikely that *all* non-monetary returns will arise as the returns depend on the workers' current situation as well as the type of training. This, however, does not preclude the opportunity of reaping benefits from both b_{1i} and b_{2i} from one training course, as a worker can be satisfied with some and dissatisfied with other aspects of the job.

In sum, the non-monetary returns of training can be depicted as

$$b_i(JS_i, x_i) \quad = \quad b_{1i}(JS_i, x_i) + b_{2i}(JS_i, x_i) \tag{1}$$

where $b_{1i}(JS_i, x_i)$ is increasing in JS_i and $b_{2i}(JS_i, x_i)$ is decreasing in JS_i (as it is increasing in dissatisfaction). As a consequence, there is a U-shaped relationship between b_i and JS_i.

Finally, as discussed above, the costs of training are constant across all workers and the cost-sharing rule of α is implemented. However, the decision problem of the worker may include an additional non-monetary cost $\tilde{c}_i$. These additional costs can arise in various ways. For instance, they may represent dismay about spending additional time on work-related issues if training takes place outside of regular working hours. A lower willingness to invest such additional time for work is an example of the neglect reaction to dissatisfaction. Alternatively, a worker may dislike training for it requires her to exert effort to learn new skills and subsequently transfer them to the job. In sum, it captures the lack of training and transfer motivation. Consequently, this additional cost depends again on the characteristics and situation of the worker, and, importantly, on the job satisfaction $\tilde{c}_i(JS_i, x_i)$. Following the literature, these costs are decreasing in JS_i as training and transfer motivation increase in job satisfaction (Ensour *et al.*, 2018; Jodlbauer *et al.*, 2012).

With these returns and costs of training, the firm and the worker will jointly decide whether the worker should participate in the training course. This is the case if at least one of the two parties gains positive returns without causing costs to the other. The net present values of training for the worker ($V_i(T_i = 1)$) and the firm ($V_f(T_i = 1)$) are equal to

$$V_i(T_i = 1) \quad = \quad \gamma K + b_{1i}(JS_i, x_i) + b_{2i}(JS_i, x_i) - (1 + \rho)\alpha C - \tilde{c}_i(JS_i, x_i) \tag{2}$$

$$V_f(T_i = 1) \quad = \quad (1 - \gamma)K - (1 + \rho)(1 - \alpha)C \tag{3}$$

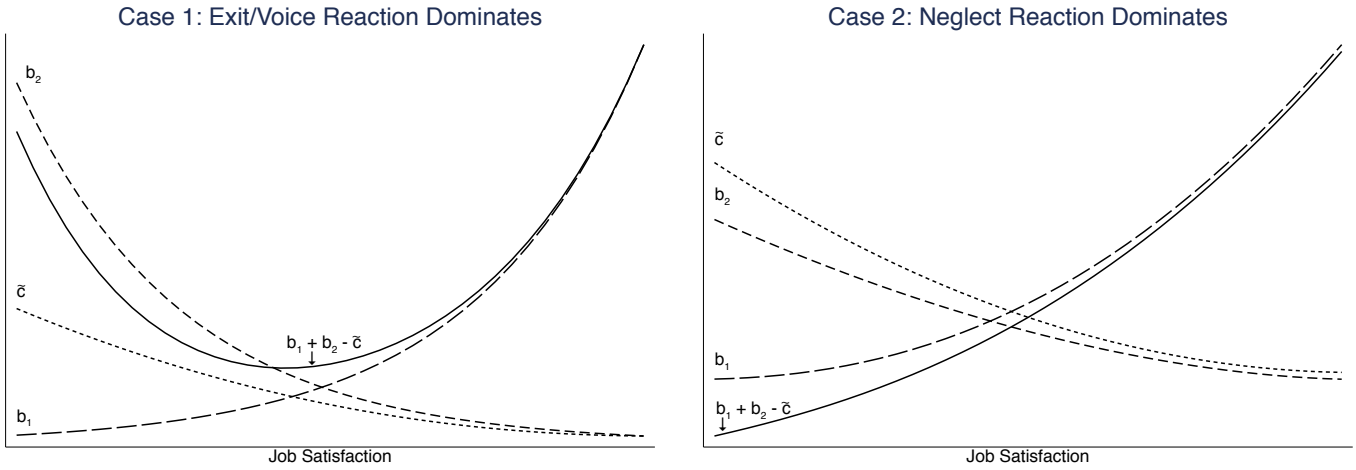
with the discount rate ρ.

It is apparent that the worker's decision to invest depends on her job satisfaction, while the firm's decision does not. However, it is not clear, in which direction the job satisfaction influences the worker's decision:

$$\frac{\partial V_i(T_i = 1)}{\partial JS_i} = \underbrace{\frac{\partial b_{1i}(JS_i, x_i)}{\partial JS_i}}_{>0} + \underbrace{\frac{\partial b_{2i}(JS_i, x_i)}{\partial JS_i}}_{<0} \underbrace{- \frac{\partial \tilde{c}_i(JS_i, x_i)}{\partial JS_i}}_{>0} \tag{4}$$

A graphical illustration of the relationship between job satisfaction and the non-monetary returns and costs are depicted in Figure 1.

Figure 1: Graphical Illustration of the Theoretical Model



Source: Own illustration.
Notes: Both graphs depict illustrations of the non-monetary returns and costs to training. b_1 are the benefits that arise from a point of job satisfaction and b_2 those that arise from a state of job dissatisfaction. $\tilde{c}$ are the non-monetary costs of training.
In Case 1, the benefits of training b_2 outweigh the costs of training $\tilde{c}$ on the left hand side. Here, the exit/voice reaction dominates the neglect reaction resulting in an overall U-shaped relationship between job satisfaction and the net value of training.
In Case 2, the costs $\tilde{c}$ outweigh the benefits b_2, such that the neglect channel dominates. This results in an overall positive relationship between job satisfaction and the net value of training.

As discussed above, the reverse effects of JS_i on b_{1i} and b_{2i} result in a U-shaped relationship between JS_i and b_i, while there is a negative relationship between JS_i and the costs $\tilde{c}_i$. The effect of JS_i on the net value of training V_i corresponds to the effect on the costs subtracted from the effect on the benefits. This combination amplifies the positive effect of JS_i on the far right side of the scale. For the workers on the far left of the scale, however, two potential scenarios arise: In the first case, the effect of JS_i on the benefits of training b_{2i} outweighs the effect on the costs $\tilde{c}_i$. This corresponds to the exit/voice reaction

of dissatisfaction. In this case, there is an overall U-shaped relationship between JS_i and V_i (see case 1 of Figure 1). In contrast, the second case reflects the neglect reaction: If the effect on the costs outweighs the effect on the benefits, an overall positive relationship between JS_i and V_i emerges (case 2 of Figure 1).[6]

From a theoretical point of view, it is unclear which of these channels reveals to be dominant. Consequently, I turn to an empirical analysis in an attempt to descriptively identify the relationship between job satisfaction and training investments. Subsequently, I attempt to shed some light on the channels driving the relationship.

3 Data

3.1 Estimation Sample

For the empirical analysis, I utilize data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. Since 2001, this household-based panel survey is conducted annually and covers information about economic and personal well-being, labor market dynamics and family life. In 2018, roughly 18,000 individuals from about 10,000 households were surveyed (Watson and Wooden, 2021). This dataset is especially suitable for this analysis, as it not only includes the basic necessary information on training and satisfaction across many years, but also because more in-depth analyses are possible with detailed information on the training courses and satisfaction facets.[7]

In order to control for the recent training history, I restrict my sample to the years 2004-2019 and pool this data.[8] Further, I only consider the working-age population between the ages of 25 and 60. Workers are required to be employed and I exclude self-employed individuals. Finally, I drop observations for which information in the main or control variables are missing. These restrictions result in an estimation sample of 63,647 observations with 9,339 distinct individuals.

[6]Note that I do not further consider the loyalty reaction to dissatisfaction. As Farrell (1983) argues, the loyalty reaction is a rather calculated and/or transitory reaction. These individuals might believe that the dissatisfactory situation will be resolved somehow by someone. Meanwhile, they are willing to bear the dissatisfactory situation and remain loyal to their firm. The effect on training participation is unclear as these individuals may be willing to participate if the firm asks for this, but may still have high costs of participating.

[7]In other datasets, such as the Socio-Economic Panel (SOEP) in Germany, only few years provide the above mentioned information, or the detailed information is not provided at all. Other surveys, such as the National Educational Panel Study (NEPS) in Germany, do not provide the (consistent) panel structure which is quite important in the analysis as I impute information from previous years.

[8]That is, I first utilize the panel structure to impute relevant data of previous or following years, e.g. the job satisfaction (see Section 3.3). Afterwards, I disregard the panel structure, utilize the data as a pooled cross-section and include year dummies.

3.2 Training Measures

Since 2003, individuals are asked whether, in the past 12 months, they have participated in any education or training courses, as part of their employment. I utilize this information as the dependent variable, which is a dummy indicating whether an individual has participated in training in the past 12 months. Overall, roughly 40% of the sample participate in training.

Individuals are also asked to name the reasons for training.[9] The possible answers are: "To maintain professional status and/or meet occupational standards", "To improve your skills in your current job", "To develop your skills generally", "To prepare you for a job you might do in the future or facilitate promotion", "To help you get started in your job", "Because of health/safety reasons" or "Other". Individuals are asked to indicate all applicable responses. Hence, all purposes of training are captured, even if an individual participated in multiple trainings for different reasons or a single course for multiple reasons. However, it is not possible to infer, which courses were undertaken for which purpose.

From 2007 onwards, this part of the survey was extended with various questions, e.g. regarding the number of courses, the overall duration as well as the transferability of the newly acquired skills. The main issue with the additional information is that they refer to the aggregated training courses, i.e. it is not possible to indicate for one training course the reason, costs and duration unless an individual has only participated in one training course.

Table A.1 in the appendix provides the descriptive information of the aggregated training courses. Panel A refers to the information on training participation and the aims of training, which are available for the years 2004-2019. The aim of improving skills, maintaining the professional status and developing general skills are indicated most often as the purpose of training. Additional information on the training courses are available from 2007 onwards and summarized in panel B. In total, only 22% report contributing to the costs of training, while more than 80% of the training participants believe their skills to be valuable for other employers at least to a moderate extent.

3.3 Job Satisfaction

In the HILDA, there are multiple questions regarding the satisfaction with the current employment. In all years, individuals are asked to rate their satisfaction about different aspects of their (main) job on a scale from 0 (Totally dissatisfied) to 10 (Totally satisfied).

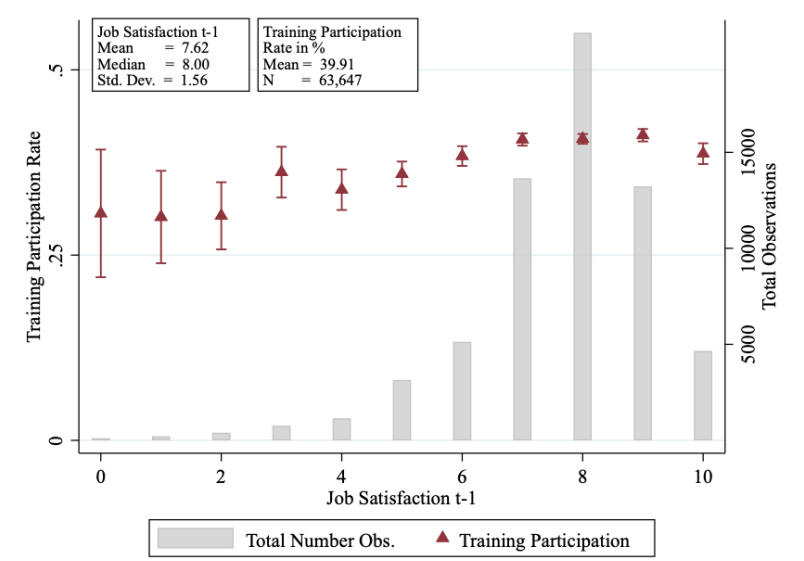
[9] I take a closer look at the aims of training in Section 5.1.

In particular, individuals rate their satisfaction regarding "the work itself (what you do)", "your total pay", "your job security", "the flexibility available to balance work and non-work commitments" and "the hours you work". Finally, individuals are asked "All things considered, how satisfied are you with your job?". I use this last question to create a continuous measure of overall job satisfaction, which is my main variable of interest.

As I aim at estimating the effect on how the current job satisfaction influences the worker's choice to invest into training, the timing of the measurements are pivotal. Ideally, one could measure the job satisfaction of the worker at the point in time at which the training decision is made. However, the HILDA only provides information once a year. Additionally, I do not observe the timing of the decision, but rather the timeframe in which training takes place (i.e. within the 12 months prior to the interview in t). Therefore, it is important to take a measure of job satisfaction from a point in time *before* training. This additionally contributes to minimizing issues with reverse causality stemming from the positive effect of training on job satisfaction (Burgard and Görlitz, 2014). Since I cannot assume that job satisfaction remains stable, taking the *most recent* measure prior to training is important. Consequently, I impute the information on job satisfaction from $t-1$. When interpreting the results, this measurement limitation must be kept in mind.

The main summary statistics regarding the job satisfaction in $t-1$ are summarized in the left text box in Figure 2. On average, the working population in Australia is quite satisfied with their job with a median job satisfaction of 8 and an average of 7.62. The average satisfaction levels with the various job facets are presented by training status in Table A.2. With the exception of flexibility and hours satisfaction, the satisfaction levels are significantly higher for training participants than for those workers who do not invest into training. Figure 2 displays the descriptive relationship between job satisfaction and training participation. The distribution of job satisfaction (x-axis) is plotted with gray bars (right y-axis). As can be seen, job satisfaction follows a normal distribution which is heavily skewed to the left. Overall, only 9% of the overall sample indicate that they have higher levels of dissatisfaction (i.e. 5 or lower). As a consequence, the information on the left half of the job satisfaction scale is rather noisy. On the left y-axis, the unconditional training participation rates are plotted by the level of job satisfaction. There is a clear upward trend in participation rates with job satisfaction. This holds especially for those who report medium levels of satisfaction (5-7 on the scale). For high levels of satisfaction, a minor dip in the participation rates is visible (9-10 on the scale). The left half of the scale provides

Figure 2: Training Participation Rates by Job Satisfaction



Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.
Notes: The figure shows the training participation rates by job satisfaction (in $t-1$) and the 95% confidence intervals (left y-axis). The question asked in the survey is "All things considered, how satisfied are you with your job?". Respondents can answer on an 11-point Likert scale ranging from "completely dissatisfied (0)" to "completely satisfied (10)". The grey bars (right y-axis) depict the distribution of the job satisfaction measure.

some indication that high levels of dissatisfaction (0-2 on the scale) is associated with lower levels of training participation. However, due to the limited number of observations, this conclusion must be made with great caution.

3.4 Control Variables

For the choice of control variables in my estimation, I turn to the literature on the determinants of training participation. Various studies have found that job as well as firm characteristics influence the likelihood of investing into training. For instance, higher levels of experience are associated with a higher training probability (Lynch, 1992). Both workers with a permanent or with a full-time contract are more likely to participate (Oosterbeek, 1996; O'Connell and Byrne, 2012). The training incidence is higher in larger firms and depend on the sector (Lynch and Black, 1998; Oosterbeek, 1998; Maximiano, 2012).

Additionally, socio-demographic characteristics are related to training investments. Age is a determinant of training participation, where a reoccurring finding is that older workers

receive significantly less training (Maximiano, 2012; Weaver and Habibov, 2017). On the other hand, training participation is increasing with education (Arulampalam and Booth, 1997; Leuven and Oosterbeek, 1999; Bassanini *et al.*, 2007). The picture is not quite as clear regarding gender differences. Some studies report higher training rates among men (Lynch, 1992; Fitzenberger and Muehler, 2015), while others find the opposite (Simpson and Stroh, 2002). In contrast, Oosterbeek (1996) argues that the gap is driven by occupational choice and, thus, disappears once controlling for such factors. Finally, recent studies find a significant relationship between personality traits, such as locus of control and risk attitudes, and training investment decisions (Caliendo *et al.*, 2020, 2022).

Consequently, I control for a wide range of variables: (i) socio-economic information (age, gender, marital status, number of children, disabilities, migration background, home ownership, highest educational degree, employment and unemployment experience, and gross monthly household income from 2 years ago)[10]; (ii) regional information (regional dummies, local unemployment rate) and year dummies; (iii) occupation characteristics (employment status, contract type, tenure, trade union membership, and ISCO88 occupation)[11]; (iv) firm characteristics (firm size and NACE industry)[12]; and (v) personality traits (Big Five traits, locus of control and risk attitudes).[13] Descriptive statistics for these control variables can be found by training status in Table A.2 in the appendix.

4 Results

4.1 Estimation Strategy

The aim of this analysis is to estimate the relationship between a worker's job satisfaction and her training participation. The theoretical framework identifies two potential relationships: If the exit and voice reaction dominate, a U-shaped relationship is expected. In contrast, the neglect reaction would induce an overall positive relationship. As I lack exogenous variation in the job satisfaction, causal interpretations remain limited. However, by

[10]The number of children is not available in the years 2005, 2008, 2011, 2015, and 2019. The information is imputed from the previous years.

[11]Trade union information is missing for the years 2004-2008 and is imputed backwards from 2009.

[12]For the occupational classification, I rely on the International Standard Classification of Occupations 88 (ISCO88) which categorizes occupations into 10 groups. There are no soldiers in my sample, such that only 9 occupational groups remain. The industries are collapsed into 12 categories based on the classification system NACE ("Nomenclature statistique des Activités Economiques dans la Communauté Européenne") used by the European Union (see Table A.2).

[13]The personality traits (which are not the focus of this study) are measured for a few select years (Big Five in 2009, 2013 and 2017, locus of control in 2007, 2011, 2015, risk attitudes in 2014 and 2018). To maximize the sample, I average for each individual the information over all available years.

taking the timing of measurements into account and ensuring that the level of satisfaction is measured prior to training participation, I attempt to provide a more causal point of view.

In the following, I first exploit the panel structure of the HILDA data by imputing relevant information from the previous years. Afterwards, I treat the data like a pooled cross section across all years 2004–2019[14] and conduct a logit regression as the dependent variable is binary. Further, I cluster the standard errors on the individual level to account for individuals appearing multiple times in the dataset. In this regression, I consider a dummy variable indicating overall training participation (T) in the past 12 months as the dependent variable and job satisfaction (JS) in $t-1$ as the main independent variable of interest:

$$P(T=1)_{it} = \frac{\exp(\alpha_0 + \alpha_1 JS_{it-1} + \alpha_2 JS_{it-2} + \alpha_3 TH_{it-1;t-2} + \boldsymbol{X'_{it}\alpha_4})}{1 + \exp(\alpha_0 + \alpha_1 JS_{it-1} + \alpha_2 JS_{it-2} + \alpha_3 TH_{it-1;t-2} + \boldsymbol{X'_{it}\alpha_4})} \tag{5}$$

where i indicates individuals and t time. The self-reported job satisfaction (JS) is measured in $t-1$, i.e. *before* training, and is standardized for comparability of the results. Thus, α_1 is the main effect of interest. In the main analysis, I vary the functional form of this variable to identify the dominant channel. I additionally control for the job satisfaction in $t-2$ to capture any changes in satisfaction that may occur in the year prior to the analyzed training decision timeframe (Chen *et al.*, 2011). I attempt to further reduce potential reverse causality issues by controlling for the recent training history (TH) to capture effects of previous courses on the job satisfaction (Burgard and Görlitz, 2014). For this, I include a dummy that takes on the value 1 if the individual has indicated participating in training in the past 12 months of the year $t-1$ and/or $t-2$.[15] A graphical overview of the timing of these variables can be found in Figure A.1. Finally, in the vector $\boldsymbol{X_{it}}$, I control for the variables outlined in Section 3.4: (i) socio-economic information, (ii) regional and year information, (iii) occupation characteristics, (iv) firm characteristics, and (v) personality traits.

4.2 Participation in Training

Table 1 presents the results of the main regression estimation on the relationship between job satisfaction and training participation. Average marginal effects (ME) of the logit estimations are presented, with the exception of column (4) in which merely the coefficients

[14] I consider year effects by including a dummy for each year. The reference year is 2004.

[15] Note that, for 2004, the dummy only refers to $t-1$ as there is no information on training participation in wave 2002. Excluding the year 2004 does not change the results. Results are available upon request.

(Coeff.) are reported as the marginal effect of the squared term cannot be calculated. The coefficients cannot be interpreted apart from their sign and significance. Column (1) displays the results from a linear specification and (2)-(4) examine the functional form of job satisfaction in $t-1$.

Linear Specification: Column (1) of Table 1 presents the results of a simple linear specification with all control variables. I find a positive and significant relationship, which indicates that more satisfied workers are more likely to invest into training: Increasing the job satisfaction in $t-1$ by one standard deviation (SD, equivalent to 1.56 points on the 11-point Likert scale) is associated with an increased probability of participating in training of 0.6 percentage points (p.p.). Comparing this to the unconditional training participation rate, this translates to an increase of 1.5 percent.

On its own, this finding suggests that the neglect reaction is dominant, resulting in an overall positive relationship. Nevertheless, a more thorough investigation of the functional form is in order.

Non-linear Specifications: Columns (2)-(4) present the results of non-linear specifications. In case the exit/voice channel dominates the neglect channel, I expect a U-shaped relationship between job satisfaction and training participation. Should, however, the neglect channel be more prevalent then I expect to find an overall positive relationship across the entire satisfaction scale.

For this investigation, I first generate a dummy which takes on the value one if the (non-standardized) job satisfaction is greater than the value of 5 (the mid-point of the scale) and zero otherwise (column 2). Hence, I compare those who report higher levels of satisfaction ("satisfied workers", right half of the scale) with those who report low levels of satisfaction ("unsatisfied workers", left half of the scale). The results suggest that satisfied workers are on average 1.9 p.p. or 5.7% more likely to invest into training than unsatisfied workers. This implies that the positive effect on the right hand side of the scale is more pronounced than the combined effect of the potential channels on the left hand scale. Thus, either the neglect channel dominates resulting in a positive relationship on the left hand as well, or the negative relationship induced by the exit/voice channel is weaker than the positive relationship on the right hand, resulting in an overall lower likelihood of investing

for unsatisfied than satisfied workers.

Table 1: Logit Estimation Results: Training Participation on Job Satisfaction (Average Marginal Effects)

	(1) ME	(2) ME	(3) ME	(4) Coeff.
	Linear Specification	Non-linear Specification		
Job Satisfaction $t-1$ (std.)	0.006***			0.019
	(0.002)			(0.013)
Job Satisfaction $t-1$ (std.) × Job Satisfaction $t-1$ (std.)				-0.010*
				(0.006)
Job Satisfaction $t-1$ (Dummy)		0.019***		
		(0.007)		
Medium Job Satisfaction $t-1$			0.019	
			(0.013)	
High Job Satisfaction $t-1$			0.032**	
			(0.013)	
Participation Rate	39.91	33.55	40.06	39.91
Effect in %	1.50	5.66		
p-value of Joint F-Test			0.00	0.00
Controls	✓	✓	✓	✓
Pseudo-R^2	0.15	0.15	0.15	0.15
Observations	63,647	63,647	63,647	63,647

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.
Notes: The table displays the average marginal effects estimated based on logit estimations (columns 1-3) or coefficients from logit estimations (column 4). The dependent variable is a dummy indicating participation in training. The main explanatory variable of interest is the worker's job satisfaction (from $t-1$). All regressions include the full set of control variables. For the regressions, the (unconditional) average of the dependent variable ("Participation Rate"), the average effect in % (in relation to the unconditional participation rate) of the main explanatory variable ("Effect in %", columns 1 and 2), and the Pseudo-R^2 are displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.
(1) Full specification. Detailed estimation results available in Table A.6 in the Appendix. Job satisfaction is continuous and standarized.
(2) The job satisfaction dummy is equal to 1 if the (non-standardized) job satisfaction is greater than 5 and zero otherwise (reference category). Here, the participation rate refers to the unconditional average of the dependent variable for the reference group.
(3) Individuals with a (non-standardized) job satisfaction of 4-6 (7-10) have a medium (high) job satisfaction. The reference category is low satisfaction (with values 0-3). Here, the participation rate refers to the unconditional average of the dependent variable for the reference group. p-value of joint F-test presented.
(4) The size of the coefficients cannot be interpreted. The linear and squared terms of the standardized job satisfaction are included. For the predicted participation probabilities based on the non-standardized job satisfaction see Figure A.2, Panel A. p-value of joint F-test presented.

Next, I collapse the sample into three groups: Individuals with low job satisfaction (0-3), medium job satisfaction (4-6), and high job satisfaction (7-10). In case the exit/voice channel dominates the neglect channel, I expect to see the medium satisfaction group to have a lower participation probability than the low satisfaction workers. In column (3), I exclude the low job satisfaction group as the reference category. There is no significant difference between the low and medium satisfaction groups, whereas the high job satisfaction workers are 3.2 p.p. more likely to invest into training than the reference group. The insignificant

coefficient of the medium group may imply that the two channels of exit/voice and neglect cancel each other out. However, this result must be viewed with great caution because there are only very few observations on the left half of the scale. The insignificant coefficient may also simply be the result of too few observations. If that is truly the case, the positive sign of the (insignificant) coefficient points towards the neglect channel as the dominant reaction to dissatisfaction in the training context.

In column (4), I include the squared term of the job satisfaction. Note that here only the coefficients are presented rather than the marginal effect in order to present the functional form. Should low levels of job satisfaction result in workers intending to improve or leave the situation, I expect to see a U-shaped relationship between job satisfaction and training. Importantly, due to the standardization of the job satisfaction measure, the domain of the function also includes low negative values (in magnitude). As a consequence, a U-shaped relationship is achieved with a positive sign for both the linear and squared term. However, I find a positive and negative coefficient for the linear and squared terms, respectively, resulting in a presumably inverted U-shape. This would imply two points: First, there is a positive relationship for rather unsatisfied workers, supporting the dominance of the neglect channel. Second, for highly satisfied workers the training probability even decreases, portending to the possibility that training has decreasing returns with high levels of satisfaction. Figure A.2, panel A, plots the predicted training participation probability based on this estimation. Here, the control variables are held at their means. As expected, the confidence intervals on the left are sizeable in comparison to those on the right, cautioning conclusions about the unsatisfied workers.

Finally, in Figure A.2, panel B, I include the job satisfaction variable as a categorical variable. Here, the average marginal effects of the categories are depicted. As the number of (highly) unsatisfied workers is limited, I pool those individuals who report higher levels of dissatisfaction i.e. workers who indicate a value between 0 and 5 on the satisfaction scale. This is the reference category. As can be seen, a higher level of job satisfaction is associated with a higher probability of participating in training in comparison to the unsatisfied workers. If the voice/exit channel were to dominate, I would expect to see a lower training probability amongst the moderately satisfied workers. As this is not the case, these results substantiate the preceding findings.

Taken together, the results indicate that there is overall a positive association between job satisfaction and training participation. Tentatively, the conclusion can be made that,

on average, unsatisfied workers are more likely to display the neglect reaction resulting in a lower training participation probability.

4.3 Robustness

In this section, I check for the robustness of my findings. The results are reported in Table A.3. For comparison, the linear and squared specifications from the main results are presented in columns (1) and (2).

Potential Endogeneity: It is conceivable that the job satisfaction of a worker influences multiple choices regarding her employment situation. Hence, my regression includes some potentially endogenous control variables. These could moderate the effect of job satisfaction in the training context. Hence, in columns (3) and (4), I exclude the choice variables regarding the employment situation, namely the employment status, contract type, ISCO-occupation, and NACE-sector classification. The effect size increases in the linear specification, but otherwise the conclusions remain unchanged.

Training Type: Becker (1962) argues that the distribution of the return to training depends on the transferability of skills acquired during training where the worker (firm) reaps the benefits of general (specific) training. Previous studies have highlighted the importance of this distinction, as it depicts heterogeneous incentives for the worker (e.g. Caliendo *et al.*, 2020, 2022). In the context of job satisfaction, it could be argued that general training is especially of interest for unsatisfied individuals who intend to leave the current firm (i.e. exit reaction). Indeed, when looking at participation in general training as a dependent variable,[16] the two positive signs in the squared specification indicate a U-shaped relationship (column 6). In contrast, the two negative signs for specific training are less intuitive (column 8). Presumably, individuals with high levels of job satisfaction (perceive to) require less specific training. However, it must be kept in mind that the transferability of training skills is measured aggregately for all courses in the HILDA. Reducing the sample to those who participated in one or none courses, significantly reduces the variation in the training participation. The results are less precise but yield similar results. Results are available upon request.

[16] I utilize information regarding the usefulness of the newly acquired skills in other firms. Individuals who indicate that they could use the skills to a great or very great extent are defined as general training participants, while those who indicate they could use the skills to a moderate or limited extent, or not at all are considered as specific training participants.

Initiation: In columns (9) and (10), I turn to the initiation of training: If training participation is mandatory, the worker is not part of the decision process. In this case, it is conceivable that the job satisfaction is irrelevant for the participation decision. Hence, the relationship may be underestimated if some of the training courses in the sample are obligatory. As there is no information available regarding the initiation of training in the HILDA, I follow Smith *et al.* (2019) and exclude courses which had the purpose of a job introduction or for health and safety reasons.[17] Smith *et al.* (2019) argue that a large portion of firms provide such courses mandatorily. Indeed, column (9) indicates that the effect is underestimated in the baseline specification. However, column (10) reinforces the slightly inverted U-shape relationship. Hence, the main conclusions remain unchanged.

Fixed Effects: Finally, specifications (11) and (12) attempt to provide a more causal estimation by exploiting the panel structure and applying a fixed effects logit estimation.[18] By comparing the individuals with themselves across time, I can hold time-constant unobserved variables fixed, reducing potential biases. As this estimation requires the independent variables to vary over time, the control variables gender, migration background, and the personality traits[19] are omitted. Further, the number of observations decreases here, because the fixed effects logit estimation excludes those individuals for whom the dependent variable does not change for all observed years.[20] Finally, I follow Cruz-Gonzalez *et al.* (2017) and correct for the incidental parameter bias which arises in binary response models (Neyman and Scott, 1948; Fernández-Val and Weidner, 2016; Cruz-Gonzalez *et al.*, 2017).[21] Both the linear and squared specifications point towards a positive and linear relationship

[17] Most individuals who participate in either of such courses additionally indicate further aims of training as well. In total, only 5 individuals report job introduction and/or health and safety reasons as the only aims of training. Since it is not possible to distinguish whether one course followed multiple aims or the person participated in multiple courses with different aims each, I exclude all individuals who indicate participation for either an introduction or health and safety reasons.

[18] There is a noteworthy within-person variation in the job satisfaction: For roughly 62% of the observations there is a change in job satisfaction between $t-2$ and $t-1$. Overall, 57.3% change their satisfaction between 1 and 3 points on the 11 point Likert scale (in either direction), while 2.3% exhibit a change of at least 5 points. Only 38.1% of the estimation sample do not change their job satisfaction between two consecutive years.

[19] Because there are very few years which include information on the personality traits, these were averaged across all available years to maximize the estimation sample. Consequently, they are stable by design in this sample.

[20] Roughly 17.4% of the main estimation sample is excluded because these individuals never participate in training. Additional 6.3% are excluded because they always participate in training. Thus, for 76.3% of the main estimation sample there is some variation in the training status over the years.

[21] I employ the analytical correction method with one lag, both individuals and time effects, and bias correction for both individuals and time effects (Cruz-Gonzalez *et al.*, 2017). I also test the robustness of these findings with further specifications, e.g. the jackknife method (Cruz-Gonzalez *et al.*, 2017). Results are stable and available upon request.

between job satisfaction and training participation, which reinforces the previous findings of a dominant neglect channel. Further, the presented average marginal effects in the linear specification reveal a larger effect than in the simple logit regression: increasing the job satisfaction in $t-1$ by one SD is associated with an increase in the participation probability by 1.1 p.p., which translates to an effect size of 2.49%. It can be concluded that the effect size in the logit model is biased downwards due to unobserved time constant variables.[22] However, the fixed effects estimation does not provide causal results in case there are time-varying unobservables. This is the case for example for the current performance on the job. Consequently, it cannot be ruled out that these results are biased as well, cautioning causal interpretations. Nevertheless, overall, the logit and fixed effects logit estimations both provide evidence that the neglect channel is the dominant one.

5 Potential Mechanisms

In this section, I attempt to disentangle the potential mechanisms that drive the relationship between job satisfaction and training investments. For this, I aim at isolating the voice from the exit reaction to check whether the neglect channel dominates the voice and exit reactions to the same degree. I employ different strategies for this. First, I consider the aim of training, which can shed light on the motivation and, thus, the channel underlying the training decision (Section 5.1). Second, I conduct a heterogeneity analysis with respect to the intention to quit. Hereby, I identify groups for which the exit (voice) channel is prevalent enabling a direct comparison between the exit (voice) and neglect channels (Section 5.2). Finally, not every dissatisfactory situation can be solved equally with training. Hence, I check whether there are varying effects for the available job satisfaction facets (Section 5.3).

5.1 Aim of Training

The HILDA provides information on the aims of training. Specifically, individuals can indicate participation with the aim of maintaining their status and/or meeting occupational standards, improving their skill, learning general skills, and preparing for a potential future job or promotion.[23] These aims can shed some light on the motivation behind the training

[22] When replicating the main results of the logit regression with the reduced fixed effects sample, the effect in the linear specification increases to 1.8% and the squared specification points towards a linear relationship. Results are available upon request.

[23] I do not consider the aim "To help you get started in your job" as I am not interested in this type of training. Also, the aims "Because of health/safety reasons" and "Other" are not further considered as they do not reflect the exit, voice or neglect channel. Finally, following Smith *et al.* (2019) the aims "To help get

investment decision. Consequently, Table 2 replicates equation (5) with dummy variables indicating the training participation for a specific aim as alternative dependent variables, respectively. For ease of comparison, the baseline results of the linear and squared specification are presented in columns (1) and (2). The predicted participation probabilities by job satisfaction of the squared specifications are presented in Figure A.3 for each dependent variable.

I argue that the aim of maintaining status and/or meeting standards (columns 3 and 4), as well as improving skills (columns 5 and 6) reflect the voice channel; a worker who would be unsatisfied with a lower status might actively seek out ways to meet certain standards. Similarly, a worker who wishes to improve her skills as she is unsatisfied with her current performance could look for training to improve. Consequently, I expect only the voice and neglect channel to be of relevance in the regressions of columns (3) to (6). The results are very similar to the baseline results, pointing towards an overall positive relationship. This implies that the neglect channel dominates the voice channel.

In contrast, the aim of preparing for a future job or promotion (columns 9 and 10) reflects the exit channel: These individuals are preparing to leave their current position.[24] Consequently, in these columns, the exit and neglect reactions are relevant. Column (10) is the first specification that points towards a U-shaped relationship: individuals with low levels of satisfaction have an increasing likelihood of participating in training with the aim of preparing for a new job or promotion (compare Figure A.3, panel E).

Finally, it is not as straightforward to ascribe a single channel to the aim of learning general skills as it can reflect both the voice and exit channel. Both individuals who want to improve and leave the current situation may benefit from improving their general skills. Consequently, these results provide little new information.

In sum, these results cautiously indicate that on average the exit channel is dominated *less* by the neglect channel than the voice channel is.

started in your job" and "Because of health/safety reasons" could likely depict mandatory training.

[24]Note that a transfer within the same firm with the aim of leaving the dissatisfactory job (or position) is also considered to reflect the exit reaction (Farrell, 1983).

Table 2: Logit Estimation Results: Training Aim on Job Satisfaction (Average Marginal Effects)

	(1) ME	(2) Coeff.	(3) ME	(4) Coeff.	(5) ME	(6) Coeff.	(7) ME	(8) Coeff.	(9) ME	(10) Coeff.
	Training		Training Aim							
	Participation		Maintain Status		Improve Skills		General Skills		Future Job/Promotion	
Job Satisfaction $t-1$ (std.)	0.006***	0.019	0.005***	0.026*	0.007***	0.019	0.009***	0.043***	0.005***	0.063***
	(0.002)	(0.013)	(0.002)	(0.015)	(0.002)	(0.014)	(0.002)	(0.015)	(0.002)	(0.020)
Job Satisfaction $t-1$ (std.) × Job Satisfaction $t-1$ (std.)		-0.010*		-0.007		-0.017***		-0.011		0.011
		(0.006)		(0.007)		(0.006)		(0.007)		(0.008)
Participation Rate	39.91	39.91	25.77	25.77	30.75	30.75	23.99	23.99	11.60	11.60
Effect in %	1.50		1.94		2.28		3.75		4.31	
p-value of Joint F-Test		0.00		0.01		0.00		0.00		0.00
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pseudo-R^2	0.15	0.15	0.15	0.15	0.14	0.14	0.12	0.12	0.08	0.08
Observations	63,647	63,647	63,647	63,647	63,647	63,647	63,647	63,647	63,647	63,647

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

Notes: The table displays the average marginal effects estimated based on logit estimations (uneven columns) or coefficients from logit estimations (even columns). The dependent variables are dummies indicating participation in training with certain aims (see column headers and below). The main explanatory variable of interest is the worker's standardized job satisfaction (from $t-1$). In the even columns, the squared term of the job satisfaction is included. All regressions include the full set of control variables. For each regression, the (unconditional) average of the dependent variable ("Participation Rate"), the average effect in % (in relation to the unconditional participation rate) of the main explanatory variable ("Effect in %", uneven columns), p-value of joint F-test (even columns), and the Pseudo-R^2 are displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

In the even numbered columns, the size of the coefficients cannot be interpreted. For the predicted participation probabilities based on the non-standardized job satisfaction, see Figure A.3.

(1)/(2) Main results from Table 1, columns (1) and (4).

(3)/(4) Dependent variable: Training participation to maintain professional status and/or meet occupational standards.

(5)/(6) Dependent variable: Training participation to improve your skills in your current job.

(7)/(8) Dependent variable: Training participation to develop your skills generally.

(9)/(10) Dependent variable: Training participation to prepare you for a job you might do in the future or facilitate promotion.

5.2 Quit Intention

In this section, I exploit information on the quit intention and subsequent quit behavior. In the HILDA, employed individuals are asked "What do you think is the per cent chance that you will leave your job voluntarily (that is, quit or retire) during the next 12 months?" (on a scale from 0% to 100%). I utilize this question as a measure of quit intention and perform a heterogeneity analysis with respect to quit intentions.

For the exit channel to be an actual reaction to dissatisfaction, it would be required to observe a negative relationship between job satisfaction and the intention to quit. To check this, I estimate the effect of job satisfaction on the intention to quit, which are both measured in $t-1$ (i.e. before training takes place). In Table A.4, I indeed find that increasing levels of satisfaction are associated with decreased intentions to quit, which confirms findings from previous studies (e.g. Lance, 1988).

In the next step, in Table 3, I consider heterogeneous effects of job satisfaction on training participation by the workers' quit intentions.[25] Columns (1) and (2) replicate the main findings with the linear and squared specification for the full sample. Panel A considers overall training participation as the dependent variable. Panel B replicates the analysis with training participation with the aim of qualifying for a new job or promotion as the dependent variable because this aim reflects the exit channel the best. The corresponding predicted training probabilities across satisfaction are depicted in Figure A.4.

Those who do not intend to quit their job (i.e. a zero chance of quitting, see column 3 and 4) do not exhibit the exit reaction to dissatisfaction. In other words, these individuals either react with the voice or the neglect channel. The results barely change, providing further evidence that the voice channel is dominated by the neglect channel.

Looking at the linear specifications in panel A only, the effect sizes (albeit all insignificant) decrease with increasing levels of quit intentions. Considering the squared specifications, all coefficients are insignificant and the curves for the predicted participation probabilities flatten out (compare Figure A.4, panel 1B to 1D). This suggests that the exit channel gains dominance and counteracts the neglect channel. Nevertheless, a clear U-shaped relationship cannot be found and the overall effects remain fairly small.

[25] There is sufficient variation in the job satisfaction measure across all subgroups. Notably, with increasing quit intention the average level of job satisfaction decreases and the corresponding standard deviation increases, but the full range of the scale is represented in all subgroups.

Table 3: Logit Estimation Results: Training Participation on Job Satisfaction by Quit Intention (Average Marginal Effects)

	(1) ME	(2) Coeff.	(3) ME	(4) Coeff.	(5) ME	(6) Coeff.	(7) ME	(8) Coeff.	(9) ME	(10) Coeff.
	Full Sample		Likelihood to Quit in the Next 12 Months in % ($t-1$)							
			0		1-49		50-99		100	
A. Training										
Job Satisfaction $t-1$ (std.)	0.006***	0.019	0.005	0.012	0.007	0.033	0.004	-0.026	0.003	-0.017
	(0.002)	(0.013)	(0.003)	(0.018)	(0.006)	(0.033)	(0.004)	(0.037)	(0.007)	(0.069)
Job Satisfaction $t-1$ (std.) × Job Satisfaction $t-1$ (std.)		-0.010*		-0.026***		-0.006		-0.022*		-0.011
		(0.006)		(0.009)		(0.018)		(0.013)		(0.020)
Participation Rate	39.91	39.91	41.74	41.74	39.88	39.88	36.15	36.15	37.67	37.67
Effect in %	1.50		1.20		1.76		1.11		0.80	
p-value of Joint F-Test		0.00		0.01		0.38		0.14		0.79
Pseudo-R^2	0.15	0.15	0.18	0.18	0.14	0.14	0.12	0.12	0.13	0.13
B. Training for Future Job/Promotion										
Job Satisfaction $t-1$ (std.)	0.005***	0.063***	0.005**	0.052*	0.008*	0.107**	0.001	0.022	0.011**	0.166*
	(0.002)	(0.020)	(0.003)	(0.027)	(0.004)	(0.045)	(0.003)	(0.054)	(0.006)	(0.091)
Job Satisfaction $t-1$ (std.) × Job Satisfaction $t-1$ (std.)		0.011		-0.002		0.040*		0.006		0.019
		(0.008)		(0.014)		(0.024)		(0.019)		(0.027)
Participation Rate	11.60	11.60	11.70	11.70	11.85	11.85	11.19	11.19	12.93	12.93
Effect in %	4.31		4.27		6.75		0.89		8.51	
p-value of Joint F-Test		0.00		0.13		0.05		0.92		0.09
Pseudo-R^2	0.08	0.08	0.09	0.09	0.08	0.08	0.08	0.08	0.12	0.12
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	63,647	63,647	34,709	34,709	15,170	15,170	10,222	10,222	2,166	2,166

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

Notes: The table displays the average marginal effects estimated based on logit estimations (uneven columns) or coefficients from logit estimations (even columns). In panel A the dependent variable indicates participation in any training, in panel B it indicates participation in training for a future job or promotion. The main explanatory variable of interest is the worker's standardized job satisfaction (from $t-1$). In the even columns, the squared term of the job satisfaction is included. All regressions include the full set of control variables. For each regression, the (unconditional) average of the dependent variable ("Participation Rate"), the average effect in % (in relation to the unconditional participation rate) of the main explanatory variable ("Effect in %", uneven columns), p-value of joint F-test (even columns), and the Pseudo-R^2 are displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. In the even numbered columns, the size of the coefficients cannot be interpreted. For the predicted participation probabilities based on the non-standardized job satisfaction, see Figure A.4.

(1)/(2) Main results from Table 1, columns (1) and (4).

(3)/(4) only include individuals who indicate a zero chance of quitting their job in the next 12 months ($t-1$).

(5)/(6) only include individuals who indicate a chance of 1-49% of quitting their job in the next 12 months ($t-1$).

(7)/(8) only include individuals who indicate a chance of 50-99% of quitting their job in the next 12 months ($t-1$).

(9)/(10) only include individuals who indicate a chance of 100% of quitting their job in the next 12 months ($t-1$).

However, when considering the effect on training for a new job or a promotion (panel B of Table 3), the results are more pronounced. The results of the full sample are highly driven by those who do not intend to quit (which is also the largest part of the sample). However, for those with quit intentions, a U-shaped relationship becomes evident.[26] This provides some tentative evidence that individuals who intend to leave their job due to job dissatisfaction may turn to training to qualify for a different job. Once again, it must be cautioned that the left half of the scale is quite noisy which can be seen by the large confidence intervals in Figure A.4. This may also in part contribute to insignificant coefficients.

As a final step, in Table A.5, I check whether job satisfaction is indeed related to job changes. Here, the dependent variable indicates a job change between t and $t+1$ (any change in column (1), a voluntary change in column (2),[27] and a change due to job dissatisfaction in column (3)[28]), which is regressed on job satisfaction in t, $t-1$, and $t-2$. I additionally control for training participation between $t-1$ and t, the interaction between job satisfaction (in t) and training participation (between $t-1$ and t), as well as the training history. As it is not possible to calculate the marginal effect of an interaction term for a logit regression, coefficients are presented in Table A.5 and predicted job change probabilities by job satisfaction in t are graphically depicted in Figure A.5.

Panel A controls for participation in any type of training. Here, we see a very clear pattern across all three dependent variables (in line with previous studies, e.g. Clark *et al.*, 1998): dissatisfied workers are more likely to change their job. Similarly, individuals who participated in training are less likely to change their job. The interaction between job satisfaction and training is negative and significant in all three specifications. Focusing on the voluntary job change, Figure A.5 panel 1B, it can be seen that unsatisfied workers who participated in training are more likely to quit than unsatisfied workers who did not participate, suggesting that training is viewed as a tool to qualify for a different position. For satisfied workers, this difference disappears. In panel B of Table A.5, I replicate the

[26] Remember that the positive signs for both the linear and squared term indeed yield a U-shaped relationship because the standardization of the job satisfaction variable shifts the domain of definition to the left such that the variable can also take on negative values.

[27] The reasons for a voluntary job change include: not satisfied with job; to obtain a better job/just wanted a change/to start a new business; retired/did not want to work any longer; own sickness, disability or injury; pregnancy/to have children; to stay at home to look after children, house or someone else; travel/have a holiday; returned to study/started study/needed more time to study; spouse/partner transferred; too much travel time/too far from public transport; change of lifestyle.

[28] There is comparably little variation in this dependent variable: only 3.6% of the estimation sample changes their job due to job dissatisfaction, while 8.1% quit voluntarily and 11.6% change their job for any reason.

analysis in which I control for training for a future job or promotion. Here, we see the same pattern, however, the interaction term is no longer significant.

In sum, this analysis provides some tentative evidence that job dissatisfaction increases the quit intentions of workers. For workers with higher quit intentions the exit channel gains dominance over the neglect channel, resulting in higher training rates. Finally, dissatisfied workers who participated in training are more likely to quit their job than dissatisfied non-participants.

5.3 Job Satisfaction Facets

As pointed out in the theoretical model in Section 2, workers can reap different non-pecuniary returns to training depending on the source of dissatisfaction (e.g. learn new skills vs. learn to work more efficiently). It is possible, however, that training courses do not provide the necessary tools to solve the initial issue (e.g. commuting distances), or that workers are not aware of courses which could help to improve the situation (e.g. communication courses to improve issues with colleagues). Thus, the voice channel may not gain dominance if overall job satisfaction cannot sufficiently capture the source of dissatisfaction. Hence, I turn to the five facets of job satisfaction regarding the work itself (what you do), their total pay, the security of the job, the flexibility available to balance work and non-work commitments, as well as the hours worked. In Table 4, I replace in equation (5) the overall job satisfaction with all five available job satisfaction facets. As before, I present the linear and squared specifications.

For the work itself and security satisfaction, the results indicate positive relationships with the training participation probability. This provides further evidence that the neglect channel is prevalent; workers who enjoy their tasks and are satisfied with the security of their job are willing to invest into their skills via training, while unsatisfied workers are not. For both facets, this positive relationship flattens out and a slight U-shaped relationship becomes evident for dissatisfied workers in the context of training with the aim of a job change or promotion. In other words, in this context the exit channel gains importance.

Table 4: Logit Estimation Results: Training Aim on Job Satisfaction Facets (Average Marginal Effects)

	(1) ME	(2) Coeff.	(3) ME	(4) Coeff.	(5) ME	(6) Coeff.	(7) ME	(8) Coeff.	(9) ME	(10) Coeff.
	Training		Training Aim							
	Participation		Maintain Status		Improve Skills		General Skills		Future Job/Promotion	
Work Itself Satisfaction $t-1$ (std.)	0.005**	0.031**	0.008***	0.058***	0.004*	0.019	0.008***	0.052***	0.003	0.047**
	(0.002)	(0.014)	(0.002)	(0.016)	(0.002)	(0.015)	(0.002)	(0.016)	(0.002)	(0.020)
Work Itself Satisfaction $t-1$ (std.) × Work Itself Satisfaction $t-1$ (std.)		0.001		0.006		-0.006		-0.002		0.018*
		(0.007)		(0.008)		(0.007)		(0.008)		(0.010)
Pay Satisfaction $t-1$ (std.)	-0.001	-0.006	-0.005**	-0.037**	-0.002	-0.019	-0.003	-0.025	-0.000	-0.003
	(0.002)	(0.015)	(0.002)	(0.016)	(0.002)	(0.015)	(0.002)	(0.016)	(0.002)	(0.020)
Pay Satisfaction $t-1$ (std.) × Pay Satisfaction $t-1$ (std.)		-0.001		-0.008		-0.007		-0.005		0.000
		(0.007)		(0.008)		(0.007)		(0.008)		(0.010)
Security Satisfaction $t-1$ (std.)	0.008***	0.021	0.012***	0.060***	0.009***	0.031*	0.008***	0.036*	0.002	0.055**
	(0.002)	(0.017)	(0.002)	(0.019)	(0.002)	(0.017)	(0.002)	(0.018)	(0.002)	(0.023)
Security Satisfaction $t-1$ (std.) × Security Satisfaction $t-1$ (std.)		-0.014*		-0.010		-0.012		-0.011		0.024**
		(0.007)		(0.009)		(0.008)		(0.008)		(0.011)
Flexibility Satisfaction $t-1$ (std.)	-0.012***	-0.087***	-0.014***	-0.121***	-0.008***	-0.083***	-0.006***	-0.065***	-0.001	-0.019
	(0.002)	(0.016)	(0.002)	(0.018)	(0.002)	(0.017)	(0.002)	(0.018)	(0.002)	(0.022)
Flexibility Satisfaction $t-1$ (std.) × Flexibility Satisfaction $t-1$ (std.)		-0.023***		-0.029***		-0.032***		-0.023**		-0.010
		(0.008)		(0.009)		(0.009)		(0.009)		(0.012)
Hours Worked Satisfaction $t-1$ (std.)	0.006**	0.035**	0.005**	0.041**	0.005**	0.039**	0.003	0.017	0.001	-0.007
	(0.002)	(0.015)	(0.002)	(0.017)	(0.002)	(0.015)	(0.002)	(0.017)	(0.002)	(0.021)
Hours Worked Satisfaction $t-1$ (std.) × Hours Worked Satisfaction $t-1$ (std.)		0.003		0.007		0.006		-0.005		-0.014
		(0.008)		(0.009)		(0.008)		(0.009)		(0.011)
Participation Rate	39.91	39.91	25.77	25.77	30.75	30.75	23.99	23.99	11.60	11.60
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pseudo-R^2	0.16	0.16	0.15	0.15	0.14	0.14	0.12	0.12	0.08	0.08
Observations	63,647	63,647	63,647	63,647	63,647	63,647	63,647	63,647	63,647	63,647

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

Notes: The table displays the average marginal effects estimated based on logit estimations (uneven columns) or coefficients from logit estimations (even columns). The dependent variables are dummies indicating participation in training with certain aims (see column headers and below). The main explanatory variable of interest is the worker's standardized job satisfaction (from $t-1$). In the even columns, the squared term of the job satisfaction is included. All regressions include the full set of control variables. For each regression, the (unconditional) average of the dependent variable ("Participation Rate"), the average effect in % (in relation to the unconditional participation rate) of the main explanatory variable ("Effect in %", uneven columns), p-value of joint F-test (even columns), and the Pseudo-R^2 are displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

In the even numbered columns, the size of the coefficients cannot be interpreted.

(1)/(2) Dependent variable: Overall training participation.

(3)/(4) Dependent variable: Training participation to maintain professional status and/or meet occupational standards.

(5)/(6) Dependent variable: Training participation to improve your skills in your current job.

(7)/(8) Dependent variable: Training participation to develop your skills generally.

(9)/(10) Dependent variable: Training participation to prepare you for a job you might do in the future or facilitate promotion.

For the satisfaction with the total pay, all specifications result in negative effects which would insinuate the dominance of the voice channel. However, these effects are overall very small and in most cases insignificant. This could indicate that the voice channel gains significance in this context, however, on average, does not dominate the neglect channel to such an extent that there is a clear significant negative relationship.

Similarly, there is a stronger negative association between flexibility satisfaction and training participation. Individuals who are unhappy with the flexibility to balance work and non-work commitments are more likely to invest into training than those who are satisfied. This finding is in line with the voice channel as workers may aim to improve their skills and performance in order to increase the flexibility of their job.

Finally, if a worker is unsatisfied with the hours worked, the most efficient voice reaction may be to talk to the employer in an attempt to increase or decrease the (contractual) working hours. If in turn, this dissatisfaction arises due to overtime, a worker may be interested in increasing her productivity to reduce the necessary overtime. However, the estimation results point towards a positive relationship between this satisfaction facet and the training probability. This suggests that training is either not viewed as the correct voice channel or the neglect channel dominates.

Overall, these findings highlight the fact that workers exhibit different reactions to dissatisfaction depending on the source of dissatisfaction: Dissatisfaction with some job facets may result in a voice or exit reaction, while others cause workers to exhibit signs of neglect. This lends weight to the complexity of the measure of job satisfaction and stresses the importance of considering the different facets of job satisfaction.[29] Importantly, the facets analyzed here are likely not all facets that can induce job dissatisfaction, for instance the satisfaction with the colleagues and boss, with commuting, or with the autonomy are expected to play an important role as well.

6 Conclusions

As Boswell *et al.* (2005) point out "a firm's intellectual capital is increasingly critical for sustained competitiveness" (p.882). Thus, keeping the skills of workers up-to-date in the face of the continuously evolving labor market is a key goal for firms and their workers. Consequently, it is of interest to understand which factors influence the training investment decision in order to increase the willingness to participate (OECD, 1996).

[29] This notion has been receiving some attention, compare for example Boles *et al.* (2007).

In this paper, I analyze the worker's decision to invest into training and account for the effect of her job satisfaction. My theoretical model predicts a U-shaped relationship if individuals attempt to change dissatisfactory situations (voice reaction) or plan to leave the job (exit reaction). In contrast, dissatisfaction may be met with neglect (neglect reaction), which would result in an overall positive relationship. From a theoretical point of view, it is unclear which channel dominates the relationship between job satisfaction and training participation on average.

There are four main take-aways of the empirical analysis (cautioned due to a small number of very unsatisfied workers). First, the Australian data provides indicators that there is an overall positive relationship, suggesting that the neglect channel is on average the more dominant reaction. This means that unsatisfied workers on average participate less in training even though training could help solve (some) problems that can cause dissatisfaction (i.e. workers neglect their job rather than improve the situation). In this case, employers should keep in mind that offering optional training may not lead workers to actually participate even if it were beneficial for the worker.

Second, closer inspections of both the aim of training and the heterogeneities across quit intentions reveal that the exit reaction is dominated *less* by the neglect channel than the voice channel is. This lends weight to the concern that dissatisfaction on the job leads workers to neglect their duty or invest into human capital that is designated to be taken to a different employer. Both cases are not beneficial for the current employer.

Third, heterogeneities can be identified across the source of dissatisfaction. For instance, the voice channel gains dominance if the dissatisfaction arises in the pay domain, whereas the neglect channel remains dominant for satisfaction with the work itself. This highlights the importance of understanding which problems cause dissatisfaction. Additionally, different sources of dissatisfaction may be solved with different types of training. This may appear obvious, as not all problems are equally easily solved by participating in training. However, it is not ex ante clear which factors lead workers to react with which reaction.

Finally, the initial findings of this paper in combination with the work of Burgard and Görlitz (2014), shed light on a valuable cycle: Workers with a higher level of job satisfaction are more willing to participate in training. Such training courses in turn have been argued to increase the job satisfaction of the participating workers (Burgard and Görlitz, 2014). Thus, higher levels of satisfaction after training are likely to increase the willingness to participate in further training courses in the future. Consequently, employers are advised

to encourage their workers to voice the sources of dissatisfaction. Identifying and resolving such sources may result in higher levels of satisfaction and, thus, a higher willingness to participate in training. Alternatively, the firm might encourage the worker to participate in training aimed at improving the issue at hand, and, thus, potentially kick-start the training-job satisfaction cycle. Finally, employers may be advised to inform their workers of all potential (monetary and non-monetary) returns to training to ensure that their workers understand whether training could be a good investment for them.

Nevertheless, this analysis is not without its shortcomings. First, with very few observations who report a low level of job satisfaction, conclusions regarding (highly) dissatisfied workers must be made with great caution. Second, measurement timing is quite important in the context of job satisfaction, as this measure cannot be assumed to be stable. Hence, the most recent measurement of job satisfaction may not be an adequate proxy for the job satisfaction from the time of the training decision. Third, it is not possible to control for performance, which is likely to impact job satisfaction as well as training participation. However, poor performers may be interested in increasing their productivity with training, while high performers may wish to stay high performers. Hence, it is ex ante not clear in which direction the omission of performance biases the presented results. Lastly, the HILDA does not provide the opportunity to certainly distinguish between mandatory and optional training. Hence, the results are likely underestimated. It would be of further interest to analyze whether there is a heterogeneous effect of job satisfaction on optional training that was initiated by the firm vs. by the worker herself. In order to improve the understanding of the relationship between job satisfaction and training participation and to provide adequate policy recommendations, more research is required. Especially, understanding which job satisfaction facets induce which kind of reaction (voice, exit, loyalty or neglect) would be of great value to elicit targeted actions to increase training participation.

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A Supplementary Tables and Figures

Table A.1: Descriptives Course Characteristics for Training Participants

	(1)
A: Years 2004 - 2019	
Observations[a]	25,401
Share of Estimation Sample	0.40
What were the aims of any of this training?[b]	
To maintain professional status and/or meet occupational standards	0.65
To improve your skills in your current job	0.77
To develop your skills generally	0.60
To prepare you for a job you might do in the future or facilitate promotion	0.29
To help you get started in your job	0.06
Because of health/safety concerns	0.29
Other	0.01
B: Years 2007 - 2019	
Observations[a]	21,570
Were any of these conducted...[b]	
at your place of employment during paid work time?	0.72
at your place of employment, but in your own time?	0.16
at some other place during paid work time?	0.54
at some other place, but in your own time?	0.22
Total number of training days[c]	7.61
Average number of hours of instruction per day[c]	5.91
Dummy for own costs	0.22
To what extent do you think you could use the new skills you have acquired from any of this training if you got a new job with a different employer?	
Not at all	0.04
Only to a limited extent	0.12
To a moderate extent	0.31
To a great extent	0.32
To a very great extent	0.21
Did not learn any new skills	0.00

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

Notes: The table shows mean values of course characteristics. For non-continuous variables, the average can be interpreted as the share of individuals for whom the dummy variable is equal to one. Questions refer to the aggregated training courses.

[a] The numbers of observations of the presented survey questions vary slightly due to item non-response.

[b] Multiple responses possible.

[c] Denotes continuous variable.

Table A.2: Summary Statistics of Explanatory Variables

	(1) No Training	(2) Training	(3) Difference
Observations	38,246	25,401	
Share of the estimation sample	0.40	0.60	
Job Satisfaction			
Job Satisfaction in $t-1$	7.59	7.68	-0.09***
Work Satisfaction in $t-1$	7.55	7.70	-0.15***
Pay Satisfaction in $t-1$	7.10	7.17	-0.06***
Security Satisfaction in $t-1$	7.89	8.07	-0.18***
Flexibility Satisfaction in $t-1$	7.44	7.25	0.19***
Hours Satisfaction in $t-1$	7.27	7.26	0.01
Training History			
Training Participation in $t-1$ and/or $t-2$	0.39	0.78	-0.39***
Socio-Economic Variables			
Age[a]	42.19	42.41	-0.22***
Female	0.47	0.53	-0.06***
Married	0.57	0.61	-0.03***
Number of Children[a]	1.52	1.55	-0.04***
Disabled	0.15	0.16	-0.01***
Migration Background	0.20	0.19	0.00
Owner of House or Dwelling	0.72	0.74	-0.03***
Highest Educational Degree			
Primary Education	0.19	0.10	0.10***
Lower Secondary Education	0.14	0.10	0.04***
Upper Secondary Education	0.25	0.23	0.02***
(Advanced) Diploma	0.10	0.13	-0.02***
University	0.30	0.45	-0.14***
Work Experience (in Years)[a]	21.54	21.41	0.13
Unemployment Experience (in Years)[a]	0.61	0.46	0.16***
Gross Monthly HH Income of 2 Years Ago (in 1000 €)[a]	10.31	10.63	-0.33***
Regional Information			
Region			
West Australia	0.09	0.09	-0.00
North Australia	0.01	0.01	-0.00*
South Australia	0.10	0.12	-0.02***
Queensland	0.21	0.21	0.00
Southwales	0.29	0.29	0.00
Victoria	0.30	0.28	0.01***
Unemployment Rate in Region[a]	5.15	5.11	0.04***
Job-Specific Characteristics			
Employment Status			
Full-Time	0.76	0.79	-0.03***
Part-Time	0.24	0.21	0.03***
Contract Type			
Permanent	0.09	0.10	-0.01***
Temporary	0.91	0.90	0.01***
Tenure (in Years)[a]	10.25	10.66	-0.42***
Member Trade Union	0.22	0.36	-0.15***
ISCO88			
Managers	0.14	0.13	0.01***
Professionals	0.20	0.35	-0.15***
Technicians and Associate Professionals	0.17	0.19	-0.03***
Clerical Support Workers	0.15	0.09	0.06***
Service and Sales Workers	0.10	0.10	0.01**
Skilled Agricultural, Forestry and Fishery Workers	0.01	0.01	0.00***
Craft and Related Trades Workers	0.09	0.05	0.03***
Plant and Machine Operators, and Assemblers	0.08	0.05	0.03***
Menial Jobs	0.06	0.03	0.03***
Firm-Specific Characteristics			

(Table continues on the next page)

Table A.2: Summary Statistics of Explanatory Variables (Continued)

	(1)	(2)	(3)
Firm Size			
Small	0.75	0.69	0.06***
Medium	0.10	0.12	-0.02***
Large	0.15	0.19	-0.04***
NACE Industry			
Manufacturing	0.05	0.03	0.02***
Agriculture	0.02	0.01	0.01***
Mining, Quarrying, Energy, Water	0.03	0.03	-0.00
Chemicals, Pulp, Paper	0.03	0.02	0.01***
Construction	0.07	0.05	0.02***
Iron, Steel	0.02	0.01	0.01***
Textile, Apparel	0.00	0.00	0.00***
Wholesale, Retail	0.15	0.07	0.09***
Transportation, Communication	0.07	0.05	0.02***
Public Service	0.33	0.57	-0.24***
Financials, Private Services	0.18	0.14	0.04***
Other	0.04	0.03	0.01***
Personality Characterstics			
Big Five Factor Openness[a]	4.18	4.32	-0.14***
Big Five Factor Conscientiousness[a]	5.13	5.18	-0.05***
Big Five Factor Extraversion[a]	4.38	4.49	-0.11***
Big Five Factor Agreeableness[a]	5.36	5.47	-0.10***
Big Five Factor Neuroticism[a]	5.12	5.18	-0.06***
Locus of Control[a]	5.52	5.56	-0.05***
Risk Affinity[a]	4.56	4.72	-0.16***

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.
Notes: Table shows mean values of explanatory variables by training status and their differences (column 3). Significant differences are indicated by asterisks. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$
[a] Denotes continuous variable.

Table A.3: Robustness: Logit Estimation Results: Training Participation on Job Satisfaction (Average Marginal Effects)

	(1) ME	(2) Coeff.	(3) ME	(4) Coeff.	(5) ME	(6) Coeff.	(7) ME	(8) Coeff.	(9) ME	(10) Coeff.	(11) ME	(12) Coeff.
	Baseline		Exogonous Controls		Training Type				Potentially Optional		Fixed Effects	
					General Training		Specific Training					
Job Satisfaction $t-1$ (std.)	0.006***	0.019	0.009***	0.029**	0.006***	0.129***	0.006***	-0.117***	0.011***	0.040***	0.013***	0.056***
	(0.002)	(0.013)	(0.002)	(0.013)	(0.002)	(0.017)	(0.002)	(0.018)	(0.002)	(0.015)	(0.003)	(0.018)
Job Satisfaction $t-1$ (std.) × Job Satisfaction $t-1$ (std.)		-0.010*		-0.011*		0.016**		-0.038***		-0.019***		-0.001
		(0.006)		(0.006)		(0.008)		(0.008)		(0.007)		(0.007)
Participation Rate	39.91	39.91	39.91	39.91	20.66	20.66	18.01	18.01	30.87	30.87	44.09	44.09
Effect in %	1.50		2.26		2.90		3.33		3.56		2.05	
p-value of Joint F-Test		0.00		0.00		0.00		0.00		0.00		0.00
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pseudo-R^2	0.15	0.15	0.14	0.14	0.15	0.11	0.15	0.08	0.16	0.16	0.20	0.20
Observations	63,647	63,647	63,647	63,647	55,458	55,458	55,458	55,458	55,321	55,321	48,564	48,564

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

Notes: The table displays the average marginal effects estimated based on logit estimations (uneven columns) or coefficients from logit estimations (even columns). The dependent variable is a dummy indicating participation in training (except columns 5-8). The main explanatory variable of interest is the worker's standardized job satisfaction (from $t-1$). In the even columns, the squared term of the job satisfaction is included. All regressions include the full set of control variables (except columns 3 and 4). For each regression, the (unconditional) average of the dependent variable ("Participation Rate"), the average effect in % (in relation to the unconditional participation rate) of the main explanatory variable ("Effect in %", uneven columns), p-value of joint F-test (even columns), and the Pseudo-R^2 are displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

In the even numbered columns, the size of the coefficients cannot be interpreted.

(1)/(2) Main results from Table 1, columns (1) and (4).

(3)/(4) Excluding potentially endogenous variables (employment status, contract type, ISCO88, NACE). The remaining job and firm control variables are: tenure, member trade union/association, firm size.

(5)/(6) The dependent variable is equal to one if the individual participated in general training.

(7)/(8) The dependent variable is equal to one if the individual participated in specific training.

(9)/(10) Individuals who indicated that they participated in training with the aim "To help you get started in your job" or "Because of health/safety reasons" are excluded, as these are potentially mandatory training courses (compare Smith *et al.*, 2019). Remaining courses are potentially optional, but can still be mandatory.

(11)/(12) Fixed effects logit regression. Sample size is reduced because the regression excludes individuals for whom the dependent variable does not change across all observed years. The control variables that do not change over time are omitted (gender, migration background, personality traits). To correct for the incidental parameter bias, I employ the analytical correction method with one lag, both individuals and time effects, and bias correction for both individuals and time effects (Cruz-Gonzalez *et al.*, 2017).

Table A.4: OLS Estimation Results: Quit Intention (in Percent) on Job Satisfaction

	(1)	(2)
Job Satisfaction $t-1$ (std.)	-4.337***	-4.757***
	(0.151)	(0.170)
Job Satisfaction $t-1$ (std.) × Job Satisfaction $t-1$ (std.)		-0.311***
		(0.081)
Average Quit Likelihood	17.81	17.81
Effect in %	-24.14	
p-value of Joint F-Test		0.00
Controls	✓	✓
$\overline{R^2}$	0.10	0.10
Observations	63,547	63,547

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

Notes: The table displays the coefficients from OLS estimations. The dependent variable is the self-reported likelihood of quitting the job within the next 12 months (in %). The main explanatory variable of interest is the worker's standardized job satisfaction (from $t-1$). In column 2, the squared term of the job satisfaction is included. All regressions include the full set of control variables. For each regression, the (unconditional) average of the dependent variable ("Average Quit Likelihood"), the average effect in % (in relation to the unconditional participation rate) of the main explanatory variable ("Effect in %", uneven columns), p-value of joint F-test (even columns), and the $\overline{R^2}$ are displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

Table A.5: Logit Estimation Results: Job Change between t and $t+1$ on Job Satisfaction

	(1) Coeff.	(2) Coeff.	(3) Coeff.
	Any Job Change	Voluntary Job Change	Job Change due to Job Dissatisfaction
A. Training			
Job Satisfaction t (std.)	-0.451***	-0.471***	-0.509***
	(0.018)	(0.020)	(0.026)
Training	-0.211***	-0.155***	-0.195***
	(0.033)	(0.039)	(0.060)
Job Satisfaction t (std.) × Training	-0.074***	-0.093***	-0.137***
	(0.027)	(0.030)	(0.040)
Job Satisfaction $t-1$ (std.)	-0.022	-0.026	-0.035
	(0.017)	(0.019)	(0.026)
Pseudo-R^2	0.11	0.11	0.11
B. Training for Future Job/Promotion			
Job Satisfaction t (std.)	-0.470***	-0.496***	-0.544***
	(0.016)	(0.018)	(0.024)
Training for Promotion/New Job	-0.188***	-0.126**	-0.222**
	(0.049)	(0.056)	(0.092)
Job Satisfaction t (std.) × Training for Promotion/New Job	-0.060	-0.061	-0.095
	(0.043)	(0.047)	(0.065)
Job Satisfaction $t-1$ (std.)	-0.022	-0.026	-0.035
	(0.017)	(0.019)	(0.027)
Pseudo-R^2	0.11	0.11	0.11
Controls	✓	✓	✓
Observations	55,244	55,244	55,244

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

Notes: The table displays the average coefficients from logit estimations. The dependent variable is a dummy indicating a job change between t and $t+1$ (see below for more details). The main explanatory variables of interest are the worker's standardized job satisfaction (from t), training participation and the interaction thereof. All regressions include the full set of control variables. For each regression, the Pseudo-R^2 is displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

The size of the coefficients cannot be interpreted.

The sample size is reduced because the job change information is imputed from $t+1$ and missing for roughly 3,000 individuals. As 2020 is not available, the year 2019 is additionally excluded.

Panel A considers participation in any training, panel B in training for a future job/promotion.

(1) Dependent variable: Any Job Change

(2) Dependent variable: Voluntary Job Change

(3) Dependent variable: Job Change due to Job Dissatisfaction

Table A.6: Logit Estimation Results: Participation in Training (Average Marginal Effects)

	(1) Training
Job Satisfaction $t-1$ (std.)	0.006***
	(0.002)
Job Satisfaction $t-2$ (std.)	-0.002
	(0.002)
Training History of the Last 2 Years	0.289***
	(0.004)
Age	0.000
	(0.001)
Female	0.014**
	(0.006)
Married	0.010**
	(0.005)
Number of Children	0.005**
	(0.002)
Disabled	0.010*
	(0.005)
Migration Background	-0.007
	(0.006)
Owner of House or Dwelling	-0.007
	(0.005)
Highest Educational Degree (Ref.: Primary Education)	
Lower Secondary Edu	0.038***
	(0.009)
Upper Secondary Education	0.062***
	(0.008)
(Advanced) Diploma	0.072***
	(0.009)
University	0.078***
	(0.009)
Work Experience (in Years)	-0.000
	(0.001)
Unemployment Experience (in Years)	-0.002
	(0.002)
Gross Monthly HH Income of 2 Years Ago (in 1000 €)	-0.001***
	(0.000)
Region (Ref.: West Australia)	
North Australia	-0.007
	(0.023)
South Australia	-0.008
	(0.010)
Queensland	-0.011
	(0.009)
Southwales	-0.018**
	(0.009)
Victoria	-0.024***
	(0.009)
Unemployment Rate in Region	0.003
	(0.003)
Year Dummies (Ref.: Year 2004)	
Year 2005	-0.042***
	(0.011)
Year 2006	-0.057***
	(0.012)
Year 2007	-0.129***
	(0.012)
Year 2008	-0.074***
	(0.011)

(Table continues on the next page)

Table A.6: Logit Estimation Results: Participation in Training (Continued)

	(1)
Year 2009	-0.092***
	(0.011)
Year 2010	-0.116***
	(0.011)
Year 2011	-0.094***
	(0.011)
Year 2012	-0.099***
	(0.011)
Year 2013	-0.095***
	(0.011)
Year 2014	-0.110***
	(0.011)
Year 2015	-0.118***
	(0.011)
Year 2016	-0.125***
	(0.011)
Year 2017	-0.122***
	(0.011)
Year 2018	-0.117***
	(0.011)
Year 2019	-0.117***
	(0.011)
Full-Time Employment	0.044***
	(0.006)
Temporary Contract Type	0.011*
	(0.007)
Tenure (in Years)	-0.000
	(0.000)
Member Trade Union	0.068***
	(0.005)
ISCO88 (Ref.: Menial Jobs)	
Managers	0.036***
	(0.012)
Professionals	0.070***
	(0.011)
Technicians and Associate Professionals	0.057***
	(0.011)
Clerical Support Workers	-0.005
	(0.011)
Service and Sales Workers	0.064***
	(0.012)
Skilled Agricultural, Forestry and Fishery Workers	0.035
	(0.022)
Craft and Related Trades Workers	0.021
	(0.013)
Plant and Machine Operators, and Assemblers	0.020
	(0.013)
Firm Size (Ref.: Small)	
Medium	0.028***
	(0.006)
Large	0.001
	(0.006)
NACE Industry (Ref.: Other)	
Manufacturing	-0.031**
	(0.016)
Agriculture	-0.026
	(0.022)
Mining, Quarring, Energy, Water	0.031*
	(0.017)

(Table continues on the next page)

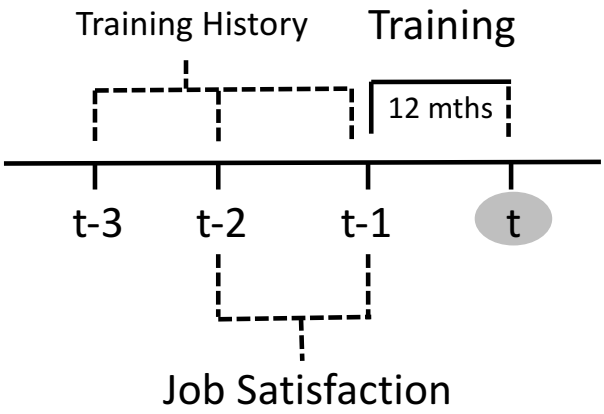
Table A.6: Logit Estimation Results: Participation in Training (Continued)

	(1)
Chemicals, Pulp, Paper	-0.034*
	(0.018)
Construction	-0.009
	(0.015)
Iron, Steel	-0.068***
	(0.024)
Textile, Apparel	-0.110**
	(0.043)
Wholesale, Retail	-0.061***
	(0.014)
Transportation, Communication	-0.011
	(0.015)
Public Service	0.080***
	(0.012)
Financials, Private Services	0.000
	(0.013)
Big Five Factor Openness (std.)	0.007**
	(0.003)
Big Five Factor Conscientiousness (std.)	-0.001
	(0.003)
Big Five Factor Extraversion (std.)	0.011***
	(0.002)
Big Five Factor Agreeableness (std.)	0.004
	(0.003)
Big Five Factor Neuroticism (std.)	0.003
	(0.003)
Locus of Control (std.)	-0.003
	(0.003)
Risk Affinity (std.)	0.007***
	(0.003)
Pseudo-R^2	0.15
Observations	63,647

Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.

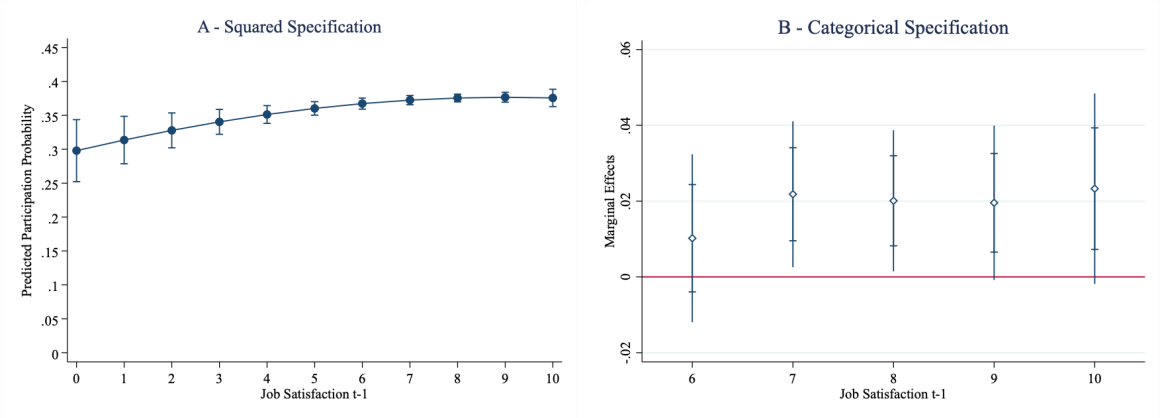
Notes: The table displays the average marginal effects estimated based on logit estimations corresponding to column (1) of Table 1.The dependent variable is a dummy indicating participation in training. The main explanatory variable of interest is the worker's standardized job satisfaction (from $t-1$). The regression includes the full set of control variables. The Pseudo-R^2 is displayed. Standard errors are in parentheses and clustered on person-level. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

Figure A.1: Description of the Data Structure



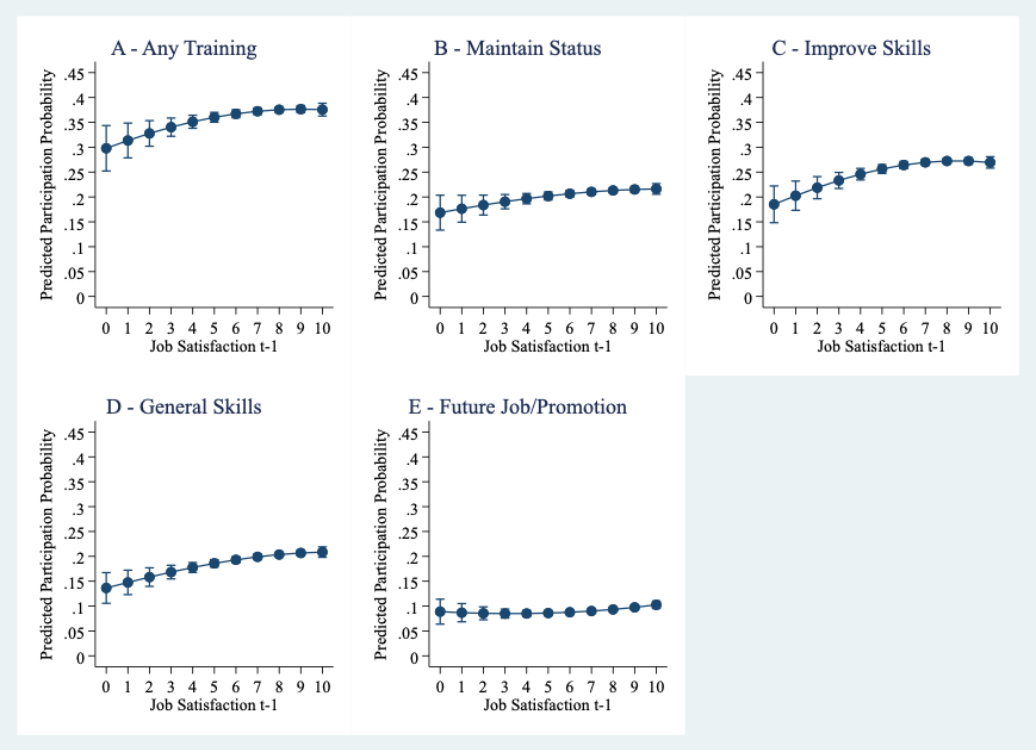
Source: Own illustration.
Notes: The figure gives an overview of the timing of the main variable measurements. The variable measuring the training participation in year t refers to participation in the 12 months prior to the interview. Job satisfaction is measured in the year $t-1$. Further, job satisfaction in $t-2$ is added to the specification to control for changes in the satisfaction prior to training. To minimize any reverse causality, the recent training history is controlled for by including a dummy indicating participation in training in the year $t-1$ and/or $t-2$ (which also refer to participation in the 12 months prior to the interview). Overall, training participation is available in the years 2003-2019. Due to the control of the training history, I use the data from the years 2004-2019 in my sample (where the training history only refers to $t-1$ for the year 2004).

Figure A.2: Logit Estimation Results: Training Participation on Job Satisfaction, Squared and Categorical Specifications



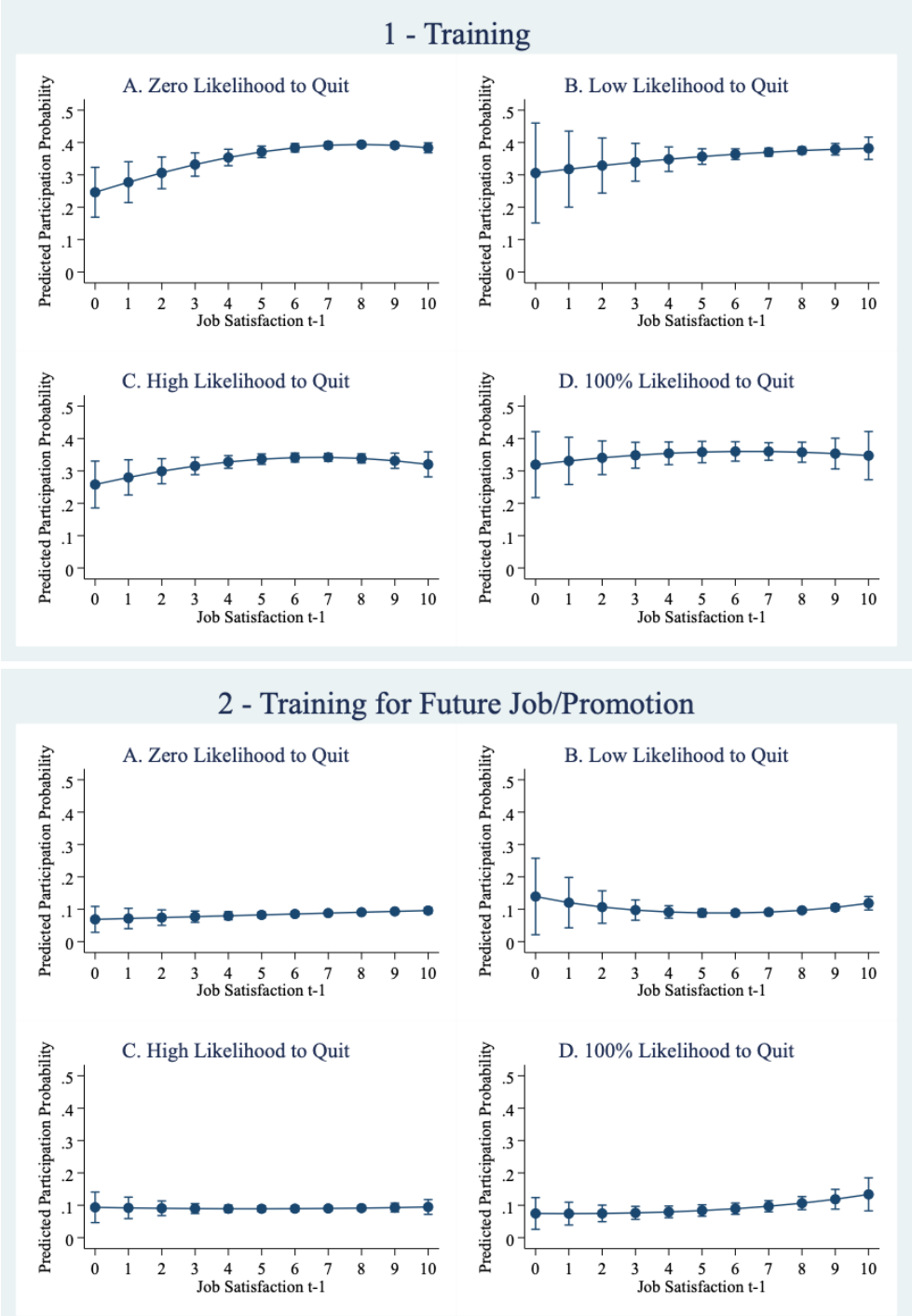
Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.
Notes: Panel A: The figure shows the predicted participation probabilities by job satisfaction $(t-1)$ and their 95% confidence intervals based on the logit estimation with the squared specifications from Table 1, column (4). The dependent variable indicates training participation. Standard errors are clustered on person-level and all control variables are included in the specification which are held at the mean (N=63,647).
Panel B: The figure shows marginal effects resulting from a logit estimation of the training participation on the categorical job satisfaction $(t-1)$ measure. The reference group is rather unsatisfied workers (i.e. 0-5 on the satisfaction scale). The dependent variable indicates training participation. Standard errors are clustered on person-level and all control variables are included in the specification (N=63,647). The 99% and 90% confidence intervals are depicted; the horizontal caps denote the upper and lower end of the 90% confidence interval.

Figure A.3: Predicted Training Aim by Job Satisfaction



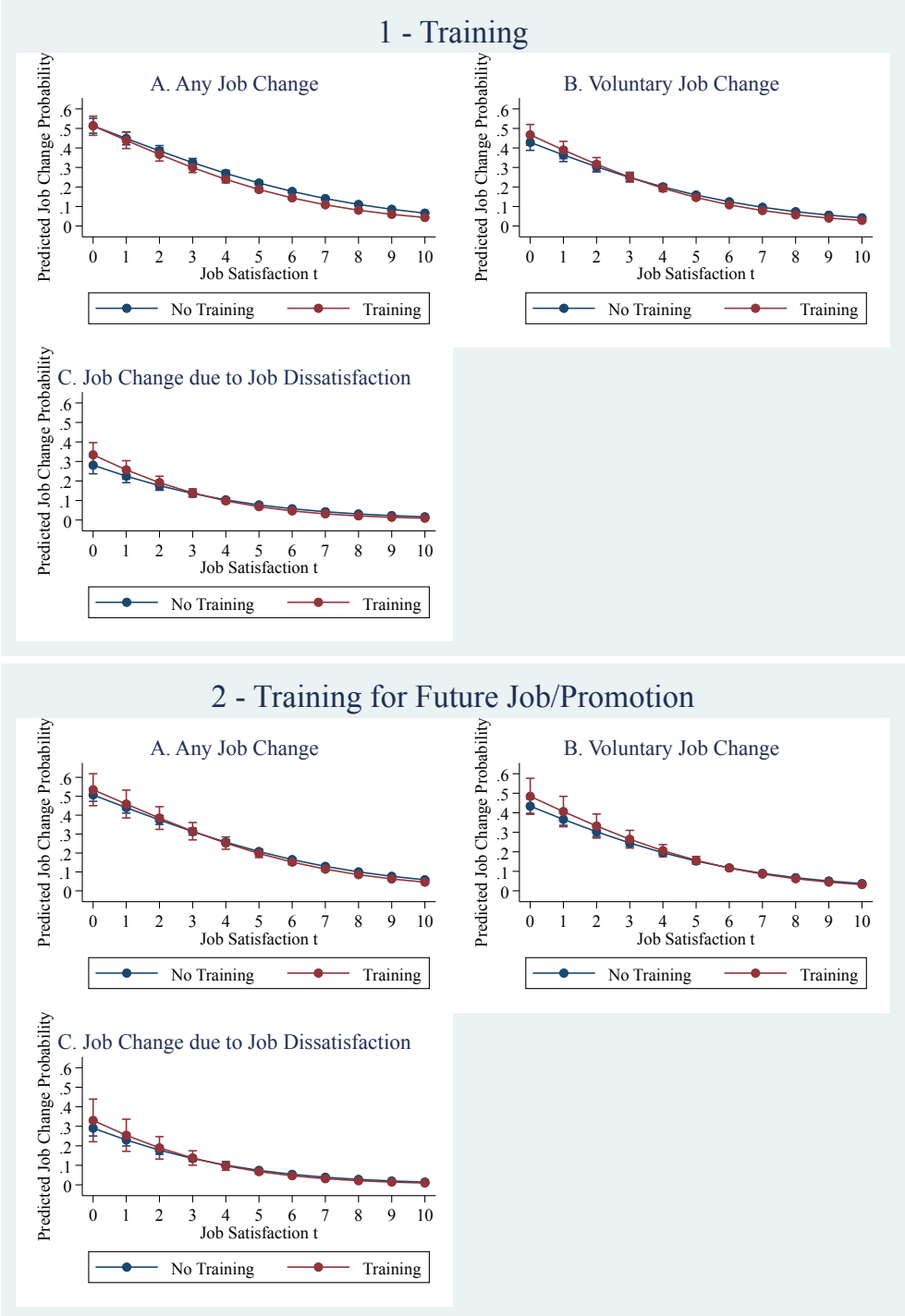
Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.
Notes: The figures show the predicted participation probabilities by job satisfaction ($t-1$) and their 95% confidence intervals based on the logit estimations with the squared specifications from Tables 1 and 2. The dependent variables indicate training participation for the reasons highlighted in the panel titles and below. Standard errors are clustered on person-level and all control variables are included in the specification which are held at the mean (N=63,647). Dependent variables:
Panel A: Any training participation
Panel B: Training participation to maintain professional status and/or meet occupational standards
Panel C: Training participation to improve your skills in your current job
Panel D: Training participation to develop your skills generally
Panel E: Training participation to prepare you for a job you might do in the future or facilitate promotion

Figure A.4: Predicted Training Probability by Job Satisfaction and Quit Likelihood



Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.
Notes: The figures show the predicted participation probabilities by job satisfaction $(t-1)$ and quit likelihood, and their 95% confidence intervals based on the logit estimations with the squared specifications from Table 3. Standard errors are clustered on person-level and all control variables are included in the specification which are held at the mean (N=55,244). Panel 1 considers participation in any training, panel 2 in training for a future job or promotion. The subpanels only include individuals who indicate the chance of quitting their job $(t-1)$ highlighted in the panel titles.
Subpanels A: a zero chance of quitting in the next 12 months $(t-1)$, $N = 34,709$.
Subpanels B: a chance of 1-49% of quitting in the next 12 months $(t-1)$, $N = 15,170$.
Subpanels C: a chance of 50-99% of quitting in the next 12 months $(t-1)$, $N = 10,222$.
Subpanels D: a chance of 100% of quitting in the next 12 months $(t-1)$, $N = 2,166$.

Figure A.5: Predicted Job Change by Job Satisfaction and Training



Source: The Household, Income and Labour Dynamics in Australia (HILDA): data for years 2004-2019, general release 19, HILDA, 2020, doi:10.26193/3QRFMZ, own calculations.
Notes: The figures show the predicted probabilities of a job change between t and $t+1$ by job satisfaction $(t-1)$ and their 95% confidence intervals based on the logit estimations with the squared specifications from Table A.5. Standard errors are clustered on person-level and all control variables are included in the specification which are held at the mean (N=55,244). The probabilities are depicted in red for those workers who participated in training, in blue for non-participants. Panel 1 refers to any training, panel 2 to training for a future job or promotion.
The dependent variables are highlighted in the panel titles.
Subpanel A: Any Job Change
Subpanel B: Voluntary Job Change
Subpanel C: Job Change due to Job Dissatisfaction